EUROPEAN TECHNOLOGY/HARDWARE: MARKET OVERWEIGHT NOVEMBER 24, 2004

The Future of Power Equipment

- **INFLECTION POINT.** Our review of the global power equipment market has produced some surprising conclusions. We have reached an inflection point in the century old industry. Consider the following: all major industrial powers (but the US) are about to ratify Kyoto (and their obligations under it); oil and gas prices have doubled; the west's power infrastructure, long neglected, urgently requires an overhaul; and (as attested by GE and Siemens' acquisitions) wind power has grown up, and is expected to become a strategic part of the future global power generation mix.

- **NUCLEAR POWER WILL BE BACK.** Our analysis also reveals that many national governments are going to have to rethink their aversion to nuclear power, which can be expected to see a large-scale revival – even in countries that are now committed to closing nuclear power stations. In this report, we analyse the attractive outlook for power generation and transmission equipment manufacturers of all types, and explain how the landscape is most likely to change.

- **POWER GENERATION EQUIPMENT OUTLOOK.** We expect growth in global power equipment to double over the next three to five years, driven by the need to upgrade the generating mix in the west and install generating assets elsewhere. We see the key growth areas as the US and Europe, where we expect a massive replacement cycle to gain momentum over the next two to three years. We expect China and the west to invest €180 billion and €280 billion, respectively, in power equipment over the next ten years. The key growth markets should be wind turbines, gas turbines (especially if gas prices revert to normal levels) and T&D equipment, with nuclear experiencing a revival.

- **POWER TRANSMISSION OUTLOOK.** We are also bullish on the transmission and distribution (T&D) market, where we estimate annual growth rates will more than double from the current 4% to about 8%-10% in the second half of the decade. While China is a straight growth market in this space, we expect the US to turn into a massive replacement market, once the pending Energy Bill is passed.

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Attractive Market With Growth Poised to Accelerate

EXECUTIVE SUMMARY AND CONCLUSIONS

The global power generation equipment market is set for major change over the next three to ten years, which we believe should result in accelerated investment growth rates. Consequently, we are very bullish on this market and also, to a lesser extent, on the power transmission and distribution (T&D) market. The factors we expect to influence growth in the power equipment market in the next ten years are:

- changes in the generation mix due to market liberalisation, environmental regulation and policies regarding energy independence
- a massive upgrading/replacement cycle in developed countries
- the ramp-up of capacity in less developed geographies, e.g. China and India
- accelerated growth in the T&D market due to: equipment demand in countries like China; the need to replace obsolete equipment, predominantly in the US and some other western markets; the liberalisation and interconnection trend in Europe; and a trend toward wind power in remote areas (e.g. offshore)
- high gas prices, although we expect these to decline again in the medium term
- wind power on the ascendant, now mandated by Kyoto and in our view the only renewable energy source capable of becoming a strategic component of the power generation mix
- the long-term revival of nuclear energy (four to five-year horizon)

Stock market conclusions

Our top picks among the companies we have under coverage in the sector are **Siemens and ABB, both rated Outperform**. We estimate these offer attractive five-year (2003-2008) earnings growth potential of 12.4% and 40.1%, respectively. With power equipment activities generating an estimated 24% and 36% (which could rise to 40% for ABB over the next five or so years) of their respective total earnings in 2004, we believe Siemens and ABB are well placed to benefit from the accelerated growth we expect in this market. We view positively Siemens' gearing towards all major turbine types (including gas, steam and wind), its activities in nuclear power (through a 34% stake in the Framatome JV) and its No.2 position in the T&D market. In this end-market, ABB holds the No.1 slot, which should provide a non-cyclical, structural growth element to ABB's business portfolio over the next two to ten years.

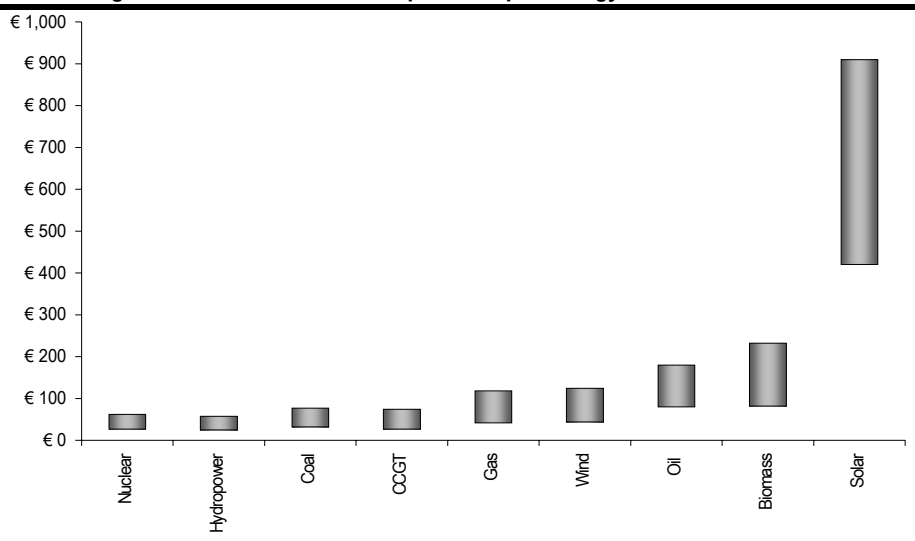
We recently downgraded Vestas to Peer Perform from Outperform to balance its 100% exposure to the high-growth wind power market with the entrance of Siemens into the arena. We view the wind power market as highly attractive, as we believe it will enjoy the highest growth rates in the power equipment market over the next ten years. However, with this growth profile and the wind turbine market's significant size

– annual volume of about €8 billion – the space is now attracting heavyweight competitors. This is evidenced by GE's takeover of Enron Wind in 2002 (forming GE Wind in North America) and Siemens' acquisition of Bonus Energy in October 2004, to form Siemens Wind in Europe[1] – both good strategic moves on these companies' parts, in our view. GE's track record in wind power is very impressive: it has managed to grow its global market share from about 8% to roughly 18% over the past two years. We believe that Siemens could double its current market share of about 8% over the next few years. Consequently, the competitive environment is significantly more challenging for Vestas and **Gamesa** (not rated), causing us concern about their global market share development and prompting our Vestas downgrade.

Nordex and **REpower** (neither rated) also operate in the wind power market but lack significant balance sheet strength and have only a limited global presence due to their strong focus on the German wind power market.

Of the remaining European companies that we do not cover, **Areva** has a market leadership role in nuclear power, for which we expect a long-term revival. We also believe the market environment is improving for **Alstom**, especially in steam turbines. The price of gas has more than doubled – in the US gas costs have shot up from an average $3.34/Mbtu in the past few years to almost $8/Mbtu – at which price level the balance now swings back in favour of coal-fired power plants, and hence steam turbines. At these prices, the generation costs of wind energy at top sites are about the same as the generation costs of power from a state-of-the-art CCGT (Combined-Cycle-Gas-Turbine), which also implies that wind power has become more attractive relative to traditional conventional energy sources.

Figure 1. Average Power Generation Prices per MWh per Energy Source



Note CCGT = Combined Cycle Gas Turbine.
Source: Bear, Stearns International Limited estimates.

[1] In October 2004, Siemens announced the acquisition of Danish wind turbine manufacturer Bonus Energy, which has a global market share of about 8%.

POWER EQUIPMENT MARKET

We are more bullish on the growth prospects of certain types of power plant (wind, gas-fired, coal-fired and nuclear power) than we are for others (oil-fired, lignite-fired, and most other renewable energy sources), and hence we expect some companies to profit more by this growth. In this respect, we like Vestas for its 100% gearing to the wind power market, combined with its market leadership position. Each company's gearing to these various power types is shown below.

Figure 2. European Power Equipment Companies and Gearing to the Industry

	Sales Gearing				Earnings Gearing				
	Wind Power	Conventional Power Generation	Nuclear Power Generation	Power Transmission		Wind Power	Conventional Power Generation	Nuclear Power Generation	Power Transmission
ABB	0.0%	0.0%	0.0%	45.3%	**ABB**	0.0%	0.0%	0.0%	40.3%
Alstom	0.0%	48.1%	0.0%	0.0%	**Alstom**	0.0%	loss making	0.0%	0.0%
Areva	0.0%	0.0%	61.5%	38.8%	**Areva**	0.0%	0.0%	only profit driver	23.7%
Gamesa	86.4%	0.0%	0.0%	0.0%	**Gamesa**	87.6%	0.0%	0.0%	0.0%
Nordex	100.0%	0.0%	0.0%	0.0%	**Nordex**	loss making	0.0%	0.0%	0.0%
Repower	100.0%	0.0%	0.0%	0.0%	**Repower**	100.0%	0.0%	0.0%	0.0%
Siemens	<0.1%	10.2%	1.3%	4.5%	**Siemens**	~0.1%	22.1%	1.0%	5.3%
VA Tech	0.0%	25.2%	0.0%	26.6%	**VA Tech**	0.0%	20.8%	0.0%	9.2%
Vestas	100.0%	0.0%	0.0%	0.0%	**Vestas**	100.0%	0.0%	0.0%	0.0%

Source: Company data; Bear, Stearns International Limited estimates.

We believe that national governments should feel some sense of urgency in determining the future of their overall generation mix. This is because current policies will need some legal modification over the next few years to enable a generation mix that is both practical and competitive. In this respect we note particularly the German government's current policy to phase out nuclear power over the next 20 years. Nuclear power currently represents a 30% plus share in the German power generation mix, and to replace this closed capacity with renewable energy sources such as wind power, as they intend, cannot in our view guarantee a reliable power stream at a competitive price. Hence, we believe the current political framework in Germany is unrealistic and will need to be modified, probably in favour of nuclear power, which we expect to see a revival globally as well. We expect the same to be true for Belgium and Sweden, which have also signed nuclear phase-out deals. Furthermore, we believe that the UK needs to take a similar decision (probably in favour of nuclear power), as in our view it is currently overly dependent on gas. We believe a lack of inexpensive alternatives and the willingness to reduce energy dependence on politically unstable regions are the key drivers for a possible revival of interest in nuclear power. Although this is not likely in the next two years, we believe this could begin to emerge over the next four to five years.

Nearer term, we expect the conventional power market to drive most of the going (predominantly related to gas-fired power plants), but we also expect the wind power market to continue growing in double-digits. Although we are confident that Asian growth markets such as China and India will drive most of the near-term growth in the power generation equipment markets, we believe western markets are about to see a massive upgrading cycle, which should start during the next two to four years.

EUROPEAN POWER GENERATION MIX

Currently, about 9% of European conventional thermal generating assets are more than 40 years old, and this will rise to 46% over the next decade. In absolute terms, this means about 146GW of conventional power generating equipment needs to be exchanged over the next ten years in Europe – implying an investment of €100 billion. This compares to the current average annual power equipment revenues of €7.0-€8.0 billion in Europe[2], of which only about €3.6-€4.0 billion is for new equipment, with the remaining €4.0-€4.5 billion spent on service and maintenance revenue. Hence, the average annual investment amount over the next decade should be more than twice the current annual market volume.

US POWER GENERATION MIX

The picture in the US is very similar. Currently, about 13% of the generation mix is older than 40 years, but this figure will rise to 37% over the next ten years. On this basis, we estimate that about 261GW needs to be exchanged over the next ten years – equivalent to an investment of €183 billion. In the US, annual power equipment sales (excluding service and maintenance revenue) have been running at about €13 billion, but we expect this to shrink to about €9 billion in 2006[3]. However, we project growth rates in the US power equipment market to turn positive again in 2007 – and the need for a massive upgrading is virtually inevitable, in our view. We estimate that the average annual investment after 2006 will be about twice the level seen in 2004.

In Europe, investment in conventional power generation assets is flat at the moment while US power equipment sales are still falling following a 'gas turbine bubble', which peaked in 2002. At the moment, virtually only wind power enjoys solid high growth rates in the US, running at about 15% year over year on average. Global investment in wind power assets is currently running at an annual level of about €8 billion, which we expect to grow by about 15% per annum over the next ten years.

WINNING TECHNOLOGIES

We expect the following technologies to be winners when it comes to new investment in power generation assets over the next decade:

- **Wind power.** In our opinion, wind power is the only renewable energy source capable of being a strategic part of the overall generation mix (up to about 20%), for two reasons. First, it is close to being price competitive, with fully-loaded generation costs of about €0.04-€0.08 per kWh (depending on the site)[4]; and second, wind power assets can be installed without fuel restrictions. This is why we are significantly more cautious about the installation of other renewable energy sources (RES) such as biomass power stations, as the supply of usable biomass (mostly wood) is limited[5].

[2] We have estimated this market volume from geographical sales numbers for Siemens, Alstom and General Electric, as well as from Platts data.

[3] Our estimates are based on power generation data from Platts.

[4] GE has recently said that it can produce wind power at 2.5 US cents per kWh – below the cost of a CCGT.

[5] In an earlier report [*German Wind Farm Developers*, August 2001] we concluded that due to the supply limits of the most typical biomass, wood, the maximum biomass capacity in Germany is only around 1,000MW, a fraction of the already installed wind power capacity.

- **Gas-fired power generation (gas turbines).** We also expect investment in gas-fired power plants to see accelerating growth rates for two main reasons. First, because the trend in market liberalisation in virtually all western countries supports the commissioning of flexible power generation assets, predominantly gas turbines; and second, because environmental trends, especially in the west, have led to a preference for gas-fired power plants over coal-fired power plants. As most western governments have imposed fairly strict environmental standards regarding emissions reduction, coal-fired power plants have become less attractive. In this we note that a coal-fired power plant emits twice as much carbon dioxide per kWh as a gas turbine.

- **Coal-fired power generation.** Coal-fired power plants currently dominate the global power generation mix and they will also continue to be commissioned in the future, even in the west. Nevertheless, western markets are expected to cut back on the commissioning of new coal-fired power plants, mainly for reasons relating to environmental policies and because western markets have a stronger appetite for the 'more flexible' gas turbines, following market liberalisation. However, growth markets such as China and India are expected to continue to invest in coal-fired power plants to meet the need for increased levels of base load. In addition to growth markets like these, western markets could see a shift back to coal-fired power plants, especially if the gas price remains at current levels or even increases further. In this respect, we believe the US in particular could well shift back in favour of building coal-fired power stations rather than gas turbines, as it has the largest coal reserves in the world and is far less strict on environmental policy than Europe. In addition, the US is much more dependent on Middle Eastern gas than Europe, which predominantly uses Russian gas.

- **Nuclear.** Although the nuclear option seems to have fallen out of fashion in most western countries, we expect this policy to be revised in around four years time for the following reasons:

  - According to the US Energy Information Administration, known reserves of conventional energy sources can only feed global consumption for a limited period (30 years for oil and 40 years for gas) – although there is the likelihood that new reserves (and possibly significant new fields) will be discovered in the future. However, it is also possible that newly commissioned gas turbines, for example, might not even be able to run for their whole lifetime. Furthermore, even with new oil and gas fields discovered we would expect significant price increases over the long term given the depletion of reserves. In effect, the economics of the shrinking pie is likely to drastically alter the economics of new investment in gas turbines.

  - With the newly heightened sensitivity to energy dependence in many countries, the nuclear option looks more attractive. Nuclear fuels can be found in a number of countries (Canada has the highest reserves), and nuclear power limits industrialised nations' dependence on those energy exporters that are politically volatile.

- Nuclear power is emission-free and so does not contribute to global warming or climate change. It has other environmental risks, such as the storage of nuclear waste and the risk of accidents, but the current environmental frameworks (such as the Kyoto Treaty) is more concerned with global climate change than with storage risks. Longer term, we believe nuclear power could offer a most compelling logic for the future.

POWER TRANSMISSION MARKET

We also believe the power transmission market offers accelerated growth potential. Although growth rates for the T&D market could remain moderate for up to two years, we expect to see a transition to structural growth in the medium term (within one to three years) for the following reasons:

- **Increase in electricity load.** As power consumption is rising across the world, T&D assets are having to cope with higher electricity loads. This is especially so in large, fast-developing countries such as China and elsewhere in Asia.

- **Replacement of obsolete equipment.** Investment in T&D assets has declined in the west – quite dramatically in the US – such that the current quality of these assets is insufficient to deal with the current electricity load. Power blackouts, such as those last year in the US, the UK and Italy, are typically the result.

- **Market liberalisation.** The liberalisation of power markets in the west has dramatically increased power trading, resulting in more cross-country and cross-border power flows, and with them greater load volatility.

- **Increase in wind power. With most western countries now promoting the commissioning of wind power, power loads have grown even more volatile.** Large wind farms are typically built in windy areas along coastlines, which are often low-demand centres with traditionally low power grid requirements. The trend toward more wind farms, particularly in offshore and near-shore locations, mandates heavy investment in the power grid for the transmission of power to areas of high demand.

- **Geographical distance between generation and demand.** Large countries like China, Brazil and Australia have invested and are planning to invest more in remote power generation assets, and need to have T&D assets that carry electricity over long distances.

- **US Energy Bill.** In the US, the market with the largest potential need for T&D equipment (although Asia is currently the largest market overall), we believe the proposed US Energy Bill will provide positive catalysts for new investment. We expect the US Energy Bill to be passed after the presidential election. As proposed, the Energy Bill envisages the following key factors:

  - **Permission process acceleration.** FERC, the US energy regulator, will have the authority to grant permits for the development and modification of transmission networks independently of the states involved. All outstanding

projects at state level that are delayed by more than one year will automatically transfer to the FERC.

- **Significant monetary investment incentives.** Grid operators will be allowed to accelerate the depreciation of their T&D investments over a period of only 15 years, although their economically useful life is around 40 years (or even longer). Also, within one year of the enactment of the bill, a new pricing mechanism will reward grid operators for reliability.

In our view, growth should be driven by two major geographies:

- **China and India.** We are likely to see growth markets such as China and India continuing to expand by around 8%-10% over the next five to ten years, as they are industrialising rapidly and have an urgent need for a reliable power supply. Power shortages in China are so severe that many industrial power plants have to run at a significantly reduced capacity utilisation, which could impact both the prospects for foreign investment in China and economic growth in general.

- **The US.** The US has systematically underinvested in power transmission assets over the past ten years, because utility companies did not have a good enough reason to expect a reasonable IRR on such investments. Hence, investment in T&D assets has often not paid off for utilities. The US energy bill addresses these issues in depth and is therefore seen as a catalyst to accelerate investment in US transmission assets.

Although some European countries (for example, the UK and Italy) have invested less than others (for example, Germany and France) and are seen as likely to upgrade their assets, there are some structural arguments to suggest that growth rates in Europe could accelerate in the future.

- **Higher levels of interconnection.** The EU has decided to raise the European cross-border interconnection level from about 7% currently to 20% of power capacity by 2010. This means that 20% of the average national power capacity can be exported to other European countries. In practice, this means that countries with high base load levels (e.g. France's strong nuclear capacity) could export their excess electricity to neighbouring countries, which in turn could switch off conventional power capacity and save fuel costs. A higher interconnection level not only means a generally more efficient use of fuel, but also a higher level of grid reliability. For example, if a large region in a country suffers a blackout and is unable to access other power stations to compensate, it can acquire replacement electricity from another country.

- **Market liberalisation.** European power markets were largely liberalised during the 1990s (with some exceptions), and since then the volume of traded power and cross-border power flows has increased massively. As a consequence of this, power load volatility has actually increased. Effective power trading aims to produce electricity at the cheapest place and transport it to the demand centres. However, physical power transport is typically limited due to grid limitations, i.e.

power transportation costs. Hence, high-volume power trading requires an efficient electricity grid. The more efficient an electricity grid, the more physical power can be transported over larger distances, leading to better exploitation of power plants, fuel savings, and a more balanced ecological impact.

- **Political commitment to wind power.** Europe's strong commitment to wind power has been growing and will continue to significantly increase load volatility in the region's power grid. Europe's installed wind power capacity is currently about 27GW. Some southern European regions, e.g. Portugal and the south of France, had to slow down the building permission process for wind farms, as their power grid was not capable of dealing with a volatile power load.

Some Facts about Electric Power

- About 3,500GW of power generation assets are installed globally, of which about 1,100GW are coal-fired, 750GW gas-fired, 350GW are nuclear power stations, and 48GW are wind power assets installed globally.

- The geographical breakdown of the global power generation mix is as follows: North America (USA and Canada), about 1,000GW; the European Union (EU15), about 600GW; China, about 360GW; Russia, about 220GW; India, about 120GW; Latin America, about 200GW; Middle East, about 140GW, Africa, about 140GW.

- The year has 8,760 hours, suggesting that 1MW of power generation capacity can generate a maximum of 8,760MWh (or 8.76GWh) of electricity. The global electricity production is around 15,500TWh (15,500,000GWh) annually, suggesting that about 50% of the global generation base is utilized on average.

- The energy efficiency of the different types of power generation assets are as follows: coal-fired power station, ~45%; gas turbine, ~60%; and biomass, ~30%. (Wind power is not applicable for obvious reasons.)

- The typical costs of the different types of power stations are as follows: hard coal-fired, €850-€1,000 per kW; lignite-fired, €1,000-€1,200 per kWh; gas turbine, €400-€550 per kW; wind turbine, €900-€1,200 per kW (offshore: €1,700-€2,500 per kW); and biomass, €2,700 per kW.

- The efficiency of wind power is measured in full-load hours (FLH). This is the equivalent of hours per year during which a wind turbine operates at full service. This number is calculated by dividing the amount of electricity generated by the capacity, e.g. a 2MW wind turbine that has generated 4,000MWh of electricity in a certain year, has produced wind power of 2,000 FLH). While a wind farm on a normal onshore site has a utilization rate of about 1,900 FLH (22%), near-shore or offshore sites can have utilization rates of 4,000 FLH (46%).

Key Changes in Global Power Equipment Markets

DRIVERS: LIBERALISATION, ENVIRONMENT AND ENERGY INDEPENDENCE

We expect global power equipment markets to see significant changes in the generation mix, predominantly through capacity additions and upgrades. The global power generation equipment market can be divided into three major regional markets: Europe, the US and China. Although we expect the European market to strengthen its gas-fired power generation and renewable energy capacity, we expect the US to continue to focus on gas-fired generation and to enter a massive replacement cycle within a few years. We expect China to be a straight growth market and the largest market for investments into power generation equipment (predominantly coal-fired and nuclear).

Markets with the most exciting growth potential, in which western power generation/transmission/distribution equipment companies are expected to participate significantly, are Europe, the US (due to the massive replacement need in both markets over the next ten years), China and India (although much of India's new capacity is expected to come from hydropower, where western companies have only played a minor role so far). Eastern Europe offers reasonable market potential, in our view, as its generating assets are largely obsolete and incapable of handling the strong demand growth that comes with economic growth. At the same time, Eastern Europe's generation mix needs significant upgrades in order to meet European environmental standards.

We believe regulatory changes are the key drivers of the global power generation mix. In our opinion, the following factors are likely to influence the mix:

- market liberalisation
- environmental regulation
- policies regarding energy independence

REGULATORY CHANGES AND IMPACTS ON THE GENERATION MIX

Below we discuss in more detail the regulatory issues and political trends that we expect to trigger changes in the power generation landscape.

Market liberalisation

Virtually all western electricity markets have been liberalised in the past 15 years. The US power market started in 1978 and Europe's in 1996. Today, the liberalisation progress in Europe looks as follows.

Figure 3. State of European Power Market Liberalisation (2004)

Country	% Mkt Open to Competition	Country	% Mkt Open to Competition
Austria	100.0%	Poland	51.0%
Belgium	80.0%	Czech Republic	30.0%
Denmark	100.0%	Slovakia	41.0%
Finland	100.0%	Hungary	30.0%
France	37.0%	Slovenia	64.0%
Germany	100.0%	Cyprus	0.0%
Greece	34.0%	Malta	0.0%
Ireland	56.0%		
Italy	66.0%	**Candidate Countries**	
Luxembourg	57.0%	Romania	33.0%
Netherlands	63.0%	Bulgaria	15.0%
Portugal	45.0%	Turkey	23.0%
Spain	100.0%		
Sweden	100.0%	**Other Neighbouring Countries**	
United Kingdom	100.0%	Croatia	9.0%
Norway	100.0%	Bosnia	0.0%
Estonia	10.0%	Serbia/Montenegro	0.0%
Latvia	11.0%	Former Yugoslavia	18.0%
Lithuania	17.0%	Albania	0.0%

Source: European Commission.

Market liberalisation typically leads to more effective power plant allocation and hence to cost reductions in the whole market. As market mechanisms, rather than governmental-style planning offices, decide on the optimal use of power plants and fuel types – virtually on an hour-by-hour basis – market liberalisation is a flexible way of permanently optimising the use of energy sources. In effect, the price of electric power typically declines in a liberalised market. Since even short-term price competition exists in liberalised markets, the level of power trading is significantly higher than in non-liberalised markets, which in turns leads to higher load volatility and hence the need for a higher amount of load balancing.

Given the need for increased power supply flexibility, liberalised power markets require a high proportion of flexible gas-fired power plants or other flexible power sources (such as hydropower). The market liberalisation trend in Europe and elsewhere therefore supports the commissioning of new gas-fired power plants and the replacement of other conventional power plants with gas-fired stations.

Environmental regulation – Kyoto

About 12 years ago, the first promising political attempts were made to move environmental policies from being a national to an international issue. In this respect, the most prominent and far-reaching legal framework is the Kyoto protocol.

The Kyoto framework focuses on the reduction of greenhouse gases by about 5% between 2008 and 2012, compared to the base year of 1990. This framework will apply if countries in a special category called Annex 1 countries (at least 55% of greenhouse gas emissions in this category) ratify it. The US, the world's largest polluter, has already declared that it will not ratify it, but instead plans to introduce a voluntary reduction system, from which we do not expect much. The Kyoto treaty is likely to become a binding legal framework now that Russia has declared its willingness to ratify it (earlier this year). With Russia on board, the Annex 1 countries have also decided to ratify it.

The effects of Kyoto on the global generation mix are twofold, in our view:

- More renewable energy generating plants will be commissioned as a result of Kyoto than without it. We estimate that the Kyoto-driven difference is about 20GW of renewable energy (about 50% more than currently installed), to be commissioned as a result of Kyoto.

- There are likely to be fewer coal-fired power plants under Kyoto than otherwise, and a larger number of gas turbines will need to be commissioned. We estimate that about 30GW of coal plants will have to be decommissioned (about 2.7% of current installations), while an additional 20GW of gas turbines should be commissioned (about 2.7% of current installed base).

Figure 4. Impact of the Kyoto Targets (assumes Lowest Impact on Cost of Electricity Generation)

Electricity Production by Energy Form (incl. CHP) TWH	1995 TWH Electricity Produced	Baseline 2010 TWH Projected	MW Installed 2010 Baseline	Annual Capacity Factor	Kyoto Target 2010 TWH	MW Installed 2010 Kyoto	Difference Baseline 2010 and MW Projected
Solids except lignite and peat	485	341	74,019	53%	207	44,932	-39%
Lignite and peat	184	156	23,786	75%	126	19,212	-19%
Oil products except diesel oil and refinery gas	174	88	33,266	30%	72	26,937	-19%
Diesel oil	9	13	4,898	30%	14	5,274	8%
Natural Gas, derived gas and refinery gas	320	1,086	214,075	58%	1,180	232,604	9%
Nuclear Energy	810	895	123,939	82%	889	123,108	-1%
Biomass	0	0	64	80%	13	1,784	---
Waste	34	66	11,167	67%	77	13,116	17%
Hydrogen	0	0	0	25%	0		0%
Methanol	0	0		54%	0		0%
Hydro of Utilities	285	307	139,245	25%	305	138,338	-1%
Hydro of Other Generators	1	2	866	25%	2	1,129	30%
Wind	3	60	30,521	23%	88	44,366	45%
Solar	0	0	104	44%	0	101	-3%
Ocean	0	0	0	85%	0	0	0%
Geothermal	2	6	761	90%	5	660	-13%
Total	2,307	3,021	656,711		2,978	651,562	-1%

Notes: Installed 2010 Baseline = Forecast installed capacity in 2010 before the Kyoto agreement.
Annual Capacity Factor = Typical utilisation rate over the year.
Installed 2010 Kyoto = Projected capacity after Kyoto.
Source: Primes; Bear, Stearns International Limited estimates.

The figure below lists the countries in the Kyoto framework that have committed to the targets.

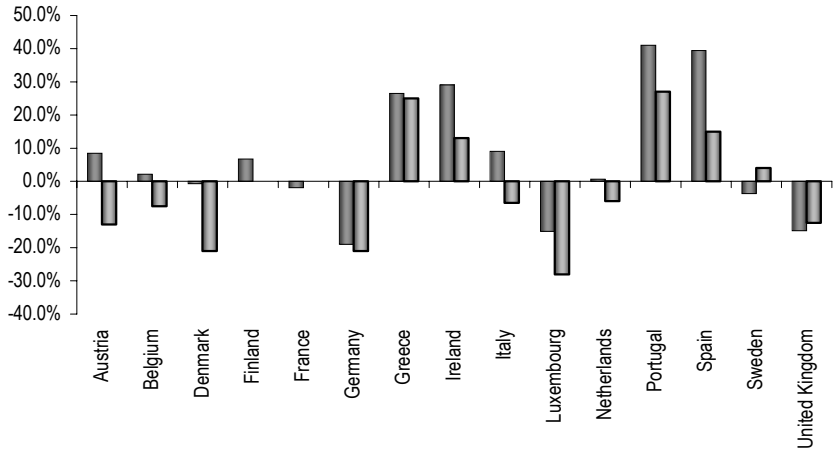
Figure 5. Kyoto Protocol Commitment by Annex Countries

Countries	% of Emission in Annex 1 Countries	Commitment 1990=100	Modified Agreements Dating From 1997 in EU 15	Percentage Increase/ Decrease From Baseline Per Country
Australia	*	108%		8%
Austria	0.4%	92%	87%	-13%
Belarus***	0.0%			
Belgium	0.8%	92%	93%	-8%
Bulgaria	0.6%	92%		-8%
Canada	3.3%	94%		-6%
Croatia	*	95%		-5%
Czech Republic	1.2%	92%		-8%
Denmark	0.4%	92%	79%	-21%
Estonia	0.3%	92%		-8%
European Community	-	92%	-8%	
Finland	0.4%	92%	100%	0%
France	2.7%	92%	100%	0%
Germany	7.4%	92%	79%	-21%
Greece	0.6%	92%	125%	25%
Hungary	0.5%	94%		-6%
Iceland	0.0%	110%		10%
Ireland	0.2%	92%	113%	13%
Italy	3.1%	92%	94%	-6%
Japan	8.5%	94%		-6%
Latvia	0.2%	92%		-8%
Liechtenstein	*	92%		-8%
Lithuania	0.0%	92%		-8%
Luxembourg	0.1%	92%	72%	-28%
Monaco	0.0%	92%		-8%
Netherlands	1.2%	92%	94%	-6%
New Zealand	0.2%	100%		0%
Norway	0.3%	101%		1%
Poland	3.0%	94%		-6%
Portugal	0.3%	92%	127%	27%
Romania	1.2%	92%		-8%
Russian Federation	**	100%		0%
Slovakia	0.4%	92%		-8%
Slovenia	*	92%		-8%
Spain	1.9%	92%	115%	15%
Sweden	0.4%	92%	104%	4%
Switzerland	0.3%	92%		-8%
Turkey***	0.0%			
Ukraine	0.0%	100%		0%
United Kingdom	4.3%	92%	88%	-13%
United States of America	*	93%		-7%
Total	44.2%		92%	-8%

* Not ratified in July 2004.
**Russia has recently declared it will ratify the treaty.
*** No limit specified. Belarus and Turkey had not ratified the Convention when the Kyoto Protocol was adopted.
Source: Kyoto Protocol and UNFCCC.

The commitments by different countries vary considerably: Luxembourg, Germany, Denmark, Austria and the UK have made the strongest commitments – they want to cut their greenhouse gas emissions by over 10%. Much progress on this has already been made by Germany, Sweden and the UK, for example.

Figure 6. EU 15 Status Compared to Kyoto Protocol Targets (2002 vs 2008-2012 Targets)



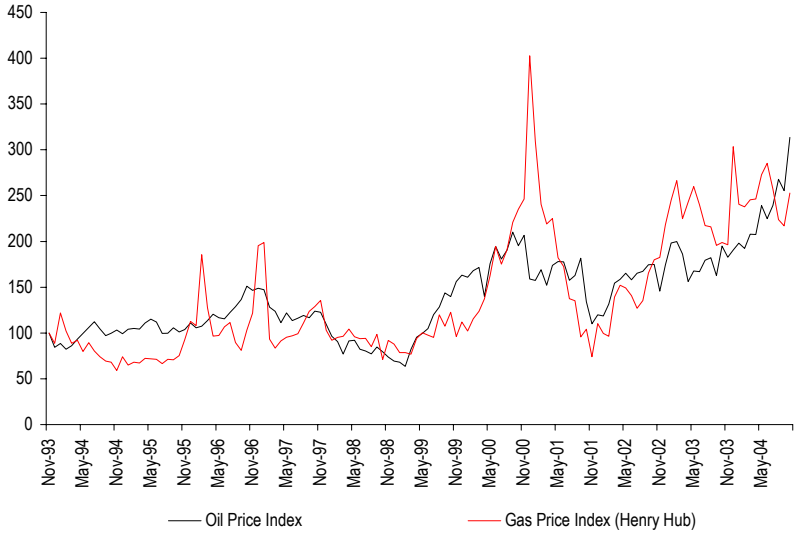
Note: Columns on the left specify progress to date, columns on the right specify Kyoto targets.
Source: European Environment Agency.

Austria, Belgium, Denmark, Ireland, Italy, the Netherlands, Portugal and Spain have still not met their targets. For these countries, we expect strong growth in renewable energy sources.

Energy independence

The political instability in the Middle East and terror attacks around the world in the past few years have caused serious concerns about the stability of the world's oil supply. The price of oil has risen as a consequence of these events. Given the high correlation of oil and gas prices (74.5%), the impact of increasing oil prices is more severe than would be expected if we just took account of the impact on oil consumers. Although only a very low percentage of power equipment is oil-fired, the power generation industry suffers indirectly from higher oil prices, as these mean increased gas prices.

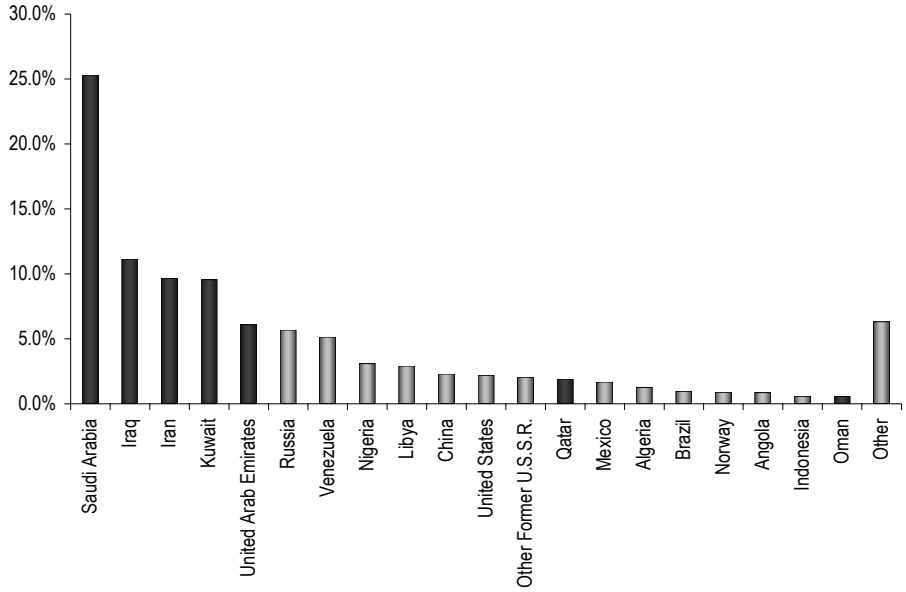
Figure 7. Indexed Price Development of Crude Oil vs Natural Gas



Source: Thomson Datastream.

According to the US Energy Information Administration, about 64% of the world's known oil reserves are in the Middle East, with only about 5% in countries with a high level of political stability. An additional uncertainty is that estimated known oil reserves are expected to last only for another 30 or so years (at the current consumption rate of about 80mb/d production). However, the above-average growth rates in China and other significant regions suggests that consumption levels will continue to grow. Hence, if no more significant discoveries are made, on these assumptions, the world's oil reserves may last only until about 2030-35.

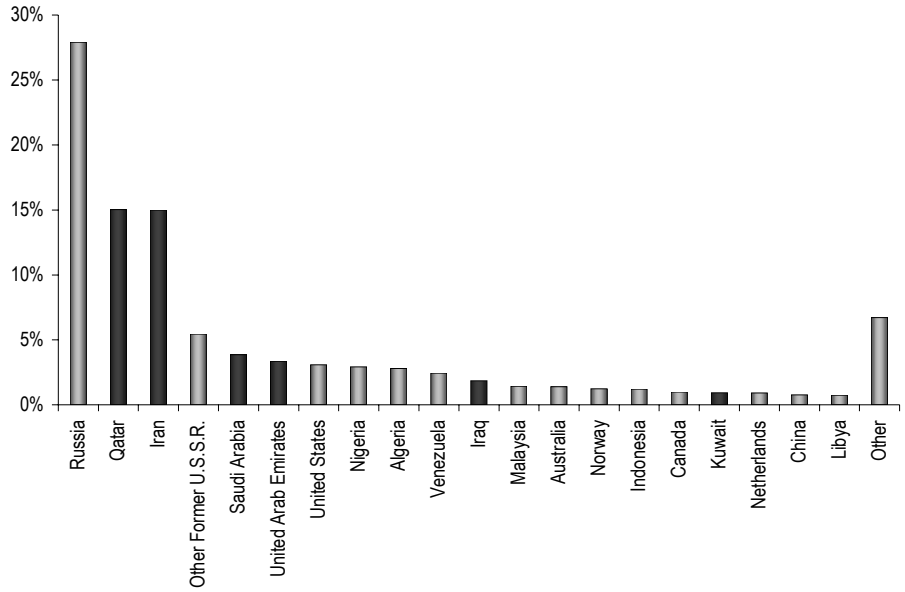
Figure 8. World Oil Reserves by Country, 2003 (Middle Eastern Oil in Dark Shading)



Source: US Energy Information Administration.

The situation does not appear to be much better with natural gas. About 40% of the world's natural gas reserves are located in the Middle East, and of any single country, Russia has the highest gas reserves, at 28% of the world's total. At slightly increasing annual production levels, the world's gas reserves should last for an estimated 40 years, according to the World Bank.

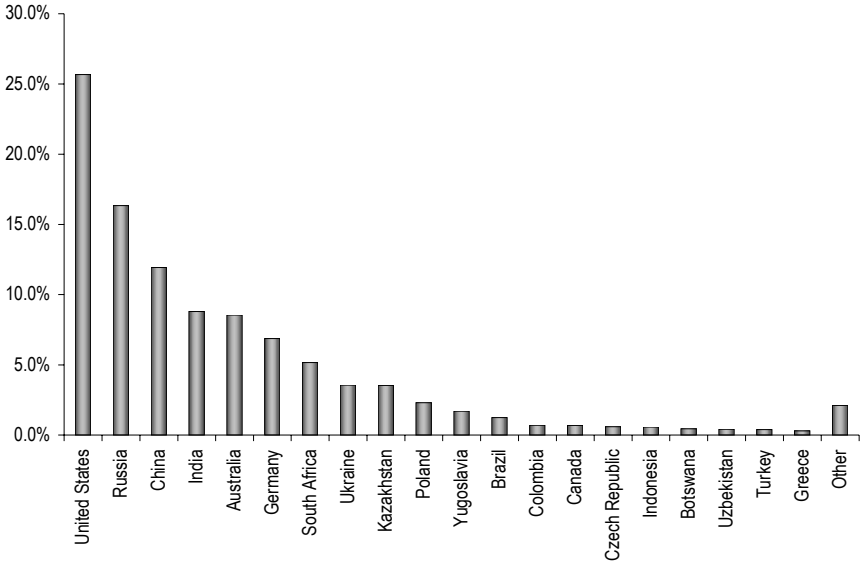
Figure 9. World Natural Gas Reserves by Country, 2003 (Middle Eastern Gas in Dark Shading)



Source: US Energy Information Administration.

The US is the leader in coal, with over 25% of the world's reserves. Russia is second with over 16% and China third with about 12%.

Figure 10. World Coal Reserves by Country (Anthracite and Lignite), 2003



Source: US Energy Information Administration.

With annual production expected to grow from 4,595 million tonnes in 2020 to 6,954 million tonnes in 2030, the world's coal reserves should last for more than 150 years.

Conclusions

Energy independence will become an increasingly important issue in the future, in our view. Of all the conventional energy sources, only coal seems to exist in sufficient quantity and variety of geographical regions that political dependencies are not really an issue. Oil and gas reserves, on the other hand, cannot be expected to last much beyond another 30-40 years unless there is a major discovery, which we cannot rule out. (The time span until resource depletion is very dependent on the price of oil and gas. We expect long-term prices for oil and gas to rise, leading to lower consumption.) Furthermore, when looking at the realities of future supply and what this dictates in terms of power equipment investment, we have to recognise that oil and gas reserves are concentrated in politically unstable regions, and that fact poses a major issue for energy independence. We believe these issues will have the following implications for power supply investment:

- Newly-commissioned gas power stations cannot be expected to be utilised for their full technical lifetime, **at least not under the assumption that gas prices remained stable at a lower price level.**

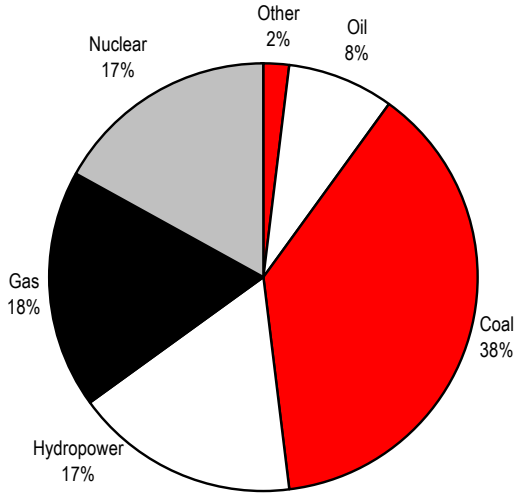
- The price of oil and gas should rise on a sustainable basis over the next couple of decades, which reflects the expected depletion of reserves, but which should also lead to higher prices for conventional electric power. Clearly this also reduces the profitability of gas turbines over their lifetime in the power generation mix.

- In our opinion, the most likely way forward from this conundrum is through a combination of these three factors: we expect to see a sustainable boost in renewable energy sources, predominantly wind power, which is to date the cheapest renewable energy source (after hydroelectricity, for which the growth potential is very limited) with a strategic capacity potential; we might see new power generation techniques, for example related to nuclear fusion or carbon-emission-free coal power stations; and we should see a revival of nuclear power, and not least because the world's nuclear fuel reserves are expected to last out for at least a few hundred years.

Energy Sources in the Power Generation Mix

The world power generation mix is heavily biased towards coal (38% of the global generation mix), which we do not expect to change dramatically in the future. However, we do expect the proportion of gas (currently about 18%) to increase to around the mid-20% level. We expect nuclear to remain about stable over the next ten years but the proportion could increase thereafter. We also expect to see a dramatic decline in oil's proportion of the mix, both in absolute and percentage terms, while other energy sources, especially wind power, should increase dramatically to a low to mid-teens percentage over the next 20 years.

Figure 11. World Generating Mix, 2001



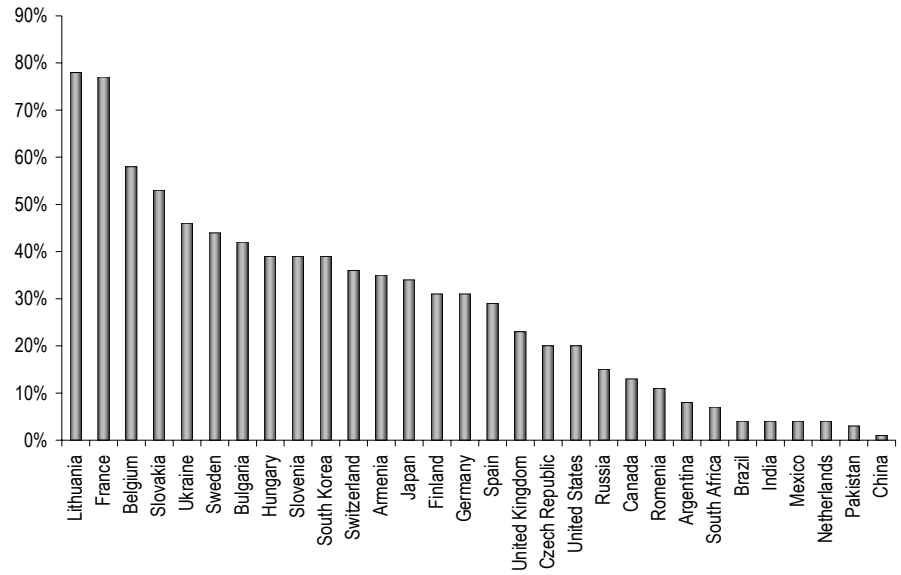
Source: RWE.

NUCLEAR

There were 435 active nuclear power plants in the world at the beginning of 2003 and 33 under construction – and none of the latter in a western industrialised country.

Only three industrialised countries – France, Finland and Japan – have committed politically to building further nuclear power plants, while Germany, Sweden and Belgium have signed nuclear phase-out deals. As none of these deals oblige any plant retirement action within the next ten years, we view such political targets as very vague and subject to change.

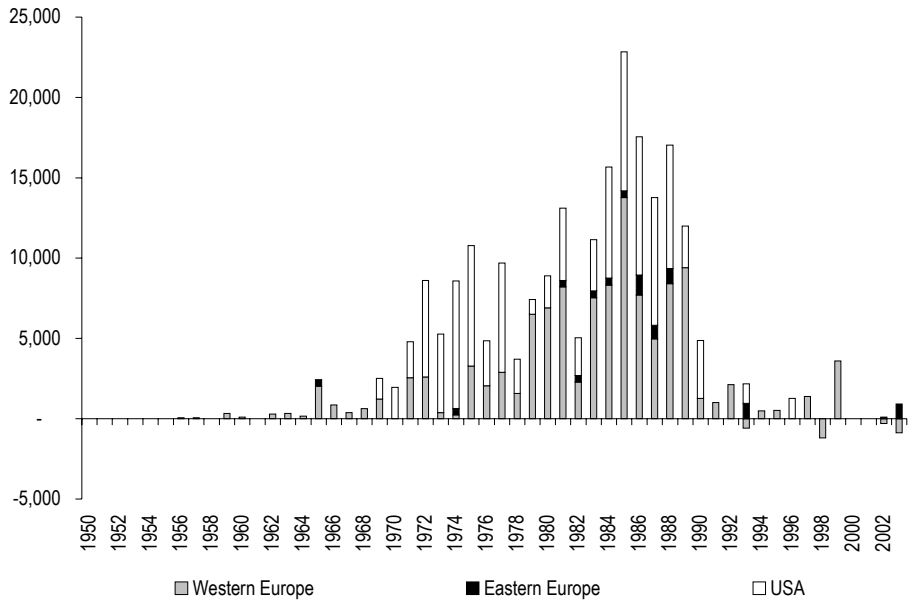
Figure 12. Nuclear Share of National Electricity Generation by Country, 2001



Source: US Energy Information Administration.

As a result of military considerations in the 1960s (nuclear weapons programmes), based on which the US, France and the UK commissioned their first nuclear power reactors, the first oil crisis at the beginning of the 1970s led to massive investment in nuclear power. The 1970s and 1980s saw by far the highest investment in nuclear power. However, during the 1990s, investment was cut back drastically. In the 1980s, over 20GW of nuclear power assets were commissioned in the US and in Europe, but only a few GW during the 1990s.

Figure 13. Additions/Retirements of Nuclear Generation Capacity in Major Regions, 1950-2003 (MW)



Source: Platts.

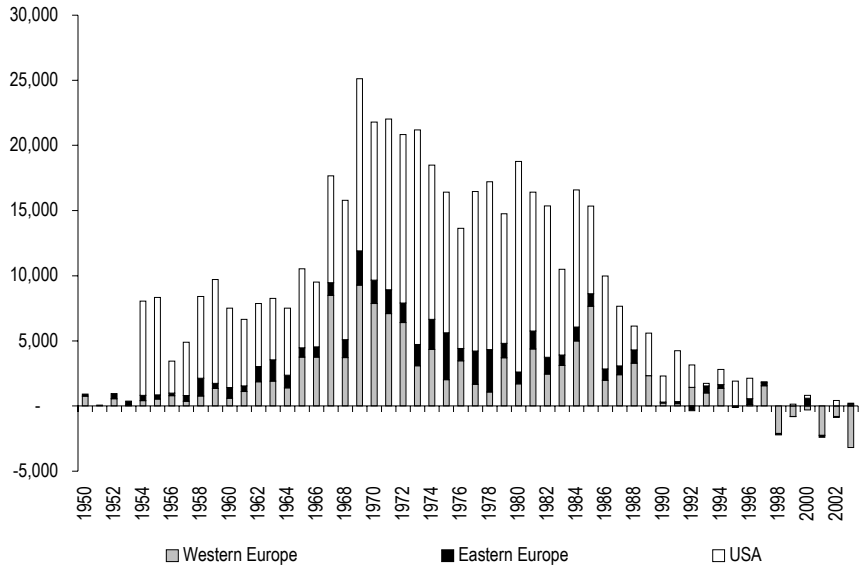
Given the vast availability of nuclear fuel, with known reserves expected to hold out for several hundred years, and the prospect of emission-free power generation, we expect nuclear power to see a revival in the next decade. Also, with conventional energy sources such as oil and gas likely to see severe depletion over the next 30 years, the price of conventional power generation can be expected to rise significantly in time, which would put nuclear power generation in focus again for economic reasons. Finally, since uranium can be found around the world, with the highest reserves in Canada, nuclear power results in a considerably lower energy dependence than most conventional energy sources.

COAL

Coal power stations typically burn anthracite (black coal) or lignite (brown coal) and represent the largest proportion in the world's – and most individual countries' – power generation mix. Coal reserves are expected to last for over 150 years, hence coal represents the one conventional energy source expected to last out a few generations of power stations. There are environmental concerns about coal-fired power plants, as they have a high rate of CO_2 emission compared to gas-fired power plants (around 850g/kWh for coal-fired and around 450g/kWh for gas-fired power plants).

Coal-fired power plants are the most traditional power generation assets in the world. Over 17% of coal-fired power plants in Europe and the US are more than 40 years old. Over the next ten years, an additional 38% will reach the typical lifetime of 40 years, or more than 266,000MW.

Figure 14. Additions/Retirements of Coal-Fired Generation Capacity in Major Regions, 1950-2003 (MW)

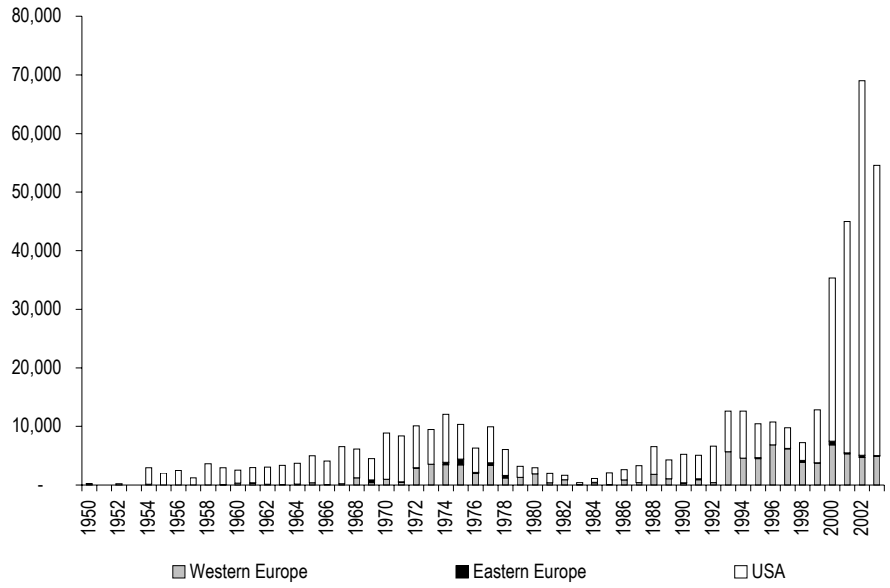


Source: Platts.

GAS

The sharp increase in gas-fired power plants (gas turbines) globally over the past decade is a direct effect of electricity market liberalisation. As the process continues in Europe and has barely started in geographies such as China and India, we believe the trend for more gas-fired power plants should continue into the next decade. We also think that a large proportion of obsolete coal-fired generation capacity will be replaced by gas-fired generation assets.

Figure 15. Additions/Retirements of Gas-Fired Generation Capacity in Major Regions, 1950-2003 (MW)



Source: Platts.

The US started early with the commissioning of gas-fired power plants but the European liberalisation process only really took off in the mid-1990s. In Europe and the US, about 31,000MW of gas-fired generation assets are older than 40 years and over 100,000MW of gas-fired generation assets will be 40 plus in ten years' time.

WIND POWER

In the past decade, no other energy source has enjoyed such good growth rates as wind power. While its critics argue that it could only have grown this much with heavily subsidies – a view with which we would not disagree – we do not regard this criticism as entirely fair for the following reasons:

- Wind power is the only renewable energy source that is close to being competitive and can be installed in large capacities. As a result, among all known renewable energy sources, it looks as if only wind power has the prospect of becoming a strategic part of the power generation mix.

- Wind power competes on a fully-loaded cost basis in power markets with a fully installed (and largely written down) generation mix, where wholesale prices are derived on a marginal cost basis. Hence, to compare wind power costs per kWh of about €0.04-€0.08 with typical wholesale power prices of around €0.03-€0.04 per kWh is not quite fair as wholesale prices are not based on average generating costs and do not include fixed costs. On a fully-loaded cost basis, wind power is very close to being competitive against standard conventional power. (GE recently stated that its turbines could produce wind power for 2.5 US cents per kWh.)

- Wind power, like other environment-driven technologies, needs governmental involvement, at least at the beginning of its life cycle, until users either volunteer to use them or the products become profitable without government regulation. The wind power market meets governmental goals of CO_2 reduction and energy savings. In this respect, it is very comparable to markets for other environment-

related technologies, which were created through governmental regulation, for example scrubbers used in power stations or catalytic converters used in cars.

- Governments do not typically directly subsidise wind power, but they usually offer tax advantages or define direct feed-in tariffs for operating wind farms.

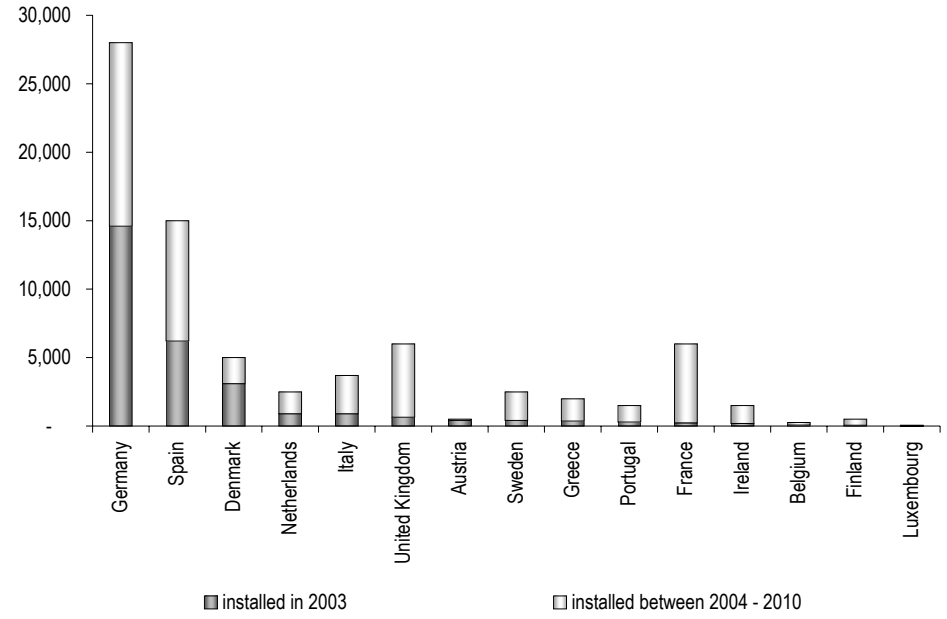
- Following the R&D efforts, a direct function of wind power being a mass market, the industry offers annual efficiency gains of about 3%-5% every year in terms of cost reduction per kWh. Hence, wind power is today now almost profitable on a fully-loaded cost basis.

On both a European and global level, hydropower is still the predominant renewable energy source (RES), but the proportion of wind power is growing much faster in the overall energy generation mix. Wind power has become a European phenomenon in the past decade, due to a high degree of political commitment in the European Union, especially in Germany, Denmark and Spain. These countries led the wind power revolution and we do not expect this will change over the next five to ten years. However, we also believe that the UK, France, Greece and Italy will add significant wind power to their generation mix in the same period. Outside Europe, we think that the US offers the largest potential for wind power. We have dedicated the entire next section of this report to an investigation of wind power, not only because the Kyoto agreement is expected to drive a major upsurge in its development, but also because we see it as currently the only viable strategic renewable energy source that can supplant carbon-based fuels, and hence we believe it has an excellent growth outlook.

Global Wind Power

According to the European Wind Energy Association and the American Wind Energy Association, 39,294MW of wind power assets were installed globally at year-end 2003. For some years, Germany has led the wind power market, with 14,609MW of installed wind power capacity at the end of 2003. The US is second with about 6,674MW, followed by Spain with 6,202MW.

Figure 16. Europe: Installed Wind Power Capacity in 2003 and 2010E (MW)



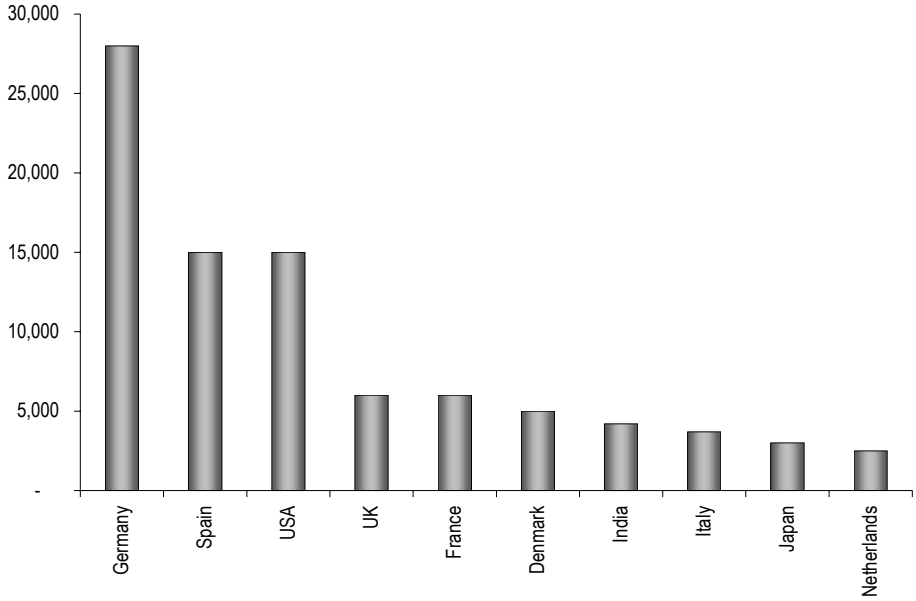
Source: EWEA.

We have analysed the markets we believe are likely to be the top ten for wind power in 2010, based on the following factors:

- the legislation regarding the promotion of wind power and the governmental targets for wind power
- likely electricity price developments based on the structure of the current energy generation mix
- geographical factors with regard to wind power (level of wind intensity and availability of large-scale sites)

Based on this analysis, we believe that the ten major wind markets by 2010 will be Germany, Spain, the US, India, the UK, Denmark, France, Italy, Japan and the Netherlands. We estimate that the following MW capacity will have to be installed by 2010.

Figure 17. Top 10 Wind Power Countries by 2010E in Terms of Additional Capacity to be Installed



Source: Bear, Stearns International Limited.

Countries use different incentive structures to support the growth of wind power. Although wind power is not significantly more expensive than conventional power on a fully-loaded cost basis, the wind power industry seems to require a favourable governmental incentive structure, and we believe this will be necessary for windpower to continue growing at the current double-digit growth rates.

In an earlier research report ('*Northern European Wind Turbine Manufacturers'*, February 2002), we outlined our view that wind power could play a significant rather than a marginal role in the overall electricity generation mix. The key points that we made are:

- **State-of-the-art wind power stations (e.g. offshore) produce more electricity per square kilometre than, for example, lignite power stations,** if one takes the required surface of lignite mining into account.

- Although wind speeds are volatile and can drop to zero, wind power stations are not merely an add-on to the traditional energy generation mix. Instead, **if wind farms are spread over large areas such as the EU or the US, there will be constant power generation because an area of that size is virtually never free of wind.** We concluded that the EU is able to provide a minimum wind energy availability of 6%-8%. Extending this area to Eastern Europe and North Africa would increase the minimum wind energy availability to 18%-20%. However, even though the natural volatility of wind power prevents a decommissioning of an equal amount of installed conventional capacity, conventional power plants can be switched off during high wind power loads. Therefore, wind power can lead to lower utilisation of conventional mid- and peak-load power stations.

- **The efficiency of wind power could be drastically improved with a combined system of wind power and hydroelectric pumping stations.** Currently, hydroelectric pumping stations provide the most efficient way to store energy that can be directly converted into electricity. Thus, from a technical point of view, combined hydroelectric-wind-energy stations could be planned so that they provide a constant baseload to the grid. These combined systems can be optimised with wind farms feeding electricity directly into the grid only for a limited time in the year. At other times, the wind electricity is used to pump water into hydroelectric pumping stations. When there is no wind, the system generates electricity from hydropower stations. We believe that this energy concept could be a medium-term to long-term solution to combine North Sea offshore wind parks with Norwegian pumping stations. Norway generates its electricity virtually entirely from hydroelectricity and still has huge potential for the installation of new pumping stations.

Value drivers in the wind power sector

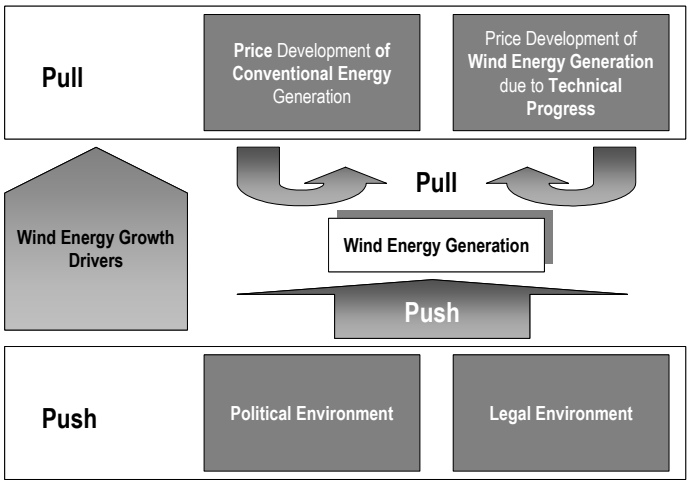
We have already identified four major factors that drive growth and value in the wind energy market:

- the political environment
- the legal environment
- the technical progress as it improves electricity generating costs
- pricing developments in conventional (competitive) energy sources

The first two factors could increase the growth of wind power, either through the payment of subsidies or through other advantages created for using wind power or penalising conventional energy generation. The latter two deal with the economic conditions under which wind power generation could increase.

We have therefore introduced a value driver analysis model that differentiates between pull factors (factors through which wind energy penetration is pulled up) and push factors (special political or legal factors that push wind energy growth). **Pull factors position RES (such as wind power) from an intrinsic market perspective, while push factors increase the penetration of wind power through external political or legal actions.**

Figure 18. Wind Energy Growth Drivers (Concept of Push and Pull Drivers)



Source: Bear, Stearns International Limited.

Independently from the political and legal environments, in a world of rising fuel prices and falling windpower costs, wind energy must eventually become a competitive alternative to conventional energy sources.

Overall, we expect wind power to receive its initial boost from the legal environment. Towards the end of this decade, however, we see an opportunity for wind energy to take off on its own. As specified earlier, we believe the technical progress with wind turbines should enable wind power to become the cheaper alternative, compared to major conventional fuels used for power generation, including gas turbines. We see the anticipated technical progress fuelled by increased R&D spending as the main reason for sustainable long-term growth for wind farm developers. Hence, the current conditions, characterised by significant growth rates of wind power due to governmental subsidies, should transition into a period of growth supported by technical advancement and thus, the economical application of wind power.

Political environment

As outlined in earlier research reports on wind power markets, we have identified the following drivers supporting the political will for extending the portion of RES in the overall electricity generation mix. Typically, politicians support RES in order to:

- reduce emissions
- limit exposure to nuclear power (e.g. Germany, Scandinavia)
- increase independence from fuel imports
- create additional generation capacity in the relatively short term
- create additional jobs
- account for externalities in the usage of traditional energy sources

Reduce emissions

Within the context of the Kyoto protocol, the EU has committed itself to reducing carbon dioxide emissions by 8% per annum until from 2008 to 2012, based on the emissions level of 1990. Although the US declared the political goals of the Kyoto protocol as unrealistic and consequently gave up all specific commitments for emissions reduction, the EU has reinforced its willingness to comply with Kyoto.

Limit exposure to nuclear power

Due to the remaining risks associated with nuclear power, some countries have officially decided to close down their nuclear power stations. For example, the German government ratified the 'Nuclear Power Phase-Out Deal' in June 2001, under which the last German nuclear power station should be closed in 2021. Additionally, from 2005, no more nuclear waste can be transported, recycled or stored temporarily in Germany. It must be stored temporarily at the power stations until a final storage place is defined. Hence, as stated above, although we seriously doubt whether this nuclear phase-out deal will be executed effectively in practice, the current regulatory environment clearly favours wind power as the main replacement for nuclear power.

Increase independence from fuel imports

The European Commission has repeatedly supported the growth of the RES sector in order to gain independence from fuel imports. The German government estimates that Europe would have to import 50% of its fuel in 2010 and 60%-70% in 2020, if it tried to cover its electricity demand with conventional generating capacity.

Create additional generation capacity

Some countries already have a significant shortage of generating capacity (e.g. China and India). Others might see electricity shortages occur in the medium or long term (e.g. the US, Spain or Germany). In the US, we expect wind energy to account for a major proportion of newly-installed generation capacity for two main reasons: the US (particularly California) needs generation capacity in the short term, wind power capacity can be installed more quickly, and it has very advantageous wind conditions, making wind power a competitive energy source. At some locations, average electricity prices from wind parks are reported to be as low as 2.5 US cents per kWh.

Create additional jobs

It is difficult to estimate the long-term employment effects of the strengthening of RES. However, according to the German *Bundesverband WindEnergie e.V.,* the wind sector alone employed about 45,000 people in Germany in 2002. This is quite a substantial number, compared to the 40,000 people currently working in the nuclear energy sector in Germany, given the much higher contribution of nuclear energy in the German energy industry. Clearly, building and installing wind turbines accelerates job creation more than long-term servicing and maintenance. As wind energy has an immediate effect on the labour market, we believe it makes a compelling case for politicians to promote this form of power.

Account for externalities

There are no unequivocal scientific methods to measure the external cost of traditional energy sources. However, there have been some recent attempts to quantify several factors caused by the different types of power stations. Professor Alfred Voss from the University of Stuttgart, for example, has put together a table showing external costs to the environment.

Figure 19. External Costs of Different Energy Sources (in € per MWh)

	Hard Coal	Lignite Coal	Natural Gas/CCGT	Nuclear	Photovoltaic	Wind
Health damage	8.181	10.226	3.068	2.045	4.090	0.511
Harvest losses	0.307	0.307	0.102	0.010	0.031	0.005
Material damages	0.205	0.205	0.051	0.020	0.102	0.010
Acidisation	2.045	8.181	0.409	-	0.409	-
Damage due to greenhouse effect	15.850	19.940	8.181	0.307	3.068	0.307
Total	26.587	38.858	11.811	2.383	7.700	0.833

Source: Professor A. Voss.

Note: The damage due to the greenhouse effect is calculated based on the costs German energy producers incur to reduce carbon dioxide emissions to comply with environmental regulations.

Clearly, this table does not incorporate all substantial external costs. For example, it does not account for any price decrease of land close to power stations or coal/lignite mines, or the cost of securing nuclear operations.

It is obvious that if electricity prices reflected external costs, externalities would be a substantial portion of the total. To illustrate this, in the past few years, electricity has been sold at the LPX[6] at an average €36 per MWh (base load), and €48 per MWh (peak load).

Legal environment

The favourable legal environment in some European countries (particularly Germany) has been the major growth driver for RES in the past and is likely to remain so in the short to medium term. In this respect, the government-guaranteed feed-in prices for wind energy have caused the RES sector to take off.

Among the various options for promoting RES, direct feed-in tariffs have proved to be the most efficient. We see three different governmental incentive systems for the promotion of RES:

- **Direct feed-in tariffs:** Many governments oblige certain grid operators to pay a 'feed-in tariff' to wind farm operators for each kWh fed into the grid. These direct feed-in tariffs keep the risk associated with an investment in RES to a minimum. They provide a very clear information basis for an investment case.

[6] Leipzig Power Exchange.

Direct feed-in tariffs are defined in Germany, Spain, Greece, Portugal, Austria and France. The advantage of this system is that it accelerates the process of building RES in a country. The disadvantage is that it has no market equilibrium. Instead, it is advantageous to continue building renewable energy plants so long as feed-in tariffs exceed the cost of capital. Therefore, on a larger scale, this system will not lead to an economic allocation of RES.

- **Tradable emission rights:** In the EU, the trading of tradable emission rights will start in early 2005. With this system, the government defines the allowed CO_2 emission per company and penalties for emissions can either be reduced through technical upgrades or by buying emission rights. Although green electricity might continue to be more expensive than conventional energy, this system will lead to an allocation of renewable energy sources to countries where it can be exploited most economically. We believe this system provides the most natural incentive to exploit RES where the renewable energy sources are most economical. Thus, this system should lead to RES growth at the overall lowest cost.

- **Investment support:** Some countries provide investors in RES with support such as subsidised loans or tax advantages. This kind of governmental intervention reduces the total investment and therefore the average generation cost of the generated power. This system is in place in Greece and Portugal.

Fundamentally, the European Commission favours a system of tradable emission rights, because only this system can lead to a long-term economic allocation of RES in Europe. The system favours the commissioning of wind farms predominantly in the windiest regions, such as the UK and Ireland, but also Spain, Portugal, Greece and Italy. Besides tradable emission rights we think the European Commission will also recommend direct feed-in tariffs because this system has proved to be effective.

At the moment, the tariffs for RES are as follows.

Figure 20. European Wind Power Incentive Structures by Country

Country	RES % 1997	RES % 2010	Feed-in Tariff: € cents/kWh	Comments
Austria	70.0%	78.0%	7.8	
Belgium	1.1%	6.0%	Onshore >=5.0 Offshore >=9.0	
Denmark	8.7%	29.0%	<=4.8	On shore and offshore, depending on: spot price (on a monthly basis) environmental premium (max €1.3 kwh) compensation for offsetting costs (€0.3 kwh)
Finland	24.7%	31.5%	6.9	In the form of a tax benefit. An additional investment subsidy of 40%
France	15.0%	21.0%	8.5	Paid for the first 5 years after installation
			6.5	Paid from 5 up to 10 years after installation
			3.0	Paid from 10 up to 15 years after installation
Germany	4.5%	12.5%	9.0	For at least five years after installation
			6.0	after that a reduction of the tariff to €6 cents depending on the yield of yearly reduction on tariff by 1.5%
Greece	8.6%	20.1%	7.0	Islands
			7.8	Mainland
Ireland	3.6%	13.2%	5.2	Paid for large-scale wind (up to 400 MW)
			5.5	Paid for small-scale wind (up to 85MW)
			8.4	Paid for offshore wind (up to 50MW, indicative price cap only)
Italy	16.0%	25.0%	8.4	Plant production > 50MW, certificate price up to € 8.4 cents/kWh
Luxembourg	2.1%	5.7%	2.5	For installations up to 3MW, paid for the first 10 years after installation
Netherlands	3.5%	9.0%	Onshore 6.3	In 2005 7.7, because of phasing out of ecotax
			Offshore 8.2	In 2005 9.7, because of phasing out of ecotax
Portugal	38.5%	39.0%	4.3	Beyond 2600 full load hours
			5.1	From 2400 to 2600 full load hours
			6.0	From 2200 to 2400 full load hours
			7.0	From 2000 to 2200 full load hours
			8.3	First 2000 full load hours
Spain	19.9%	29.4%	6.2	Choice between FIT or € 2.66 cents/kWh on market price
Sweden	49.1%	60.0%	1.9	Env. bonus will decline to 0 by 2007. Additional 15% reduction of costs
UK	1.7%	10.0%	4.5	Non-compliance buy-out, adjusted annually for retail prices
Cyprus	0.1%	6.0%	9.2	For the first five years
			4.8 to 9.2	For the next 10 years
Czech Republic	3.8%	8.0%	9.6	
Estonia	0.2%	5.1%	5.2	For 12 years
Hungary	0.7%	3.6%	6.0-6.8	Indefinite terms
Latvia	42.4%	49.3%	Case by case	
Lithuania	3.3%	7.0%	7.5	
Malta	0.0%	5.0%	-	
Poland	1.6%	7.5%	-	Green power purchase obl.
Slovakia	17.9%	31.0%	-	
Slovenia	29.9%	33.6%	6.3	Up to 1 MW
			6.1	Wind above 1 MW
EU 25	12.9%	21.0%		

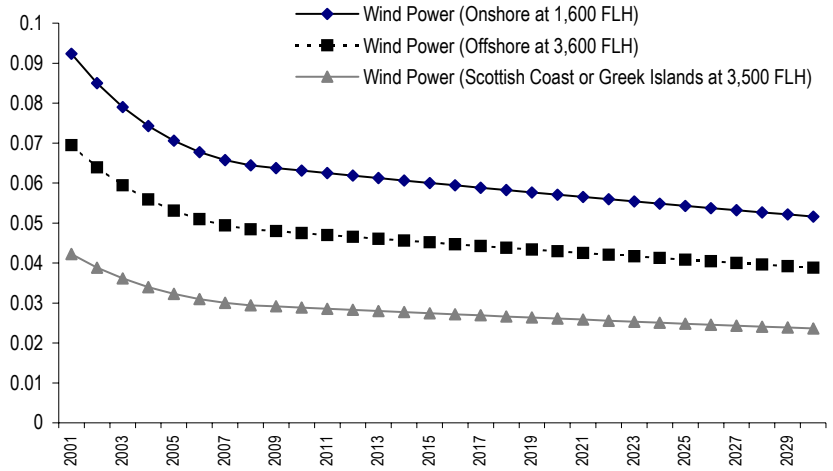
The percentage contribution of RES-E are based on the national production of RES-E divided by the gross national electricity consumption. For the EU 15, the reference year is 1997. For the EU10 (Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia and Slovakia), the reference year is based on 1999-2000 data.

Source: EWEA.

Technical progress

It is hard to estimate the speed at which wind turbines and energy generation from other RES will improve over time as a result of technical progress. Some published studies (e.g. Energiekontor) forecast total wind energy generation costs could decrease by as much as 45%-50% over the next ten years. We believe this is a realistic goal. Comparisons with other industries demonstrate that significant efficiency gains are possible due to newly imposed restrictions and heavier R&D expenditures. For example, although the car industry was already over 50 years old, fuel efficiency gains in terms of fuel consumption between the oil shock in 1973 and 1993 were as much as 110%.

Figure 21. Expected Total Cost Range for Wind Electricity Generation (in € per KWh)



Source: Bear, Stearns International Limited estimates.

The figure above shows how we estimate the total cost of wind electricity generation will develop over the next 30 years. We have used a simple DCF to generate these forecasts, assuming digressive efficiency gains of roughly 90% over a period of 30 years. This number seems conservative to us, given the efficiency gains in the auto and other industries. In the figure above, the upper line describes the wind generation costs for locations with about 1,600 full load hours (e.g. Western Europe Onshore), while the middle line depicts total generation costs at locations with about 3,600 full load hours (e.g. North Sea Offshore). Finally, the lower line shows the total generation costs at top onshore locations with 3,500 full load hours (e.g. Ireland or Scotland). The main assumptions are 7% cost of capital, 20 years of wind turbine utilisation, total installation costs of €1,300 per kW Onshore and €2,200 per kW Offshore, and maintenance costs of 3% annually of the initial investment costs.

We do not view our assumptions as overly optimistic. For example, on the coast of Denmark, Scotland and Ireland, 3,600 full load hours are possible[7]. Some offshore locations in the North Sea even provide up to 4,600 full load hours. The whole model is proportionally sensitive to a number of factors. For example, if installation costs can be reduced to €2,000 per kW from €2,200, the current generating cost would be €0.063 per KWh, rather than €0.07 per KWh. If these offshore installation costs were reduced to €1,500 per kW, the total generating cost would be €0.047 per KWh.

Comparing the offshore generation costs to onshore costs at top locations (such as Northwest Britain), total generation costs should not exceed €0.032 per kWh, if installation costs are €1,000 per kW installed capacity. Finally, with onshore installation costs of €850 per kW, total electricity generating costs are only €0.0276 per KWh in top locations with 3,500 full load hours.

[7] Compare: Gregor Czisch: Expertise zur moeglichen Bedeutung einer EU ueberschreitenden Nutzung von Wind- und Solarenergie, working paper, ISET, University of Kassel, 2000.

Power price development

We believe that increasing electricity generation costs for conventional energy sources are the most robust driver of growth in the RES sector. Although power prices vary from country to country, we have made some detailed calculations and estimates based on German market prices. We consider Germany a good example for a representative analysis, because:

- The German market is likely to remain the largest wind power market over the next ten years.
- The German wholesale power market is highly competitive and the German generation mix is quite representative of the global generation mix.
- Except for lignite, fuel prices more or less match world market prices, making an easier comparison.

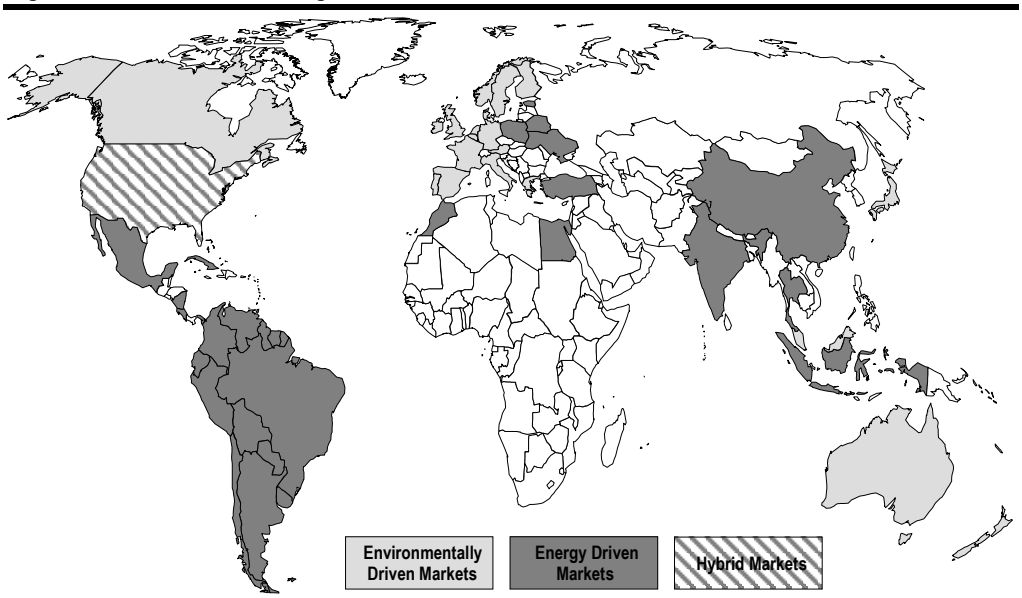
Over a four to five year period, we expect offshore wind energy generation to be able to compete against modern gas turbines (even if gas prices normalise again). We believe offshore wind energy is already more competitive than fuel oil and old-style gas turbines – even at our historical average oil and gas prices for the past three years. We have modelled long-term fuel price developments and, based on those prices, variable electricity generation costs. We believe that electricity generation will become more expensive from all conventional energy sources due to expected fuel price increases. We expect variable generation costs from fuel oil, gas turbines and combined gas cycle turbines to exceed variable wind energy generation costs within the next four to five years. Within 20 years, we even expect offshore wind turbine generating costs to be below the variable generating cost of running the average hard coal power station.

Fuel price development

In the long term, we confidently expect electricity generation to become more expensive for all traditional energy sources. There are three categories of market, all have robust drivers that should help drive the take-up of wind:

- **Energy-driven markets:** These are driven by power shortages and the demand for a quick installation of additional production capacity (typically developing countries).
- **Environmentally-driven markets:** Markets that are driven by environmental concerns, typically Europe, Canada, Australia and Japan.
- **Hybrid markets:** These are driven by both power shortages and environmental concerns (typically in the US, particularly California).

Figure 22. Global Market Categories



Source: Company data; Bear, Stearns International Limited.

The Global Power Generation Mix

The International Energy Agency (IEA) estimated the world's installed power generating capacity in 2000 at 3,498,000MW. The IEA expects this capacity to grow at about 2.4% annually, to 4,408,000MW in 2010 and 5,683,000MW in 2020.

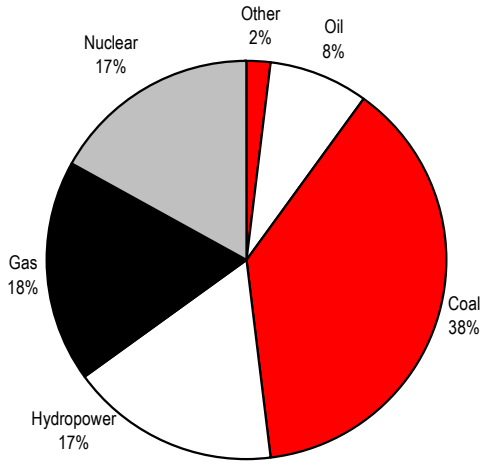
An annual growth rate of 2.4% for the power equipment market as a whole looks quite unexciting, in our view, as does the projected growth rate for gas-fired power plants, at 4.7%. However, given that a large percentage of power equipment in the world has almost reached or even exceeded its normal lifetime of 40 years, we confidently expect the market to soon see a massive acceleration in growth rates. In Europe and the US, about 12% of the currently installed coal and gas power stations is older than 40 years – equivalent to 114,000MW of installed capacity. Over the next ten years, we estimate that this will rise to 39%, or 372,000MW. While most European utilities currently keep their power plant capex levels low and mainly invest in lifetime-expanding measures, the pressure for a large-scale renewal process of western power stations is rising strongly every year.

THE GLOBAL PICTURE

Current generation mix

In the global power generation mix, coal has the largest share at about 38%, followed by gas (18%), nuclear (17%) and hydropower (17%).

Figure 23. World Generation Mix, 2001



Source: RWE.

Key challenges

The key challenges for the global generation mix, in our view, are:

- **Market liberalisation in major geographies.** While the US and most European markets are virtually fully liberalised, some European markets are still in the process of developing. Eastern Europe, China, India and other major geographies still have the prospect of complete liberalisation process before them. This is a

key challenge for the utilities and their power equipment, as power trading and hence load volatility in liberalised markets is typically much higher than in regulated markets. In effect, liberalised markets require more flexible power generation assets (such as gas-fired power plants) and higher quality transmission and distribution equipment.

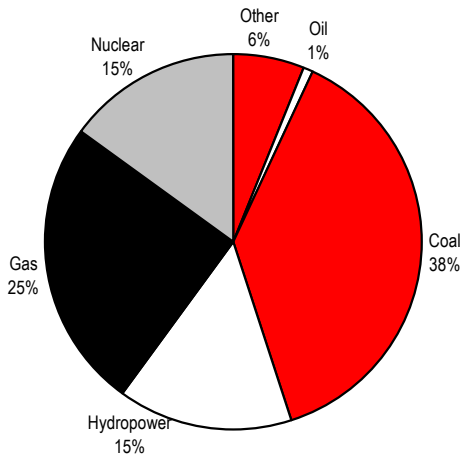
- **Depletion of fuel resources.** Known oil and gas resources are expected to be depleted within 30-40 years, assuming a continuation of current consumption patterns. Although we expect prices to increase in the longer term to reflect reserve limits, these long-term price increases could significantly impact the economics of gas turbines. At current oil and gas prices, the price of gas-fired power generation has already been severely impacted.

- **Energy independence.** Political instability in the Middle East and terror attacks around the world in the past few years have led to serious concern about the security and reliability of the world's oil supply. The price of oil has risen as a consequence of these events. Given the high correlation of oil and gas prices (74.5%), the impact of rising oil prices on power costs is more severe than from merely taking the oil price into account. The power generation industry – even though only a very low percentage of power equipment is oil-fired – suffers from higher gas prices. Continued prices in oil and gas prices would be likely to further support the development of renewable energy and nuclear power.

Future generation mix

However, we expect the proportion of coal used in the global generation mix to remain static over the forecast period, while we expect the proportion of gas-fired power plants to increase to about 25% by 2020 from the current 18%. We expect oil-fired power stations to virtually disappear from the generation mix while the proportion of renewable energy (except for hydropower) should increase dramatically (to 6% from 2% in 2001).

Figure 24. World Generation Mix, 2020E



Source: Bear, Stearns International Limited.

Required investments

For the analysis of Europe and the US, we have used Platts data, a private data supplier, which projects that the market will begin to grow again over the next few years. Platts data suggests that the strongest growth rates should be in the wind power market.

Europe

Figure 25. Market Potential for Power Generation Equipment Investments in Europe

	Additional Installations in MW				Market Volume in EUR				Year-on-Year Growth Rates			
	Coal	Gas	Wind	Total	Coal	Gas	Wind	Total	Coal	Gas	Wind	Total
2000	2,085	7,457	3,109	12,651	1,918	4,101	2,798	8,817				
2001	757	5,475	4,280	10,512	696	3,011	3,852	7,560	-63.7%	-26.6%	37.7%	-14.3%
2002	-	5,075	5,532	10,607	-	2,791	4,979	7,770	-100.0%	-7.3%	29.3%	2.8%
2003	1,244	5,022	5,314	11,580	1,144	2,762	4,783	8,689	NM	-1.0%	-3.9%	11.8%
2004	428	12,217	5,327	17,972	394	6,719	4,794	11,907	-65.6%	143.3%	0.2%	37.0%
2005	260	16,325	5,960	22,544	239	8,979	5,364	14,581	-39.3%	33.6%	11.9%	22.5%
2006	3,940	18,718	5,950	28,608	3,625	10,295	5,355	19,275	1415.5%	14.7%	-0.2%	32.2%
2007	2,566	16,945	7,963	27,474	2,361	9,320	7,167	18,847	-34.9%	-9.5%	33.8%	-2.2%
2008	2,893	30,156	7,725	40,774	2,662	16,586	6,953	26,200	12.7%	78.0%	-3.0%	39.0%

Source: Platts; Bear, Stearns International Limited.

Using the Platts data, we anticipate that growth rates in Europe's power equipment sector should pick up over the next few years. While we are unwilling to accept the data at face value, we see a clear trend towards growing investment levels[8].

United States

The picture in the US is different. Platts data suggests that growth rates will be negative over the next few years. While the planning and approvals process for new power stations is shorter in the US than in Europe, there is a possibility that our data is too conservative. Essentially, as a large percentage of US power plants has already reached or is about to reach its usual economic and technical lifetime of 40 years, the following projections could turn out to be overly conservative.

Figure 26. Market Potential for Power Generation Equipment Investments in the US

	Additional Installations in MW				Market Volume in EUR				Year-on-Year Growth Rates			
	Coal	Gas	Wind	Total	Coal	Gas	Wind	Total	Coal	Gas	Wind	Total
2000	218	27,874	165	28,257	201	15,330	149	15,680				
2001	-	39,511	1,635	41,146	-	21,731	1,472	23,202	-100.0%	41.7%	890.9%	48.0%
2002	440	63,939	428	64,807	405	35,166	385	35,956	NM	61.8%	-73.8%	55.0%
2003	80	49,536	1,687	51,303	74	27,245	1,518	28,837	-81.8%	-22.5%	294.2%	-19.8%
2004	594	25,554	700	26,848	546	14,055	630	15,231	642.5%	-48.4%	-58.5%	-47.2%
2005	924	23,022	1,200	25,146	850	12,662	1,080	14,592	55.5%	-9.9%	71.4%	-4.2%
2006	(711)	17,920	1,500	18,709	(654)	9,856	1,350	10,552	-177.0%	-22.2%	25.0%	-27.7%
2007	4,684	11,465	2,000	18,149	4,309	6,306	1,800	12,415	-759.0%	-36.0%	33.3%	17.7%
2008	6,578	4,157	2,000	12,735	6,052	2,286	1,800	10,138	40.5%	-63.7%	0.0%	-18.3%

Source: Platts; Bear, Stearns International Limited.

[8] We have downward-adjusted the data from Platts for the Italian market, where over 70GW of gas-fired power plants are planned. We find this number a little unrealistic and have reduced it to about 30GW.

Given that about 91,000MW (11.5% of the total) of installed coal and gas-fired power generation capacity is older than 40 years at present, which we estimate will grow to 261,000MW (37% of the total) over the next ten years, we expect the US to experience a massive capacity upgrading cycle over the next few years, which should lead to a significant increase in growth rates again. For the next couple of years, however, it looks as if only wind power is likely to experience significant positive growth rates in the US.

China

China, another significant economy, with around 360GW of installed capacity, still suffers from serious power shortages, which leads to an under-utilisation of production assets, particularly in the densely populated areas around Shanghai and other major cities.

The problem of power shortages has a serious effect on economic prospects in China. The key risk is that it could significantly reduce foreign investments and economic growth potential. In order to cope with this problem, the Chinese government has announced it will commission about 30GW of power generation capacity per year over the next few years. This would make China the world's major growth market for power generation equipment with annual investments of about €21-€25 billion, at least over the next few years.

India

India has an installed capacity of about 112GW and suffers from similar problems to China: high economic growth rates and strong underinvestment in the electric power sector, hence regular power shortages. The power shortage in India is currently 11.2%, in terms of peak demand minus peak supply.

In its current five-year plan, the government plans to add 41GW of generation capacity by 2010. Of this, about 35% is planned to be hydropower, 61% coal and gas-fired power plants, and the rest nuclear power. On this basis, we estimate India will invest about €5.6 billion annually, of which about €3.6 billion should be invested in gas- and coal-fired power stations.

Latin America

Latin America has a total installed capacity of about 215GW, of which the majority (65%) is hydroelectric power capacity, 32% thermoelectric capacity and the rest nuclear and other. Electricity consumption in Latin America is expected to grow by a CAGR of 4.1% over the next few years. According to Reuters Business Insights/Market Line/Olade, Latin America is expected to add about 18,873MW of power generation capacity between 1997 and 2005, or about 2,359MW per annum. Hence, the market size of Latin America is about €1.7 billion.

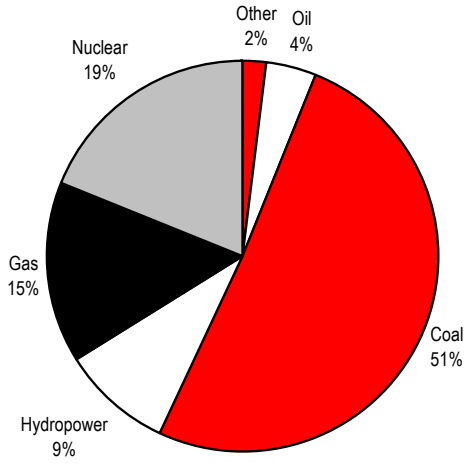
UNITED STATES

We believe that the market for power generation equipment in the US will shrink over the next couple of years, before a massive replacement cycle kicks in. We estimate that the US power generation equipment market has a current market volume of about €15 billion and that it will shrink to about €10 billion by 2008. However, 261GW of conventional generation capacity will be older than 40 years during the next decade and will need to be replaced by new equipment, therefore we estimate the average market size in the US could double over the next few years from current levels.

Current generation mix

The generation mix in the US is heavily dominated by coal-fired power plants (with 51% proportion of the total generation mix), followed by nuclear (19%) and gas (15%). The proportion of gas-fired power plants has increased significantly over the past few years, driven by market liberalisation and the strong growth of (partially Enron-driven) power trading activities. Due to market liberalisation and power trading, the US has built up a strong demand for flexible cutting-edge power generation technology, which is why it has mainly commissioned gas-fired power plants such as CCGTs (combined cycle gas turbines).

Figure 27. US – Power Generation Mix, 2000



Source: US Energy Information Administration.

Key challenges

The key challenges for the US electricity sector going forward will be the following, in our view:

- **Ageing equipment.** Currently, about 12.8% of US conventional thermal generation mix is older than 40 years[9], equivalent to 91,000MW. Over the

[9] While nuclear and hydropower stations can have a useful lifetime in excess of 40 years, conventional thermal power plants have a typical lifespan of 40 years.

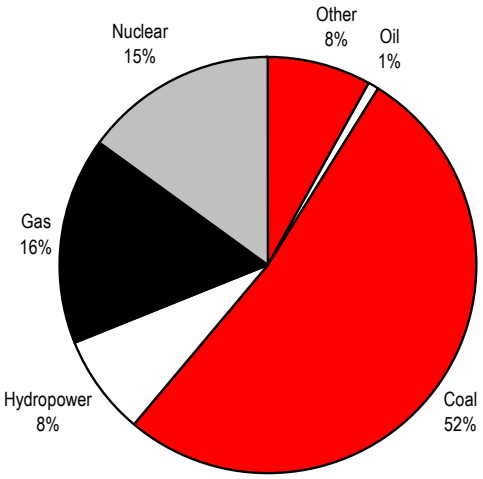
coming decade, the percentage of thermal power plants over 40 years old will triple to 36.6%, equivalent to 261,000MW.

- **Energy independence.** The US has only 2.2% of the world's oil reserves and 3% of the world's gas reserves. However, it is independent in terms of coal as it has over 25% of the world's coal reserves and could take a strategic decision to revive the nuclear power option, given that there are large nuclear fuel reserves lasting several hundred years and as its neighbour Canada is the largest producer of uranium in the world. Hence, nuclear power would guarantee the US energy independence.

Future generation mix

We believe the US is likely to further strengthen its coal-powered generation capacity as a means of achieving energy independence. However, as we have highlighted before, there is a possibility the US will increase its nuclear capacity over time. Still, for the next five years or so, the expected installations of gas-fired power plants should easily exceed the coal-fired power plant installations.

Figure 28. US – Power Generation Mix, 2025E

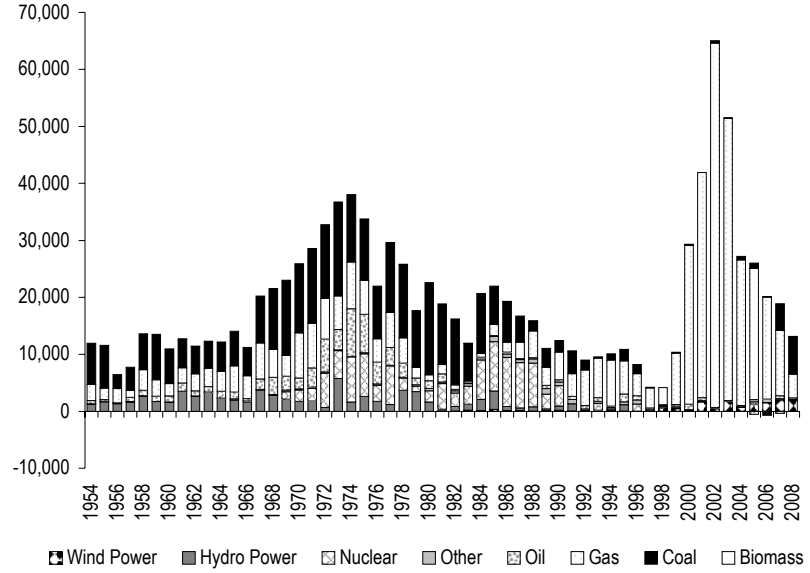


Source: US Energy Information Administration; Bear, Stearns International Limited.

Required investments

According to Platts data, about 12.8% of the US conventional thermal generation mix is older than 40 years currently and this percentage will triple to 36.6% over the next ten years (if assets are not replaced) – equivalent to 261,000MW – a required investment of €182 billion. We expect power capacity investment to increase over the next ten years given the need to replace ageing equipment, although actual plans for new power plant investments suggest declining investments in the next couple of years.

Figure 29. US – Additions/Subtractions (in MW) to the Power Generation Mix over Time, 1954-2008E



Source: Platts; Bear, Stearns International Limited.

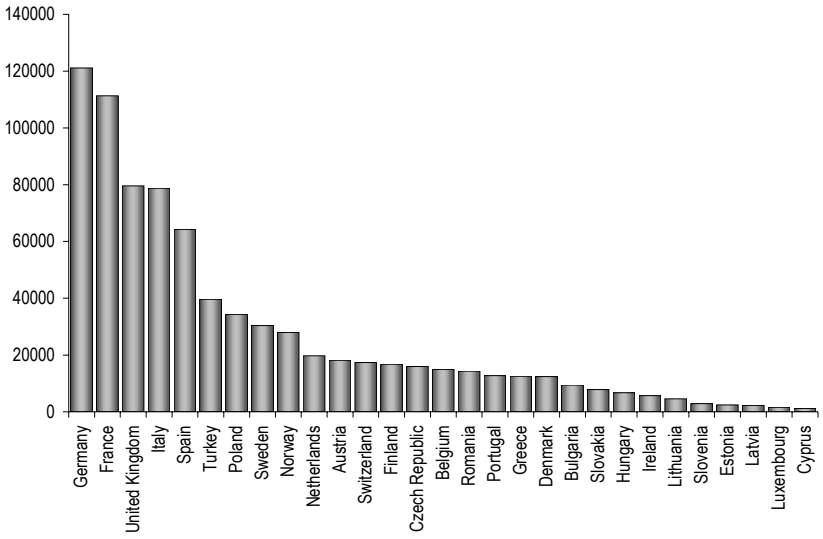
EUROPE

In our view, Europe is an attractive market for power generation equipment, mainly driven by market liberalisation, under which much old-style conventional power equipment will be replaced by modern gas turbines. Like the US, 145GW of the European generation capacity will be obsolete over the next ten years and will need to be replaced.

Current generation mix

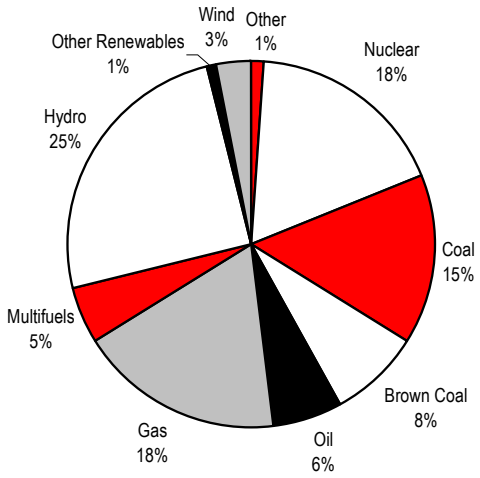
Europe (including Turkey) has an installed power generation capacity of about 787GW, of which the largest portions are hydroelectric (25%), gas-fired (18%), nuclear powered (18%), and coal-fired power plants (15%).

Figure 30. European Installed Power Capacity by Country, 2003 (MW)



Source: Eurelectric.

Figure 31. Europe – Power Generation Mix, 2005E

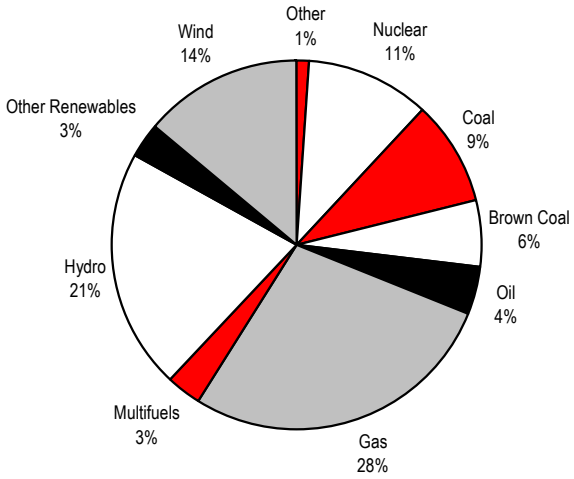


Source: Eurelectric.

Future generation mix

Of the conventional power sources, we expect the proportion of gas-fired power plants to increase to 28% from 18% currently. However, of the renewable energy sources, we expect the proportion of wind power to increase much more dramatically to 14% in 2020 from currently about 3%. Therefore, we think that wind power will enjoy the highest growth rates in the industry, followed by gas-fired power plants.

Figure 32. Europe – Power Generation Mix, 2020E



Source: Eurelectric.

Key challenges

In our view, the key challenges to Europe's future generation mix are the following:

- Europe's generation mix needs more flexible power capacity, as an effect of the ongoing liberalisation process. In liberalised markets, the power trading activity is typically much higher than in non-liberalised markets, hence the load

fluctuates more strongly, creating a need for a larger amount of balancing power, which is typically satisfied by gas-fired turbines. Hence, we expect the proportion of gas-fired power plants to increase to 28% from 18% currently.

- As the European power markets are getting more integrated and so more cost- and fuel-efficient, the continent will need to install more cross-border power transmission capacity. At the moment, about 7% of Europe's power capacity is exportable to other European countries, while the EU's overall goal for this cross-border capacity is 20%.

- Europe's commitment to Kyoto-like carbon dioxide emission targets means that it will either invest strongly in alternative energy (most importantly wind power), or that countries such as Germany and the UK will renew and extend their nuclear capacity over time. Although we expect nuclear capacity in Europe could be supported politically over the next five to ten years, the commissioning of wind power can be achieved more quickly and is politically easier.

- Wind power – in our view, the energy source with the highest growth rates over the past ten years and expected to be over the next ten – is increasingly challenging the power stability in different countries. Given that wind power is very volatile but helps reduce carbon dioxide emissions and fuel dependence, it is not without operational difficulties. In effect, a large proportion of wind power in the power generation mix requires a lot of balancing power plants, specifically gas-fired power plants.

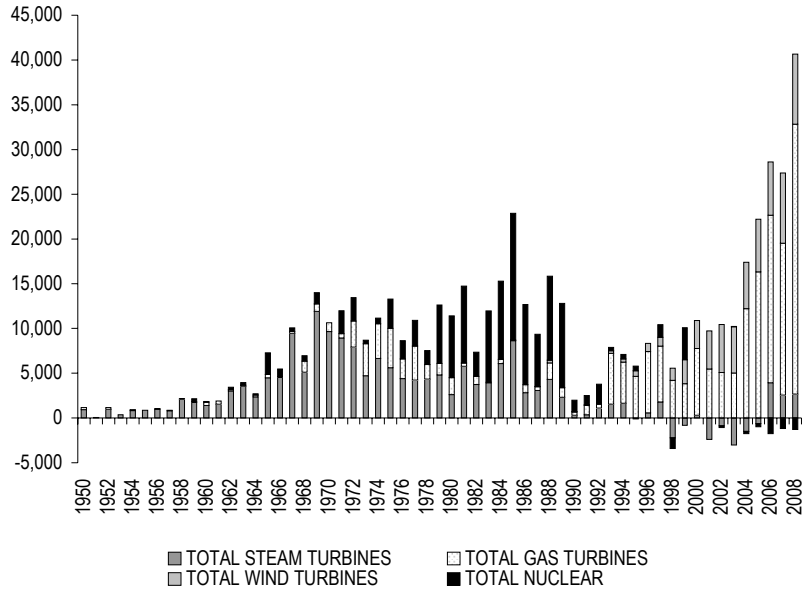
- Some countries in Europe (Germany, Sweden, and Belgium) have signed nuclear phase-out deals to decommission nuclear power stations over the next 20 years. We believe these phase-out deals are very tricky in practice, primarily due to the issues of energy dependence and carbon emissions. Running a nuclear power station is very cheap, as nuclear fuel is very inexpensive and widely available. At the same time, nuclear power stations emit no carbon dioxide and so do not contribute to climate change. Nuclear power also helps to make countries largely energy independent, as nuclear fuel is produced around the world in politically very differently oriented countries. While a reduction of nuclear power in Europe would lead to an increase in the proportion of gas-fired power plants, we do not believe that Europe will effectively reduce its nuclear capacity. With the depletion of some conventional power sources over the next 40 years, the focus on energy independence and the will to decrease carbon dioxide emissions, we believe that nuclear power could return in Europe over the next five to ten years.

In Europe, only France and Finland have announced plans to build new nuclear power stations – all other countries have either officially stated the end of their nuclear power programmes or have decided to effectively avoid and postpone the subject in political debates. The European generation mix could become more heavily dependent on gas power if major European countries decide not to build new nuclear power stations.

Required investments

About 29,000MW of Europe's **thermal** generation capacity is 40 years old or more, hence obsolete (about 13% of Europe's coal-fired and 9% of its oil-fired generation assets). Hydroelectric power plants are often older than 40 years, but their economically useful lifetime exceeds that of thermal power plants. In ten years, the amount of obsolete thermal capacity will grow to 145,000MW, requiring an investment of €100 billion.

Figure 33. Europe – Additions/Subtractions (MW) to the Power Generation Mix over Time, 1950-2008E



Source: Platts; Bear, Stearns International Limited estimates.

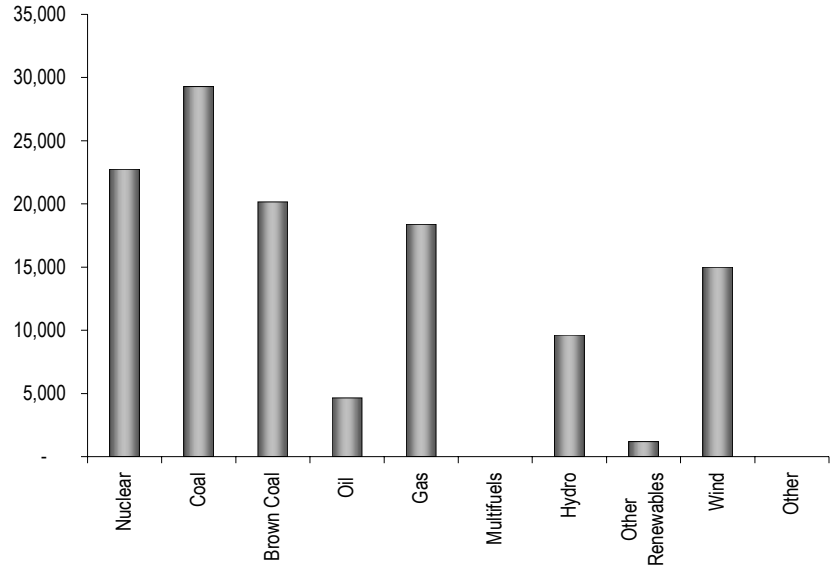
GERMANY

Over the next five years, we expect to see an investment in wind power of at least €10 billion (flat to slightly down compared to the past five years) and in gas-fired power plants of €2.5 billion (up strongly from about €240 million in the past five years) in Germany.

Current generation mix

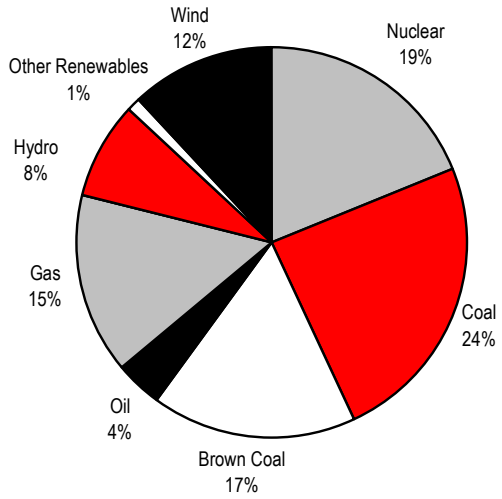
The German generation mix is dominated by coal (hard coal and brown coal), which together account for 41% of Germany's generation mix. Nuclear, the other legacy base load fuel, contributes about 19% of Germany's generation mix, while gas only contributes 15% but is expected to grow to 17% by 2010 and to 23% by 2020 (source: Eurelectric).

Figure 34. Germany – Generation Assets by Fuel Type, 2005E (MW)



Source: Eurelectric.

Figure 35. Germany – Power Generation Mix, 2005E



Source: Eurelectric; Bear, Stearns International Limited estimates.

Key challenges

Germany's generation mix mainly reflects two factors: (1) the pre-liberalisation legacy mix, i.e. the focus on conventional and nuclear baseload power stations, essentially hard coal, brown coal and nuclear; (2) the proportion of wind power reflects the government's move towards aggressively supporting the commissioning of wind farms.

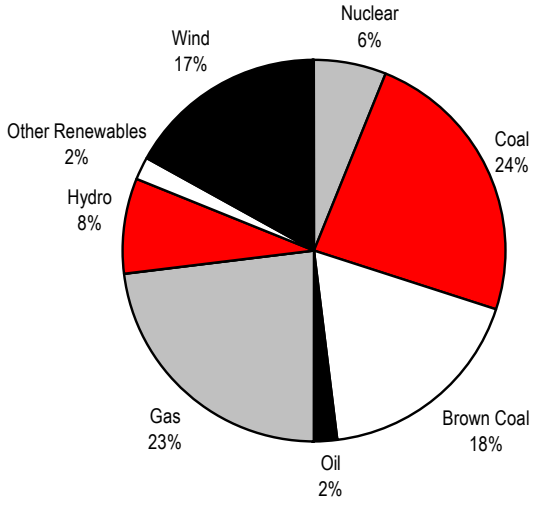
The challenge is that the wind power proportion is growing rapidly but the country does not operate a sufficient level of load-balancing power stations such as gas power stations. In other words, as wind power is very volatile, the German generation mix

requires a large amount of flexible reserve power stations (i.e. gas). The other key challenge is the current legislation on Germany's nuclear phase-out deal, which requires utilities to successively close down all nuclear power stations by the mid-2020s.

Future generation mix

This load volatility problem will be addressed and reduced in Germany's future generation mix, in which we expect gas to have a much larger proportion, while the proportion for nuclear will be reduced.

Figure 36. Germany – Power Generation Mix, 2020E



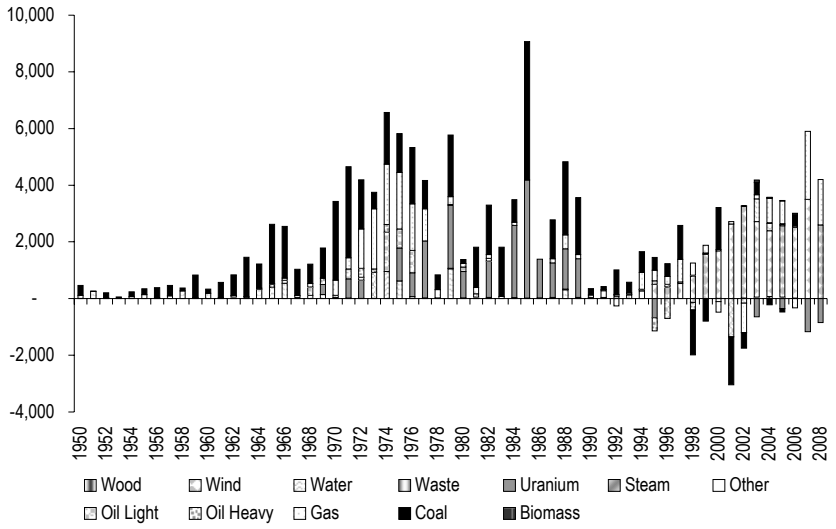
Source: Eurelectric.

Required investments

We expect Germany to commission over 5,300MW of gas-fired power plants over the next five years (2004-08), and about twice as much wind power capacity. We therefore expect capital expenditures by German utilities for gas-fired power plants of €2.5 billion, up significantly from about €240 million in the last five years.

We also estimate about €10 billion could be invested in new wind farms over the next five years. This could prove conservative, depending on the progress of offshore wind farms (capital expenditures per MW are almost twice as high as for onshore installations).

Figure 37. Germany – Additions/Subtractions to the Power Generation Mix over Time, 1950-2008E



Source: Platts; Bear, Stearns International Limited.

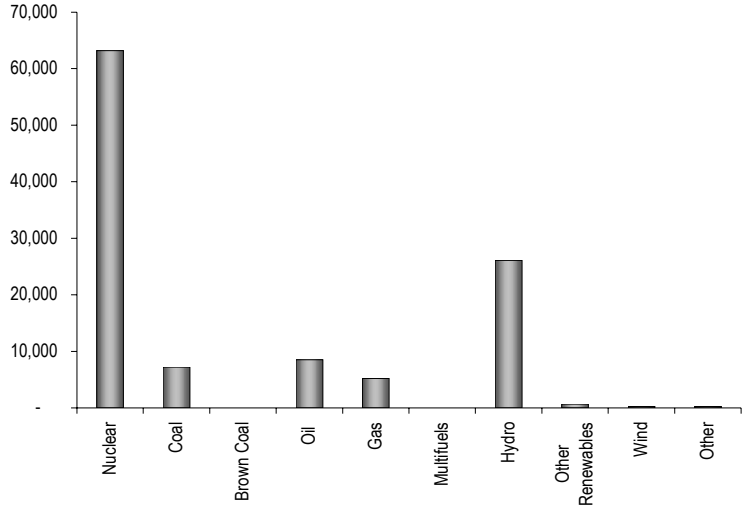
FRANCE

In our view, France offers a very unexciting picture in terms of power generation capacity, as the country predominantly runs on nuclear and hydropower and neither the age of the French generation equipment nor the Kyoto framework suggest it needs a massive power generation replacement cycle. Hence, we believe that only wind power will enjoy exciting growth rates over the next ten years. We expect France to commission about 6,000MW of wind farms by 2010 from very low levels currently.

Current generation mix

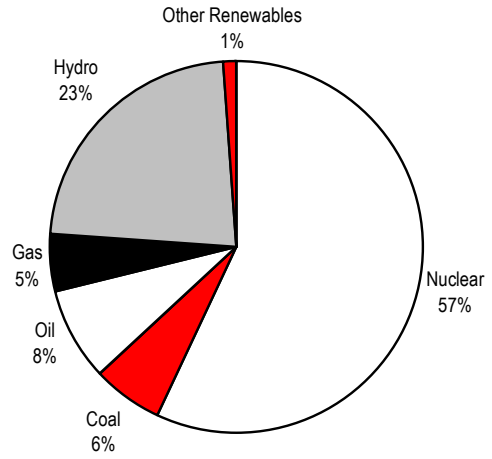
France has a very nuclear-heavy generation mix of 57%. It has no stated intention of changing its generation mix drastically in the future, although the percentage of gas and renewable energy sources, specifically wind power, are expected to increase.

Figure 38. France – Generation Assets by Fuel Type, 2005E (MW)



Source: Eurelectric.

Figure 39. France – Power Generation Mix, 2005E



Source: Eurelectric; Bear, Stearns International Limited.

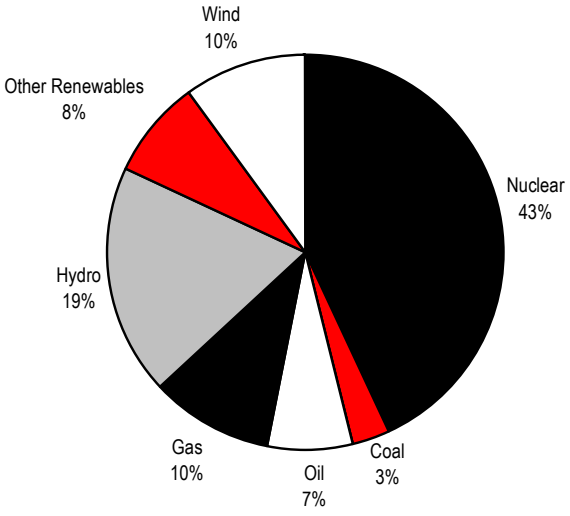
Key challenges

We believe France is very well positioned for the future in terms of its generation mix. Although the French market has not fully opened up to competition yet (the current liberalisation level is only 37%), we believe its massive nuclear baseload offers a strong competitive edge.

Future generation mix

The French generation mix of the future will not change drastically, in our view. We expect the proportion of wind power to grow to 10% from about 0% today, while the proportion of other renewable energy sources and gas-fired generation capacity is also expected to grow.

Figure 40. France – Power Generation Mix, 2020E

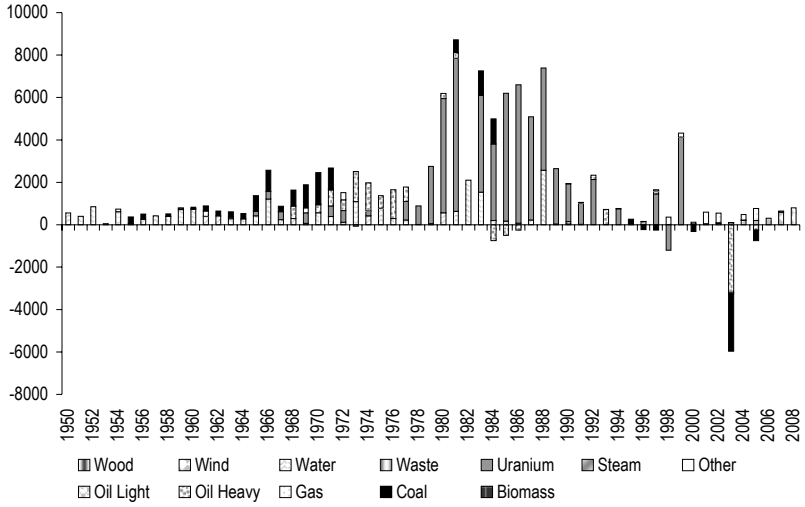


Source: Eurelectric; Bear, Stearns International Limited.

Required investments

Our data suggest that France is going to be a very small market in terms of new investment into power generation capacity. In our view, wind power has the brightest growth opportunities there over the next few years, as the French generation mix does not really suffer from underinvestment or ageing equipment.

Figure 41. France – Additions/Subtractions (MW) to the Power Generation Mix over Time, 1950-2008E



Source: Platts; Bear, Stearns International Limited.

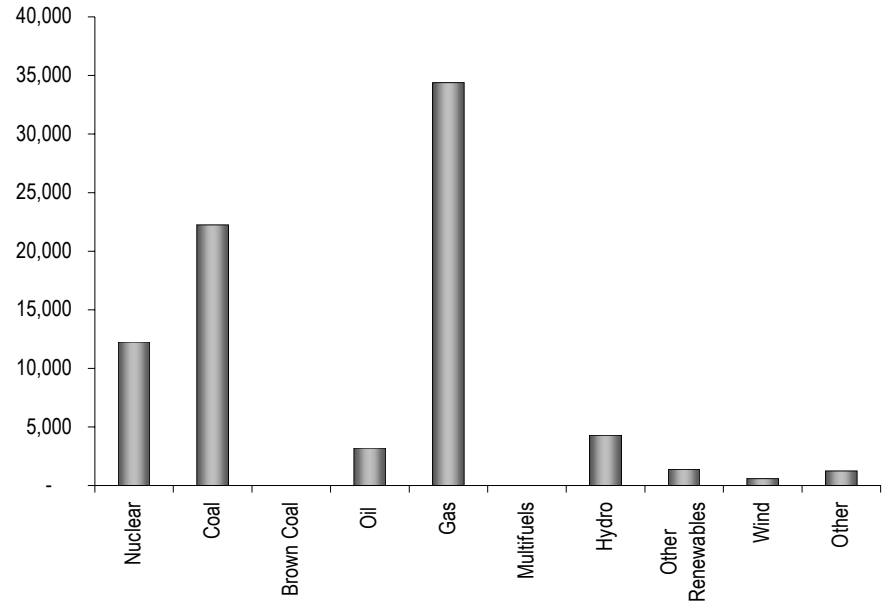
THE UK

As with France, we believe that wind power will enjoy by far the most exciting growth rates in the UK over the next few years, as its generation mix is dominated by gas turbines. We expect the UK to invest about €4 billion in gas turbines and about €10.5 billion in wind power over the next five years.

Current generation mix

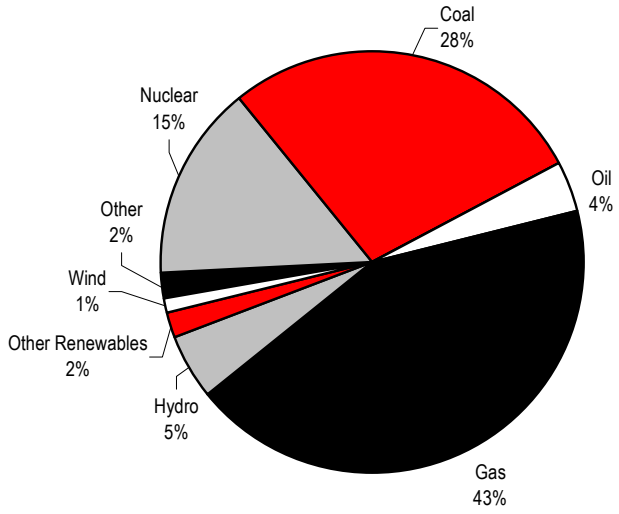
The UK's generation mix is probably the most modern in Europe, reflecting an early and quite rigorous market liberalisation and its high domestic gas resources. However, given the big rise in gas prices, the UK's generation mix has become a real challenge over the past few quarters. The generation mix is strongly biased towards gas-fired power stations. The UK first installed gas-fired power plants in 1993 after years of low investment in conventional energy sources. However, in 1989, the UK commissioned a large amount of nuclear capacity.

Figure 42. UK – Generation Assets by Fuel Type, 2005E (MW)



Source: Eurelectric.

Figure 43. UK – Power Generation Mix, 2005E



Source: Eurelectric; Bear, Stearns International Limited.

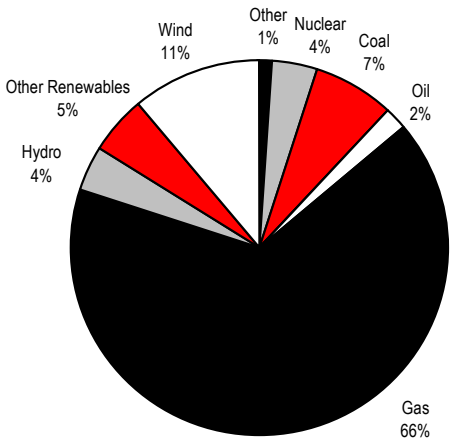
Key challenges

In our view, the key challenge for the UK's generation mix is its heavy dependence on natural gas. Therefore it might decide to build new nuclear power stations, which would be far less politically sensitive, in our view, than in Germany. We also believe the UK is poised to grow its wind power assets dramatically over the next decade, given its favourable regulatory environment, high wind speeds and very flexible gas-based generation assets. Hence, the commissioning of wind power does not have to be linked with the parallel installation of balancing power assets.

Future generation mix

Although the UK remains strongly committed to gas power and is expected to commission more gas-fired power plants, it is also expected to boost the wind power proportion in its generation mix.

Figure 44. UK – Power Generation Mix, 2020E

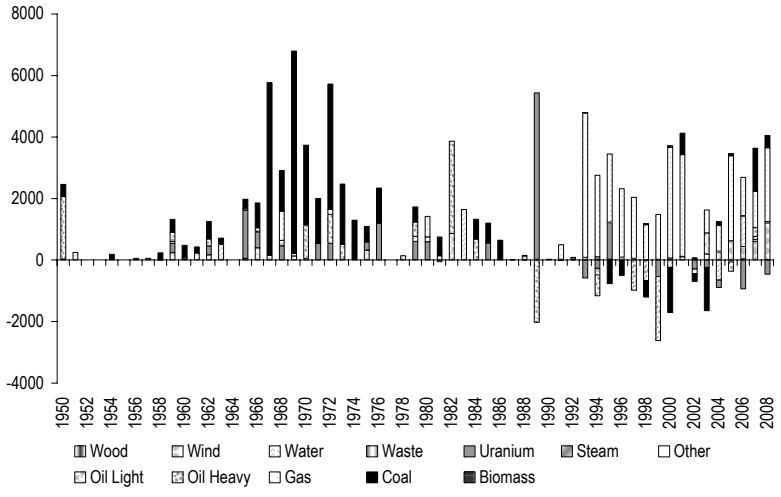


Source: Eurelectric; Bear, Stearns International Limited estimates.

Required investments

We expect the UK to invest about €4.0 billion in gas-power generation assets and more than twice as much in wind power assets (€10.5 billion) over the next five years. Although the investment in gas power plants is slowing slightly (down 1.6%, compared to the past five years, investments in wind power are expected to grow by over 70% CAGR between 1999-2003 and 2004-08. Moreover, we estimate the UK will spend about €1.8 billion on coal-powered generation assets (up 20.2% over the aforementioned periods).

Figure 45. UK – Additions/Subtractions to the Power Generation Mix, 1950-2008E



Source: Platts.

ITALY

We expect Italy to be one of the key growth markets in Europe with investment of about €30 billion over the next five to seven years. We estimate Italy will invest primarily in gas and wind turbines and it plans to commission about 70GW of gas turbines over the next few years. While we believe this number is probably unrealistically high, Italy could surprise on the upside, given its expensive, old-style generation mix and the need for extensions as well as replacements.

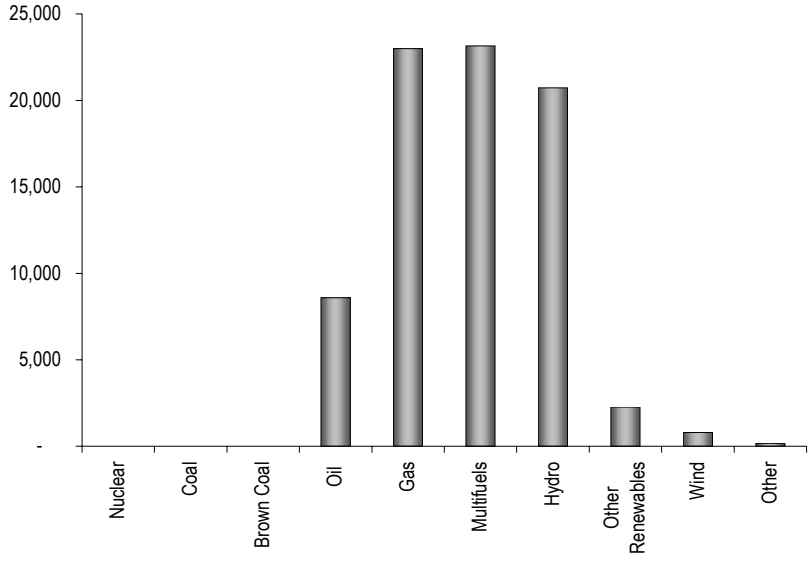
Current generation mix

Italy's current generation mix is one of the most old-fashioned in Europe. The proportion of oil is about 11% – the highest in Europe.

Although Italy's generation assets are not ageing, the high proportion of oil in the generation mix is a burden for the country, as it leads to high power generation costs. Italy has decided to develop new gas-fired power plants to help the country to achieve the following targets:

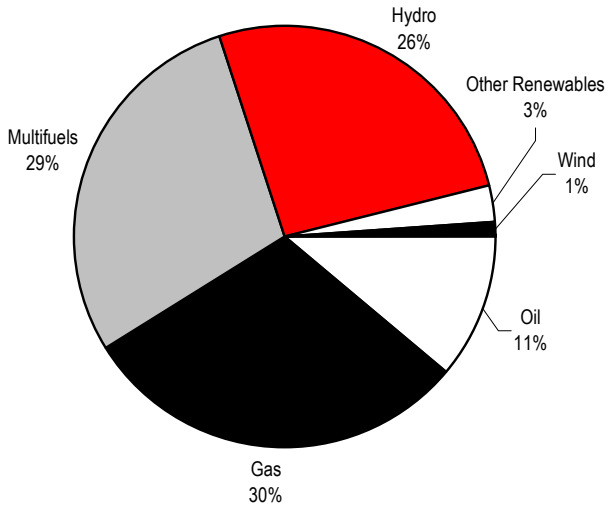
- reduce power generation costs per kWh
- overcome problems of power shortages and power failures
- a power generation mix that is more environmentally friendly
- generally renew the country's power generation asset base

Figure 46. Italy – Generation Assets by Fuel Type, 2005E (MW)



Source: Eurelectric.

Figure 47. Italy – Power Generation Mix, 2005E



Source: Eurelectric; Bear, Stearns International Limited estimates.

Key challenges

In our view, the key challenges for the Italian generation mix are:

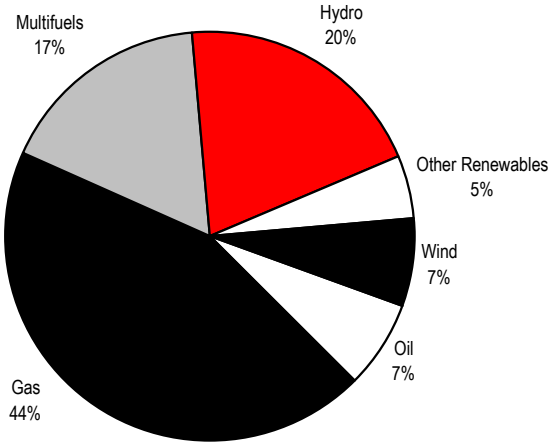
- Italy's power generation costs per kWh are the highest in Europe (about 50%-60% higher than in most European countries), reflecting Italy's expensive and old-style generation mix.

- Italy suffers from power shortages, which makes the country the biggest European power importer. As a percentage of its own generation capacity, Italy imports over 15% of electricity, especially from France, which makes the country dependent on foreign power.

Future generation mix

Italy plans to boost significantly its share of gas-fired power plants from about 30% currently to 44% by 2020. Wind power is expected to increase to 7% from about 1%. Overall, we expect Italy to be one of the key growth markets in Europe, especially in gas-fired power plants and wind power.

Figure 48. Italy – Power Generation Mix, 2020E



Source: Eurelectric; Bear, Stearns International Limited.

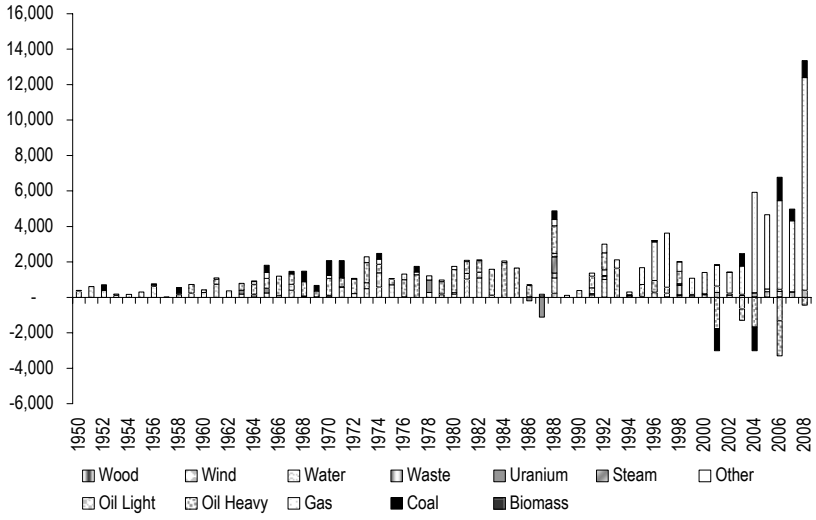
Required investments

Italy currently has a massive amount of new capacity (specifically gas-fired power plants) in the planning phase, to completely update its generation mix during the next few years. We expect Italy to invest about €30 billion over the next five to seven years, primarily in gas and wind turbines.

We anticipate Italy will commission about 4GW of wind power by 2010, invest about €8.5 billion in the replacement of obsolete generation assets and about €15 billion in new gas turbines by 2010.

Italy plans to commission about 70GW of gas turbines over the next few years. While we believe this number is probably unrealistically high, we think Italy could surprise on the upside, given its expensive, old-style generation mix and the need for extensions as well as replacements.

Figure 49. Italy – Additions/Subtractions (MW) to the Power Generation Mix over Time, 1950-2008E



Source: Platts; Bear, Stearns International Limited estimates.

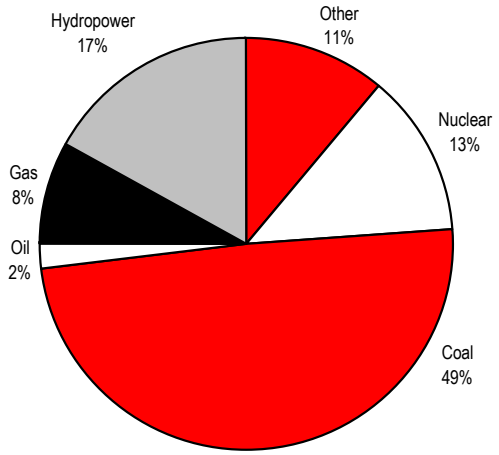
EASTERN EUROPE

In ten years, 26.5GW of conventional power generation assets in Eastern Europe will be over 40 years old and need to be replaced. At the same time, the Eastern European economy is growing much faster than in Western Europe, translating into much higher power demand. We estimate Eastern Europe will invest about €30 billion in power generation assets over the next ten years.

Current generation mix

Eastern Europe has a total generating capacity of about 102GW. As the Eastern European economy is generally expected to grow by about 7.5%-8.0% over the next few years, the power generation equipment market has very good growth potential. Currently, the proportion of coal is very strong at 49%, followed by hydropower (17%) and nuclear power (13%).

Figure 50. Eastern Europe – Power Generation Mix 2005E



Source: Eurelectric.

Key challenges

The key challenges in Eastern Europe are the following:

- **Market liberalisation.** Eastern Europe requires a more flexible generation mix to cope with market liberalisation, cross-border power trading and international competition.

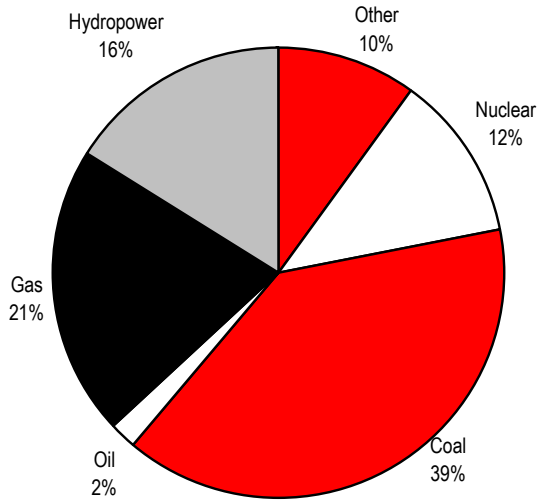
- **Environmental issues.** Currently, Eastern Europe produces about 500 metric tons of carbon equivalent per $1,000 of GDP, compared to about 160 in the US, 95 in Germany, 65 in France, and 100 in the UK. Hence, Eastern Europe's carbon emission is significantly higher than the world average compared to the size of its economy. Given Europe's environmental targets outlined at the Johannesburg Summit in 2002 and elsewhere, we believe Eastern Europe is likely to make heavy investments in cleaner power generation capacity.

- **Economic growth.** Economic growth rates in Eastern Europe are more than twice as high as those in Western Europe. As the trend of investing in manufacturing capacity in Eastern Europe is ongoing, Eastern European power consumption is likely to grow faster than in Western Europe (although there is an offsetting trend through efficiency gains). Hence, the growing economy in Eastern Europe requires power supply to be stable and sufficient on an ongoing level, which is why we consider Eastern Europe a growth market for power equipment.

Future generation mix

We expect the Eastern European generation mix to shift in favour of gas and renewable energy sources. Eurelectric estimates the size of Eastern Europe's generation capacity in 2020 at 116GW – a 13.4% increase over the next 15 years.

Figure 51. Eastern Europe – Power Generation Mix, 2020E



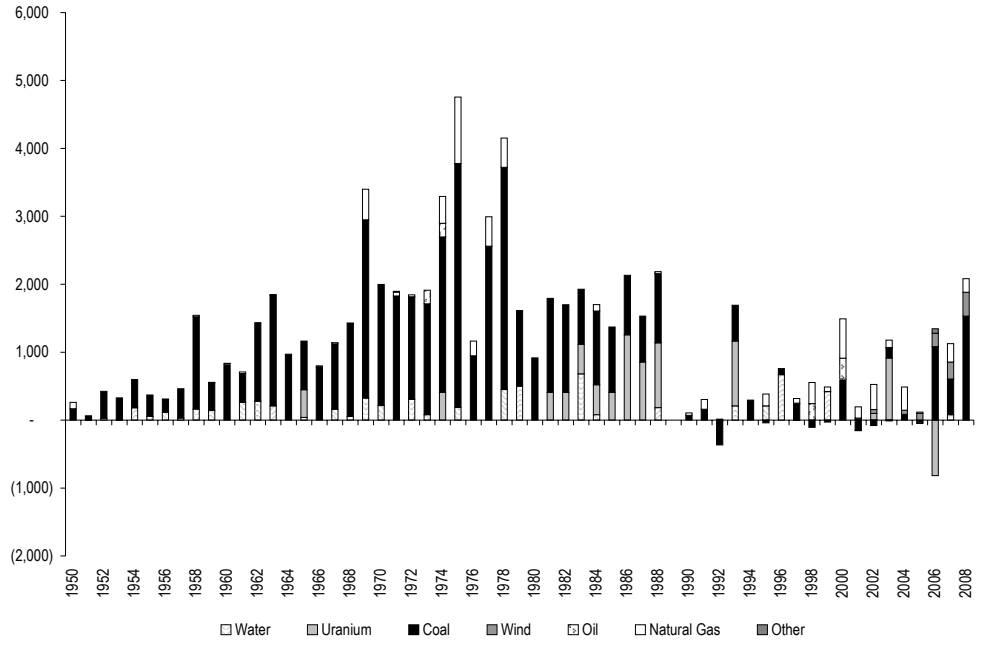
Source: Eurelectric.

Required investments

The Platts data that we use indicates that about 20% (26,500MW) of the Eastern European coal generation capacity is older than 40 years, and this figure is expected to increase to 53% over the next ten years, suggesting enormous upgrading potential. Other parts of the generation mix are either not significantly out of date, or they have a longer assumed lifetime, such as hydropower stations. We estimate that over the next ten years, Eastern Europe needs to commission about 42,000MW of new conventional generation capacity, which we expect to be shared between coal and gas-fired capacity. Hence, we forecast Eastern Europe could see investment of about €30 billion in that period.

While the planned power projects suggest a more moderate growth for the next few years (based on Platts data), the actual figure could exceed projected growth rates to ensure that Eastern Europe's power infrastructure achieves the expected growth rates.

Figure 52. Eastern Europe – Additions/Subtractions (MW) to the Power Generation Mix over Time, 1950-2008E



Source: Platts.

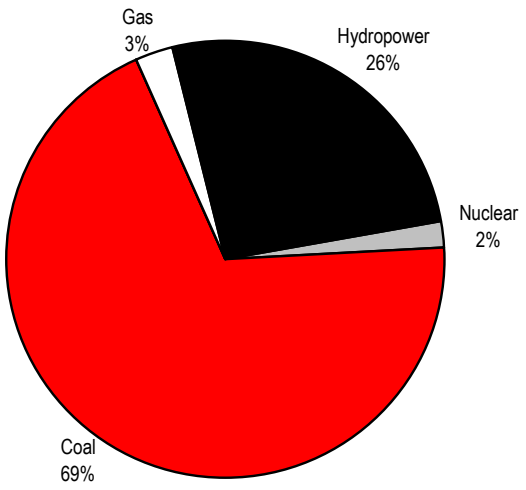
CHINA

China has around 360GW of installed capacity and suffers from serious power shortages that have lead to an under-utilisation of production assets, particularly in the densely populated areas around Shanghai and other major cities. Power shortages have a serious effect on China's economic prospects. The key risk is that it significantly reduces foreign investment and economic growth potential. The Chinese government has therefore announced it will commission about 30GW of power generation capacity per year over the next few years. This would make China the world's major growth market for power generation equipment, with annual investments of about €21-€25 billion.

Current generation mix

The current generation mix is based heavily on coal-fired power plants (69%), then hydropower (26%), with the rest (gas, oil, and nuclear) making a non-meaningful contribution (5%).

Figure 53. China – Power Generation Mix, 2005E



Source: PESD; Stanford University.

Key challenges

China faces a combination of the following challenges, in our view:

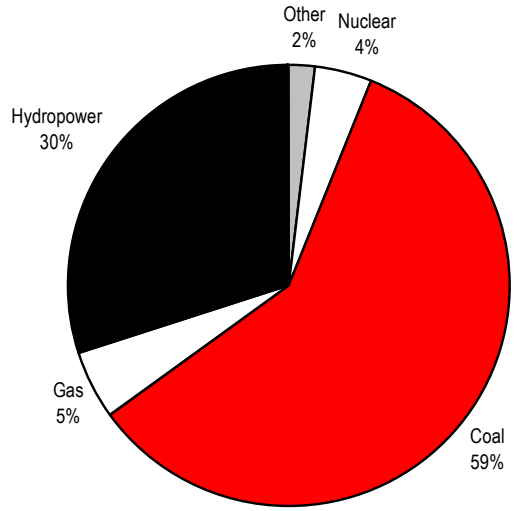
- Significant economic growth over the past few years, combined with underinvestment in generation assets, has led to power shortages in major regions and cities. Many factories, e.g. in the Shanghai region, are forced to run on significantly reduced capacity utilisation and many set up for a seven-day per week production only have governmental permission to run for three days. The problem of power shortages has a serious effect on the country's economic prospects. The key risk is that it significantly reduces foreign investment and economic growth potential. The Chinese government has therefore announced it will commission about 30GW of power generation capacity per year over the next few years.

- There are significant environmental problems relating to coal-fired power stations that are not yet equipped with scrubbers or other filter technology. As China has boosted its economy over the past few years without being particularly environmentally friendly, the country is suffering increasingly from pollution. The World Bank estimates that about 400,000 people are dying annually due to air pollution in China. China is likely to shift towards more environmentally friendly technologies in the future, in our view, although there is not much tangible change in place yet.

Future generation mix

Coal is expected to continue to dominate the generation mix but we expect hydropower to grow strongly, as well as the proportion of nuclear. We estimate China will have an installed power generation capacity of about 950GW by 2020.

Figure 54. China – Power Generation Mix, 2020E



Source: Bear, Stearns International Limited estimates.

Required investments

China has around 360GW of installed capacity at the moment and plans to commission about 30GW of power generation capacity every year. This makes China the world's major growth market for power generation equipment with annual investments of about €21-€25 billion.

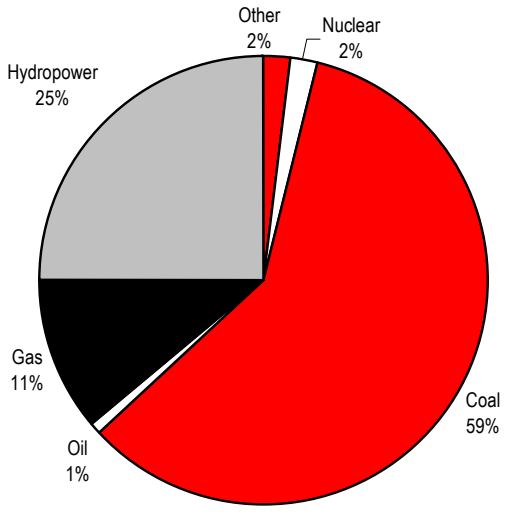
INDIA

India has a current installed capacity of about 110GW and – given its high economic growth rates – it suffers from power shortages. India needs to boost its power generation infrastructure in order to support its economic growth outlook.

Current generation mix

By the end of 2003, India had about 110GW of installed power generation capacity, of which by far the most (59%) was coal-based, with hydropower at 25% and gas 11% of the total.

Figure 55. India – Power Generation Mix, 2003



Source: Central Electricity Authority; India.

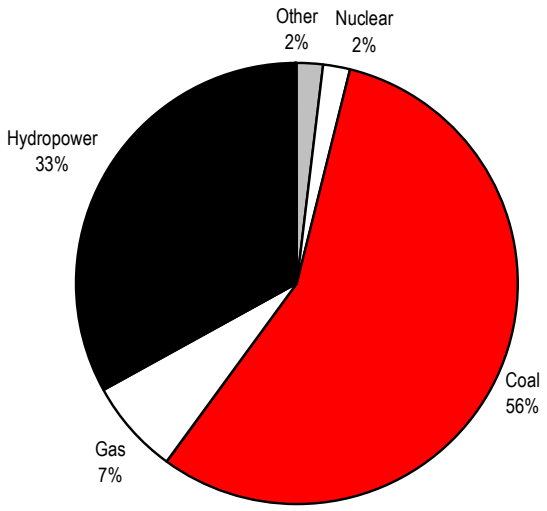
Key challenges

India suffers from similar problems to China – it cannot meet its peak demand with its currently installed generation assets. India currently falls short by 11.2% in terms of peak power availability minus peak power demand – equivalent to 9,500MW of capacity. The Indian economy is growing by about 6.5% per annum and so the power shortage problem could worsen if new investment in power generation equipment is delayed.

Future generation mix

We estimate India will have an installed power generation capacity of about 300,000MW in 2020, dominated by coal (56%), then hydropower (33%) and gas (7%). Although the proportion of hydropower typically declines in most countries as this capacity usually gets exploited first, India has some substantial hydropower projects. Currently, India has about 29,500MW of hydropower plants in operation, while 8,132MW are being built. In addition, the government has planned hydropower additions of 50,000MW. Hence, we expect the proportion of hydropower to increase to 33% from the current 25% by 2020.

Figure 56. India – Power Generation Mix, 2020E



Source: Bear, Stearns International Limited estimates.

Required investments

In its five-year plan, the government plans to add 41,100MW capacity between 2002 and 2007. Of this, about 35% is planned to be hydropower, 61% coal and gas-fired power plants and the rest nuclear power. On this basis, we estimate India will invest about €5.6 billion per annum, of which about €3.6 billion should be in gas- and coal-fired power stations. Longer term, we estimate India needs to invest an average €8.2 billion per annum in its power generation infrastructure.

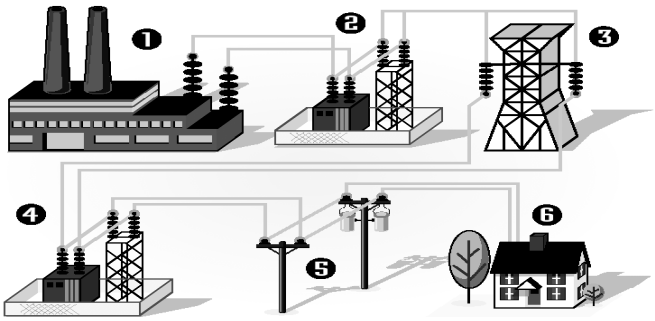
Power Transmission and Distribution Equipment Markets

SUMMARY

The global market for Transmission & Distribution (T&D) market has been a slow growing market over the past ten years, expanding at a rate of only about 4% per year. However, we believe this is about to change. We expect it to transform into a structural growth market (around 8%-10%) over the next 2-3 years. In this respect, the term 'structural' refers to several years of significantly higher than average growth rates, mainly supported by the need in China and India to extend the transmission grid to ensure economic growth, but also driven by a need in the US to compensate for massive underinvestment in the past. The catalyst for US growth should be the pending Energy Bill, which we expect to be passed during 2005. Europe, in our view, will continue to grow modestly in total. However, we estimate Eastern Europe could see growth of around 10%.

Electric systems comprise power-generating plants and transmission and distribution lines and equipment. Electricity is carried via transmission lines from generating plants to demand centres, i.e. the geographic region of the end-users. From there, distribution lines carry electricity to the end-users – households and businesses.

Figure 57. Power Transmission and Distribution Process



Source: Edison Electric Institute. Electricity leaves the power station (1) its voltage is increased at a "step-up" substation (2). Next the energy travels along the transmission line to the place where the energy is needed (3). Once there, the voltage is decreased, or "stepped down", at another substation (4) and the distribution power line (5) carries the electricity until it reaches a home or business (6).

The transmission network

The transmission network connects power stations to distribution units that deliver the electricity to demand centres. These are typically highly complex systems that are carefully designed to meet strict technical and planning standards. Typical hardware involved in transmission networks includes High Voltage Direct Current lines (HVDC), High Voltage Alternating Current lines (HVAC), utility automation devices, and other high voltage equipment.

Substations

In the process of transporting electrical power from a power station to the end-user, substations are used to change the power voltage. While power stations produce power with a typical voltage level of about 20kV, end-users typically consume electric power with a voltage level of 110-240V. At the same time, the transportation of high-voltage

power is more efficient than low-voltage power, which is why substations step up the electric voltage at the power station and reduce it again once the electricity has reached a demand centre. Typical hardware used in substations includes power transformers, distribution transformers, automation devices, and control devices.

Distribution system

Distribution systems deliver electricity from the substations to the end-users – homes, businesses and industries. Distribution lines are further classified into primary and secondary distribution lines. Primary distribution lines or feeder lines carry electricity at levels (2.4-34.5kV) and extend throughout the area in which electricity is distributed. Secondary distribution lines then carry electricity at a lower voltage for users in homes and businesses. Residential voltage levels are usually 110-240V and commercial levels are 240-2,400V. Typical hardware deployed in distribution systems is medium and low voltage lines, controllers and automation devices.

MARKET DESCRIPTION AND DRIVERS

As the market for T&D assets has been growing at around 4% over the past few years and margins have typically been in the low to mid-single digits, the financial market's attention has declined. We believe there is little general awareness that the global spending level in the area of T&D has to increase dramatically going forward, for several reasons:

- **Increase in electricity load.** With power consumption increasing globally, T&D assets have to cope with higher electricity load levels. This factor is particularly important in large, fast-developing markets such as China, India and other Asian countries.

- **Replacement of obsolete equipment.** Investments in T&D assets have declined in the west – quite dramatically in the US – such that the current quality of those assets is insufficient to deal with the current electricity load. Power blackouts, which the US, the UK, and Italy have all suffered recently, are mostly the result of insufficient T&D assets.

- **Market liberalisation.** The liberalisation of power markets in the west dramatically increased power trading, which in effect resulted in more cross-country and cross-border power flow. Electricity grids were originally designed for public utilities and the electricity grid in the western world often cannot cope with strong load volatility and strongly changing load levels. At the same time, power trading requires flexible networks with the ability to measure power throughput exactly, which has not been a major requirement in traditional power grids.

- **Increase of wind power.** Given that most western countries promote the commissioning of wind power assets in order to fulfil Kyoto-related or other environmental policies and treaties, the power load volatility has increased significantly, as wind farms are dependent on the naturally volatile wind speed. At the same time, larger wind farms are typically located in windy areas along the coastlines, which are often low demand centres with traditionally low power grid requirements. The trend towards more wind farms, particularly in offshore

locations, will necessitate heavy investments in the power grid. For example, Germany, where wind farms with a total capacity of thousands of MWs are planned offshore, will need to invest in highly efficient T&D assets in order to cope with such highly volatile capacity levels.

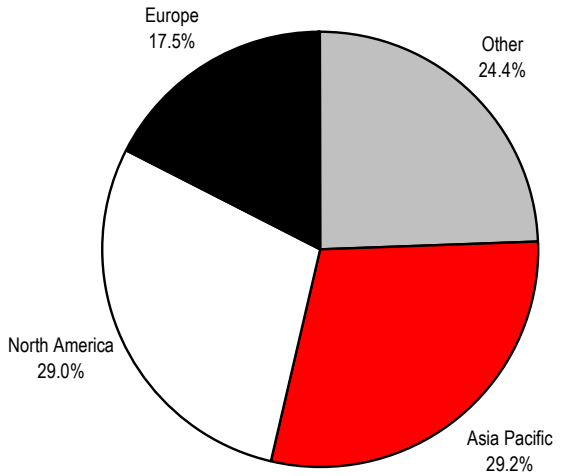
- **Geographic distance between generation and demand.** Large countries like China, Brazil and Australia, which have invested and are planning to invest more in remote power generation assets, need to have T&D assets that carry electricity over long distances. The government of China, for example, commissioned its Three Gorges dam and power station with a total power capacity of 18.2GW (equivalent to about 10-15 nuclear power stations), which is over 800km away from its demand centres, Shanghai and Guandong on China's east coast. Therefore, it needed to build a HVDC transmission line, which has the most efficient power throughput capacity. Similar projects – probably relating to huge wind farms, offshore or onshore – will require a similar investment in T&D assets.

- **Political reasons.** The EU has decided to increase its cross-country interconnection capacity from 7% of total power capacity currently to 20% by 2010. The extension in transmission lines will improve cross-border trading and hence lead to more attractive prices for end-customers. At the same time, power assets across Europe will be used more effectively and efficiently. For example, France might be able to deliver more excess nuclear night-power to Germany, which could enable a German utility to switch off a gas power station and therefore save money on fuel. As well as the decision on higher interconnection capacity, the extension of the EU to Eastern Europe will make T&D upgrades and connections necessary in the new member states, we expect.

GEOGRAPHICAL BREAKDOWN

The three largest markets for T&D assets are Asia, North America, and Europe, with a total market share of about 76%. In the past couple of years, the economic growth rates in the Asia-Pacific region and the consequent need for power grid extensions have made this region the largest investor in T&D assets, as shown below.

Figure 58. Geographical Market Breakdown of T&D Expenditure, 2003



Source: Freedonia Group.

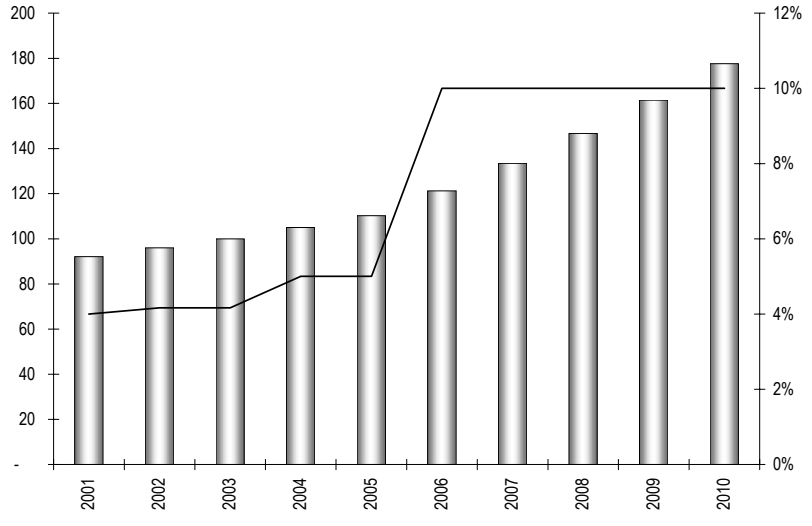
Global market size and growth outlook

Estimates of the global T&D market vary significantly, depending on the source. The IEA puts the total T&D market at about $100 billion (€78 billion) annually, of which 30% (€23 billion) is invested in transmission assets and 70% (€57 billion) in distribution assets. IEA's estimate for transmission assets investment is below the estimates provided by Siemens (€29 billion) and ABB (€35.6 billion).

More interestingly, the IEA estimates that between 2001 and 2010 about $1,050 billion needs to be invested in distribution assets globally and about $450 billion in transmission assets. Hence, grid operators and related parties need to invest about $1.5 trillion in T&D assets. For the IEA, the key reason for these heavy investments is the increase in electricity demand, for which the current grid quality is completely insufficient. At the same time, the grids in the US, the UK, Italy and other countries, especially developing countries, already require heavy investment simply to cope with the current power load requirement.

We estimate that about $288 billion was invested between 2001 and 2003, which leaves over $1,200 billion still to be invested in the global grid. At the moment, it looks as if 2004 and potentially 2005 growth rates will be in the mid-single digits (although this could increase due to higher US investments). If T&D market growth rates reach 5% in 2004 and 2005, they have to accelerate dramatically (to 20%) thereafter in order to guarantee necessary grid upgrades. Although we believe that market growth acceleration from 4% to 20% is unrealistic, we expect the market could grow at a rate rising from the current 4% to the area of 10%. If the T&D market grows by 10% after 2006, the IEA's investment requirement would be missed by 17%. While the US has been the region with the most substantial under-investment in this area, we believe that the soon-to-be-signed Energy Bill could be a powerful catalyst to increased spending on US T&D assets, and we discuss this in more detail in the next section.

Figure 59. T&D Market Growth Outlook, Annual Investments ($bn); Growth Rates (%), 2001-05E

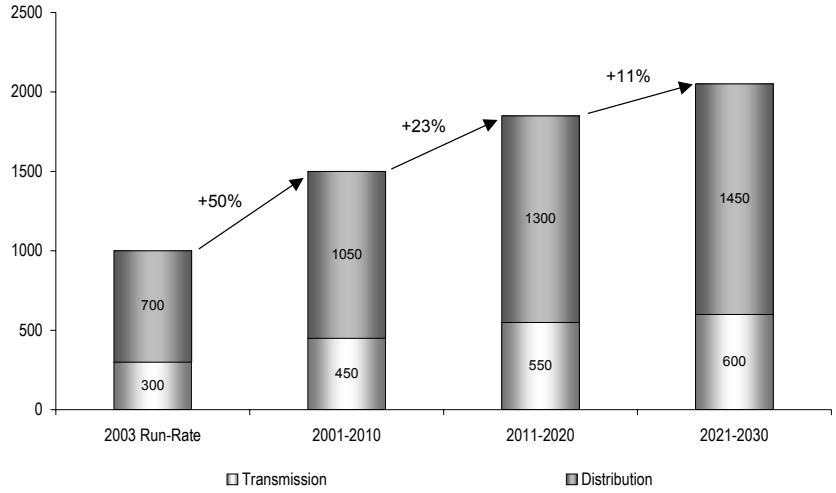


Source: IEA; Bear, Stearns International Limited estimates.

According to the IEA, T&D investments will have to grow over the next 25 years – fuelled in the medium term by necessary equipment upgrades and replacements, and driven by electricity demand growth thereafter.

Figure 60 shows that the amount needed to be invested in the T&D market during the current decade by far exceeds the current run-rate. Indeed, the required investment level is 50% higher than the current spending level. Given that the current spending level is likely to grow only slightly over the next one to two years, we expect investment to accelerate significantly into the second half of the decade.

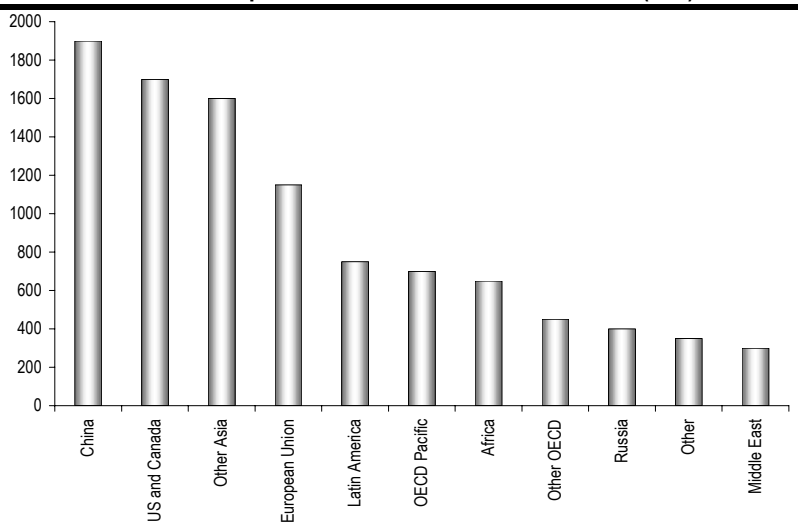
Figure 60. Required Investments in T&D over Time ($bn)



Source: IEA; Bear, Stearns International Limited estimates.

The figure above demonstrates that the key T&D markets of the future will be Asia (especially China), North America (especially the US), and Europe, representing about 64% of the total. We will discuss these markets in more detail in the following section.

Figure 61. Investment Amount Required in T&D Between 2001 and 2030 ($bn)



Source: IEA.

China

We are very positive on the market growth outlook for China and we believe that China's economic growth rates will need to be supported by continuously investing in Power Generation and Transmission and Distribution assets. The IEA estimates that China spent about 1.9% of its GDP on power assets in 1990, and 2.6% in 2000, and that it needs to increase this ratio to 2.7% for the rest of the decade. Given China's strong projected economic growth rates for the remainder of the decade (of about 7.5%), demand for T&D assets in China should grow by about 8% annually.

In our view, the Chinese T&D market is driven by the following factors:

- **Market growth.** China's power generation assets currently have a total capacity of about 360GW. It is estimated that the country needs about 430GW power capacity by 2005 and 600GW by 2010. Parallel to this, China needs to invest in T&D assets, as more Chinese regions need to be connected to the grid and heavy demand zones (the east and south-east of the country) require higher capacity T&D assets.

- **Large distances between supply and demand zones.** China plays a leading role globally with regard to transporting electricity over very long distances. Its Three Gorges dam has a hydroelectric capacity of 18.2GW and transports its generated power over a transmission line more than 800 km long to Shanghai and other eastern and south-eastern high-demand zones. Given the large geographical distance between China's energy supply centres (also relating to coal) and its demand centres, China will need more high-capacity long-haul transmission lines in the future.

- **Regulatory environment.** The Chinese government has decided to connect the whole country to one nationwide grid, which will require expansion of the grid to cover the whole country. At the moment, China has regional grids, which have very different quality standards.

- **Market liberalisation.** Over the next few years (exact time horizon unspecified), China wants to liberalise its power market, which will, in our view, have the same effect as in the western world. In this respect, we expect more power trading to occur and therefore more volatile load levels, hence the need for a high-capacity grid with more complex technical requirements (e.g. better metering capability).

United States

Annual US investment in the T&D market has declined over the past 25-30 years about 60%. In effect, the US power grid shows such significant deficits that its reliability has declined strongly. The blackout of August 2003, which cut the power off in the whole north-eastern part of North America, is a practical example of an insufficient electricity grid and hence the economic price of under-investment in T&D assets. The factors that have contributed to the downturn include:

- **A lack of an investment incentive structure.** The high regulation level with regard to electricity pricing meant that returns on investment (ROI) were

typically low on PTD projects. This slowed investments into this sector, which impacted network reliability. The FERC (Federal Energy Regulatory Commission, which is the energy regulator in the US) was unable to provide a clear mechanism for utilities and grid operators to increase their investments. The consequence of this was that transmission upgrades continued to deteriorate.

- **Timely permission process.** The permission process for network extensions was long and cumbersome. The states were responsible for providing permits for 'new site' developments, and often this was subject to a series of approvals before any decision was taken. The problem was further accentuated in cases where the transmission lines had to pass through several states, when the permission process had to be managed in each state separately.

- **Market liberalisation and energy trading.** At the same time, demand requirements continued to rise linearly on the back of rapid economic growth. This led to increased congestion and rising peak loads, thereby putting additional strain on the system. Energy trading, introduced in the US in the 1990s as a consequence of market liberalisation, further added to the malaise. It enabled utility companies to trade power across the country, resulting in higher load volatility (although traded electricity is often not physically moved from seller to buyer). The grids that were originally designed for interconnecting neighbouring utilities were now effectively transformed into 'power-highways', resulting in tremendous congestion and occasional overload.

We believe that the US Energy Bill, which includes about 2,000 pages of legal text, and could be passed within a few months, could serve as a very positive catalyst to US T&D investments. Key points in the Energy Bill that relate to the T&D market are:

- **Permission process acceleration.** The FERC will have the authority to grant permits for the development and modification of transmission networks, independently of the states involved. Also, all outstanding projects on state-level that are delayed by more than a year will automatically transfer to the FERC. We view both these proposals positively since they would lead to an accelerated permission process.

- **Significant monetary investment incentives.** Grid operators will be allowed to depreciate their T&D investments in an accelerated process over 15 years only, thereby realising substantial tax savings in the first 15 years. We view this factor as very important and very attractive for utilities and grid operators.

- **Monetary awards for grid reliability.** Within a year of the enactment of the bill, the FERC will establish an incentive-based pricing mechanism for grid operators. The pricing mechanism will reward grid operators for grid reliability. We believe this is another tangible incentive for additional investments in the US grid.

- **US Senate gets involved in the investment process.** The Secretary of Energy, Secretary of Agriculture and Chairman of the Environment Quality will have to periodically report to the Senate on the number of pending applications for PTD development. The people involved will have to report on significant T&D

projects to the senate on a regular basis. We view this policymaker buy-in as a sign of increased credibility of the plan to upgrade the grid in the US.

Given the insufficient investment level in T&D assets in the US in the past and the high investment requirements going forward, we believe that the US Energy Bill – once passed – should serve as a strong positive catalyst for significantly accelerated investment growth rates. Overall, we estimate that US T&D growth rates could accelerate to 8%-10% in the second half of the decade.

Europe

European grid quality is generally still sufficient in most countries. UCTE (Union for the Co-ordination of Transmission of Electricity) predicts that their current transmission network is still sufficient for the next four years. However, there are some countries with insufficient grid quality that need to upgrade their grid (e.g. the UK and Italy) in order to avoid far-reaching power failures, and additionally, the regulatory environment in Europe suggests that the continent needs to make substantial investments into T&D assets over the next five to ten years. We believe that the key drivers for T&D investments in Europe are:

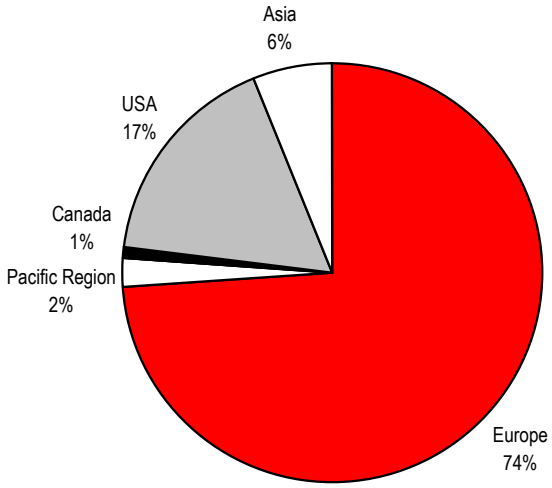
- **Higher levels of interconnection.** The EU has decided to raise the European cross-border interconnection level from about 7% to 20% of power capacity by 2010. This means that 20% of the average national power capacity can be exported to other European countries. Practically, this means that countries with high base load levels (e.g. France's strong nuclear capacity) could export their excess electricity to neighbouring countries, which in turn could switch off conventional power capacity and save fuel costs. A higher interconnection level not only means a generally more efficient use of fuel, but also a higher level of grid reliability. For example, if a larger region in a country suffers a blackout and if the country is not able to run up other power stations to compensate for this blackout, compensating electricity could come from other countries.

- **Market liberalisation.** As European power markets were largely liberalised during the 1990s (with some exceptions), the volume of traded power and cross-border power flow has increased strongly. As a result, power load volatility has increased. Effective power trading aims to produce electricity at the cheapest place and transport it to the demand centres. However, physical power transport is typically limited due to grid limitations, i.e. power transportation costs. Hence, high-volume power trading requires an efficient electricity grid. The more efficient an electricity grid, the more physical power can be transported over larger distances, leading to a better exploitation of power plants, fuel savings, and a more balanced ecological impact.

- **Political commitment to wind power.** Europe's strong commitment to wind power has increased load volatility in Europe's power grid. Europe's installed wind power capacity is currently about 27GW. Some southern European regions, e.g. Portugal and the south of France, had to slow down the building permission

process for wind farms, as their power grid was not capable of dealing with a volatile power load.

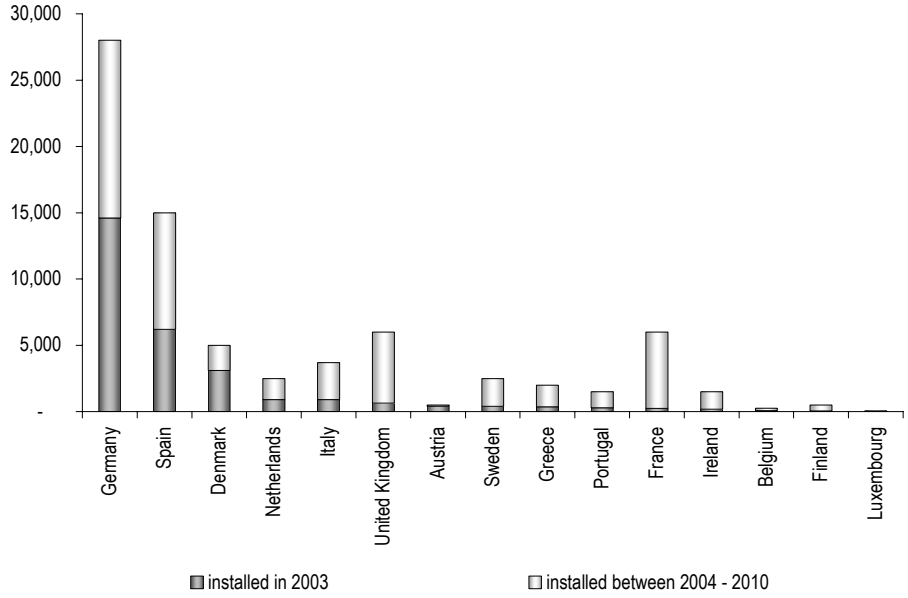
Figure 62. Distribution of Global Wind Power Installations (January 2004)



Source: Bear, Stearns International Limited estimates.

Given the mix of national targets and monetary incentives for wind power, we see the trend towards more wind power installations continuing. However, growth rates in Germany, the world's largest wind power market, will be temporarily negative, until the country installs large offshore wind power capacity, probably from 2006 onwards (also depending on the government at that time).

Figure 63. Europe: Installed Wind Power Capacity in 2003 and 2010E



Source: EWEA.

We believe that the commissioning of wind farms will be strongly incentivised by the introduction of emission trading in Europe in 2005. Although it is difficult at present to make reliable forecasts about market dynamics and prices of the tradable green certificate market, wind farms should be producers of tradable green certificates, which is comparable to a 'licence to print money'. We therefore believe that countries and regions with high average wind speeds and structurally weak economic conditions such as Scotland, the west and north-west of the UK, Ireland, western France, Portugal, Greece, southern Italy, and others will have a strong monetary incentive to commission more wind farms and hence improve their electricity grid.

- **EU extension.** The extension of the EU to Eastern Europe requires the new member states to upgrade their electricity grids and to interconnect them with the rest of Europe's grid. At the same time, high levels of foreign investments and hence market growth should continue in the new member states such that power grid upgrades and extensions should be necessary. Therefore, in our view, the T&D market in Eastern Europe will be driven by economic growth and hence electricity demand growth, the need for Europe-wide interconnection lines, and general replacements of obsolete assets.

- **Obsolete grid in some member states.** The grid quality in some European member states, such as the UK, Italy, Portugal, Greece and some European regions, particularly in the south, has become insufficient over time, as investments have lagged technical requirements. Given the higher technical requirements of more power trading, wind power-related power volatility and feed-in in structurally weak areas, and general electricity demand growth, Europe needs to accelerate its investments into the power grid. Last year's major blackouts in London and northern Italy have demonstrated the poor quality of the existing grid already under current technical requirements. Regions in other southern European countries have similar technical grid problems.

In conclusion, we are positive about the growth outlook for T&D in Europe, as investments to date have proved insufficient to guarantee reliable power grids. In addition, as Europe has decided to increase its cross-border interconnection level to 20% from 7% currently, additional investments in transmission lines are necessary. We view the decision to introduce a tradable green certificate system and the current incentive structures for wind power in Europe as a strong signal that load volatility will increase. Also, larger wind farms are typically close to structurally underdeveloped regions with generally poor grid qualities. Hence, an increase in wind power capacity – which we forecast – should lead to additional investments in the European power grid. Finally, as Europe's market liberalisation continues and increases the amount of traded energy, the European grid quality will have to improve.

BEAR
STEARNS

Company Profiles

ABB (ABBZn.VX, SFr7.00, $5.90, Outperform, PT: SFr9.20, $7.93)

Stock Rating
Outperform

Sector Rating
Market Overweight

Price Target
SFr9.20

52-Week Range
SFr5.90-SFr8.20

EPS
2003: SFr0.13/$0.11
2004E: SFr0.31/$0.26
2005E: SFr0.51/$0.42

P/E
2003: 57.0x
2004E: 23.2x
2005E: 14.2x

Common Shares (m)
2,028

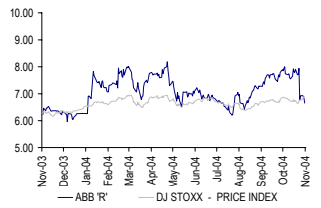
Equity Market Capitalisation (m)
SFr13,992

True Book Value per Share
SFr1.62

Est. 3-Yr(2003-06E) CGR EPS Growth Rate
50.5%

EPS is not materially affected by factoring in options expense.

Rel to DJ STOXX



Source: Thomson Datastream

We like the stock because ABB is strongly geared towards the power T&D market, where we expect structural growth to emerge in the second half of this decade. We expected ABB to be the key beneficiary of the expected increase in power transmission and distribution (T&D) equipment spending, for which the US Energy Bill represents the clearest catalyst.

Key points

- ABB and Siemens are the top picks in our coverage European technology hardware universe. We believe that ABB has emerged from its dramatic downturn as a stronger, better-positioned and certainly more focused company. As a result of its restructuring, ABB will no longer be a conglomerate but a focused company, active in only two business sectors: automation technology and power transmission & distribution technology.

- We like the stock because ABB is strongly geared towards the power T&D market, where we expect structural growth to emerge in the second half of this decade on the back of a number of identifiable catalysts. We expect ABB to be the key beneficiary of the expected increase in power transmission and distribution (T&D) equipment spending, for which the US Energy Bill provides the clearest catalyst.

Investment positives

- ABB is midway through a strategic refocusing programme which intends to rationalise the corporate structure down to just two business divisions, both in which the group holds a leadership position.

- ABB is strongly geared (about 40%) to the Power Transmission market, in which it holds a No.1 market position. We expect end-market growth rates to double in the second half of the decade to about 8%-10% from currently about 4%.

- ABB holds some major earnings growth potential (about 40% CAGR over a period of five years – 2003-08).

Investment risks

- Technical risks; a slowdown in capital expenditure in automation and power equipment; legal issues surrounding the asbestos case.

Valuation

- We value ABB on 18x 2005E earnings, which suggests a fair value of €9.20. The stock is currently trading on 14.2x 2005E earnings.

Investment summary

We like ABB for its high gearing to the power T&D market, where we expect structural growth in the second half of this decade on the back of a number of identifiable catalysts. We believe that ABB should be the key beneficiary of the expected increase in power transmission and distribution (T&D) equipment spending, for which the US Energy Bill represents the clearest catalyst.

In our view, growth rates for the T&D market could remain moderate for up to two years. We expect to see this transition to structural growth in the medium term (one to three years) for the following reasons:

- **Increase in electricity load.** As power consumption increases globally, T&D assets have to cope with higher electricity load levels. This factor is especially strong in large, fast-developing countries such as China and elsewhere in Asia.

- **Replacement of obsolete equipment.** Investment in T&D assets has declined in the western world – quite dramatically in the US – such that the current quality of these assets is insufficient to deal with the current electricity load. Power blackouts, such as those last year in the US, the UK and Italy, are the result of insufficient T&D assets.

- **Market liberalisation.** The liberalisation of power markets in the West has dramatically increased power trading, which has in effect resulted in more cross-country and cross-border power flow.

- **Increase of wind power.** Given that most western countries now promote the commissioning of wind power, power load volatility has increased significantly. At the same time, larger wind farms are typically located in windy areas along the coastlines, which are often low-demand centres with traditionally low power grid requirements. The trend towards more wind farms, particularly in offshore locations, will necessitate heavy investments into the power grid.

- **US Energy Bill.** In the US, the market with the largest potential need for T&D equipment (although Asia is currently the largest market overall), we believe that the proposed Energy Bill will provide positive catalysts for new investments. We expect the bill to be passed in early 2005. As proposed, the bill envisages the following key factors:

  - **Permission process acceleration.** The US energy regulator FERC will have the authority to grant permits for the development and modification of transmission networks, independently of the states involved. Also, all outstanding projects at state-level that are delayed by more than one year will automatically transfer to the FERC.

  - **Significant monetary investment incentives.** Grid operators will be allowed to depreciate their T&D investments in an accelerated process over 15 years only (as opposed to the 40-year typical lifetime of these investments). Also,

within one year of the enactment of the bill, a new pricing mechanism will reward grid operators for grid reliability.

Given the insufficient investment level in T&D assets in the US in the past and the high investment requirements going forward, we believe that the US Energy Bill – once passed – should serve as a strong positive catalyst for significantly accelerated investment growth rates. Overall, we estimate that US growth rates could accelerate to 8%-10%.

In view of these strong expected growth rates, we see potential for margin expansion in the sector overall. Given that it holds a No.1 position in this market and that its Power Technologies business division contributes about 60% of the group's EBIT, we believe ABB should be the strongest beneficiary of the growth outlook in the T&D market.

While we expect growth rates in ABB's other business division, Automation Technologies, to remain moderate for a few years (currently about 4.0%, expected to accelerate to about 5.4% after 2004), we believe that ABB should have an opportunity to leverage its No.1 position to achieve some margin expansion. As the economic cycle clearly points to an uptrend in capital goods expenditure, margin improvement should emerge. The company guides for an EBIT margin of 10.7% by 2005, up from 7.7% in 2003. While demand growth on the back of economic recovery should explain some of the margin expansion potential, the remainder should be credited to ABB's leaner organisation, through better factory utilisation and providing a better product, including hardware, software and related services.

In summary, we believe that ABB has emerged from its dramatic downturn as a stronger, better-positioned and certainly more focused company. We believe that management has earned a high level of credibility with an impressive restructuring programme. As a result of its restructuring, ABB will no longer be a conglomerate but a focused company, active in only two business sectors: automation technology and power transmission & distribution technology. We view the transmission & distribution market as a highly attractive future structural growth market, in which ABB should benefit over-proportionally.

Company description

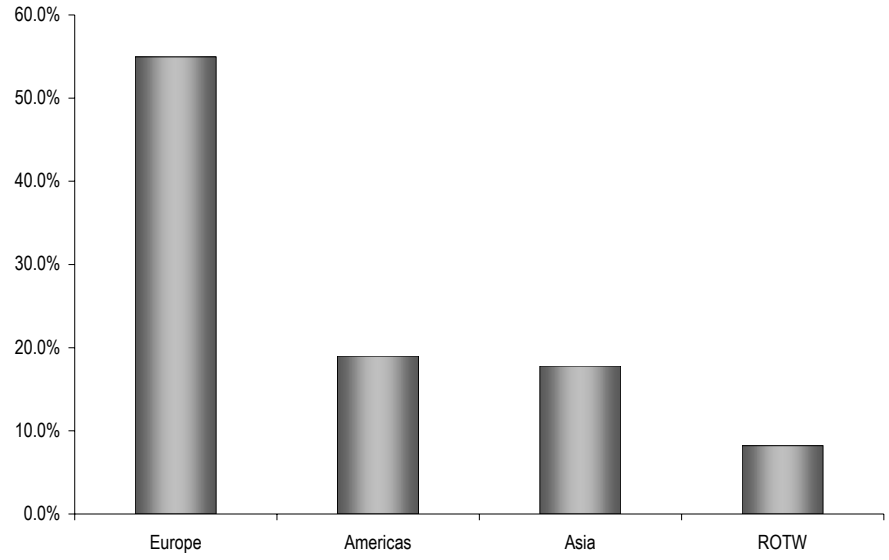
ABB is a Swiss-Swedish company active in the power transmission and process automation market. It is the world's leading manufacturer of power transmission equipment and one of the largest engineering firms in the field of automation technology. Although headquartered in Switzerland, ABB reports in US dollars. Of total estimated revenues in 2004 of $20.7 billion, about $9.5 billion are generated in the area of power transmission, while $11.5 billion are generated in the field of automation technology. The rest is derived from non-core businesses such as a downstream oil, gas and petrochemicals business as well as various smaller activities, including a building technologies business in Germany. ABB intends to stay only in the Power Technologies (PT) and the Automation Technologies (AT) business.

ABB's recent history is very volatile, as the company got very close to financial collapse in 2002/03, following massive lawsuits in the US relating to its former asbestos activities and losses in its non-core businesses. As a result, the company restructured its business organisation and raised capital. ABB's operational performance has improved in the last few quarters following heavy restructuring and cost-cutting. Although a legal settlement has not yet been reached in the asbestos case (a district court ruling is expected within a few weeks or months), we do not expect the outcome to differ materially from the $1.2 billion asbestos settlement plan, which ABB has set up and fully provisioned for. However, there is a possibility that parts of this asbestos settlement plan will be revisited by other US courts, and so the final ruling could be delayed by another few quarters.

Geographical breakdown

Although ABB reports in dollars, it is essentially a European company with about 55% of sales in Europe. While its PT business division sells only about 34% in Europe (33% in the Americas and 20% in Asia), the AT business division sells 63% in Europe (19% in the Americas and 14% in Asia).

Figure 64. ABB: Sales Breakdown by Major Geography, 2003

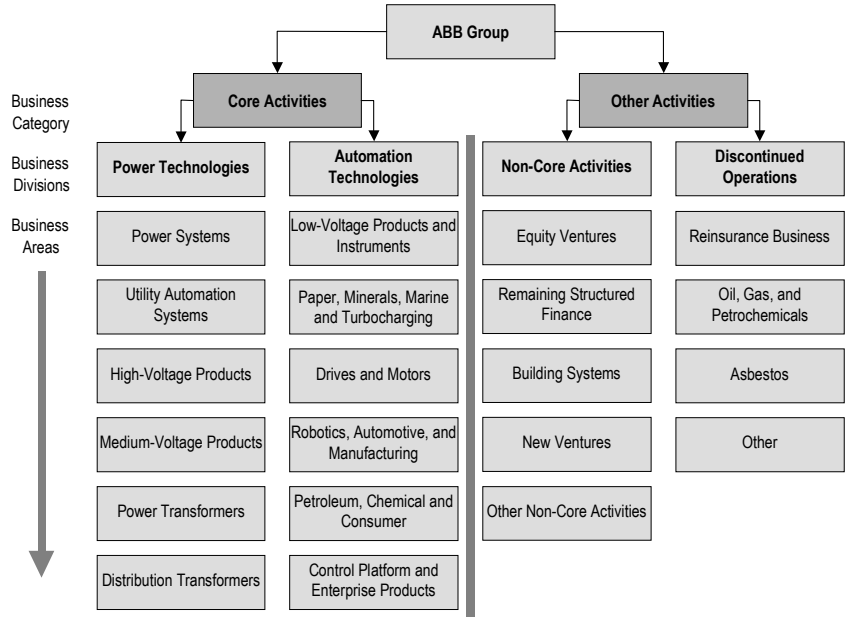


Source: Company data.

Divisional breakdown (description of key products)

Following its restructuring programme, ABB now focuses on only two business divisions, which will represent the company's core activities: Power Technologies and Automation Technologies.

Figure 65. ABB Group: Organisational Chart

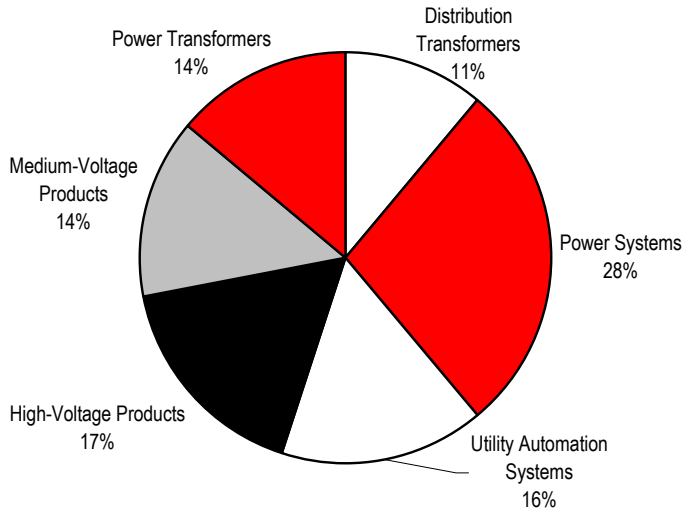


Source: Company data; Bear, Stearns International Limited.

Power Technologies

The Power Technologies division offers products and services for electric, gas and water utilities as well as industrial and commercial customers. It produces a broad range of products, systems and services for power transmission, distribution and power plant automation. The division had about 145 manufacturing plants and approximately 41,200 employees in 2003. It has a No.1 position in its market. Its key competitors are Areva, Schneider and Siemens.

Figure 66. Power Technology Business Breakdown



Source: Company data.

POWER SYSTEMS

Figure 67. Power Systems Overview

Key Activities/Products	Customers	Competition	Market Share
High Voltage Direct Current Systems (HVDC) Products	Electric Utilities	ABB	14%
Flexible AC Transmission Systems (FACTS)	Electric Grid Operators	Siemens	12%
Power Semiconductors		Areva	8%
Substations		VA Tech	5%
Overhead Transmission lines		Japanese	4%
Related Services			

Source: Company data.

The Power Systems business area is involved in the turnkey contracting business to install and upgrade transmission and distribution systems that use components manufactured by ABB and third parties. ABB is the leader in high-voltage direct current (HVDC) technology. HVDC transmission is a very efficient technology for transporting electricity over long distances. It reduces power losses, increases system stability and provides a more controllable flow than high-voltage alternating current. An HVDC transmission system typically includes converters, which change alternating current to direct current and then back to alternating current when it reaches the terminal point and transmission lines, either above or below ground.

Power Systems also builds flexible AC transmission systems (FACTS) to enhance power grid stability, improve power quality and thus increase transmission capability. Power Systems also produces power semiconductors and substations to interconnect electricity grids operating on different voltage levels, to sectionalise portions of the grid and to protect the electrical system against damage from outside sources such as lightning and overload. By sectionalising the grid, power can be rerouted from portions of the transmission system that are experiencing problems to sections that are functioning properly, thereby enhancing the overall reliability of the power supply.

This business area delivers complete air and gas insulated substations for power transmission. Power Systems also delivers the engineering, procurement and construction (EPC) of overhead transmission lines, one of the main subsystems in a transmission network. ABB manufactures steel transmission towers and composite insulators in-house. Power Systems also provides studies on the design of new transmission lines and system optimisation that take into account technical, economic and environmental considerations. This business area offers service contracts and support for the management of existing power transmission and distribution assets, including both ABB products and those manufactured by third parties. In addition, it offers asset management services including technical consulting (system diagnostics, network analysis, planning and optimisation), commercial consulting (cost reduction programmes, investment strategies, re-engineering of business processes) and execution (maintenance strategies, logistics).

UTILITY AUTOMATION SYSTEMS

Figure 68. Utility Automation Systems Overview

Key Activities/Products	Customers	Competition	Market Share
System integration of instrumentation, control and electrical ("ICE") equipment	Electric Utilities	ABB	18%
Integration of products manufactured by ABB's PT and AT business divisions	Water Utilities	Siemens	13%
Related Services	Wastewater Companies	Areva	7%
		Invensys	5%
		Emerson	3%

Source: Company data.

The Utility Automation Systems business area integrates products manufactured by both the Power Technologies and the Automation Technologies divisions, as well as those of third parties, to provide utility customers with automation systems tailored for their generating plants or transmission and distribution networks. In power plant automation, the Utility Automation Systems business area offers complete system integration of instrumentation, control and electrical (ICE) equipment for the power generation market. The business area also offers services relating to combustion management, plant performance optimisation, condition monitoring and asset management. For water plants, the business area offers system integration for all ICE applications in water systems, including automation services for water treatment plants, distribution systems, wastewater collection systems and wastewater treatment. The business area offers turnkey pumping stations and control systems for water leakage management, lift-station monitoring and optimisation of plant performance.

HIGH-VOLTAGE PRODUCTS

Figure 69. High Voltage Products Overview

Key Activities/Products	Customers	Competition	Market Share
Air- and gas-insulated switchgear	Electric Utilities	ABB	18%
Generator circuit breakers	Electric Grid Operators	Siemens	7%
Cables		Areva	7%
Capacitors		VA Tech	3%
High-voltage and generator circuit breakers		Hitachi	2%
Disconnectors			
Grounding switches			
Instrument transformers			
Surge arrestors			
Power lines and transmission towers			

Source: Company data.

The High-Voltage Products business area provides power utilities with electricity transmission equipment that allows them to operate more efficiently and with lower environmental impact. The business area manufactures the major components of power transmission systems (50 to 800 kilovolts), including air- and gas-insulated switchgear and generator circuit breakers, cables, capacitors, high-voltage and generator circuit breakers, disconnectors, grounding switches, instrument transformers, surge arrestors, power lines and transmission towers. Its products and components also include polymer insulators for lines and switchgear, circuit-breaker drives, cable accessories and fittings for overhead lines. Many of the business area's products are integrated into the offering of the Power Systems business area or are sold through external channel partners such as EPC firms. Typical applications include high-voltage substations and large-scale power grid connections over long distances.

MEDIUM-VOLTAGE PRODUCTS

Figure 70. Medium-Voltage Products Overview

Key Activities/Products	Customers	Competition	Market Share
Switching Equipment	Electric Utilities	ABB	16%
Indoor and outdoor switch disconnectors	Distributors	Schneider	10%
Breakers	OEM's	Siemens	9%
Reclosers		Areva	7%
Fuses		Cutler-Hammer	4%
Contactors			
Instrument transformers			
Sensors			
Air- and gas-insulated switchgear			
Motor control centres			
Ring main units			

Source: Company data.

The Medium-Voltage Products business area develops products and systems that reduce outage times and improve power quality and control. It supplies switching equipment both directly to end-users and through distributors and original equipment manufacturers (OEMs). The business area produces medium-voltage equipment (1 to 50 kilovolts), including indoor and outdoor switch disconnectors, breakers, reclosers, fuses, contactors, instrument transformers and sensors as well as air- and gas-insulated switchgear, motor control centres, and ring main units for primary and secondary distribution. It also produces indoor and outdoor modular systems, compact substations and power distribution centres. As with the High-Voltage Products business area, many of its components form part of the offering of the Power Systems business area. In addition, a significant proportion of its products is sold through external channel partners such as OEMs.

POWER TRANSFORMERS

Figure 71. Power Transformers Overview

Key Activities/Products	Customers	Competition	Market Share
Generator transformers	Electric Utilities	ABB	23%
Industrial transformers	Transportation Equipment	Areva	12%
Traction transformers	Industrial Customers	Siemens	11%
		Waukesha	11%
		VA Tech	10%

Source: Company data.

The Power Transformers business area designs and manufactures power transformers (72.5 to 800 kilovolts) for utility, transportation and industrial customers, as well as transformer components. It also produces insulation material. Transformers are typically used for power transmission and distribution systems, such as in large substations. Generator transformers are used in power generation when it is necessary to increase power voltage from a power plant for long-distance transmission. Industrial transformers are mainly delivered to the steel and aluminium industry, which need their own high-voltage transformers and substations on-site to service their heavy electricity requirements. Finally, this unit produces traction transformers used in electric locomotives. Customers in the components business come from both the transformer and electrical motor industry. The business area also provides a wide range of transformer service and retrofit solutions for utilities and industry customers.

DISTRIBUTION TRANSFORMERS

Figure 72. Distribution Transformers Overview

Key Activities/Products	Customers	Competition	Market Share
Oil-type distribution transformers	Industrial Customers	ABB	14%
Dry-type distribution transformers	Construction Companies	Howard	7%
Special application distribution transformers	Electric Grid Operators	Schneider	7%
		Areva	6%
		Cooper PS	6%

Source: Company data.

The Distribution Transformers business area manufactures distribution transformers for use in industrial facilities, commercial buildings and utility distribution networks. It manufactures and sells a full range of power distribution transformers (up to 72.5 kilovolts), including oil-type, dry-type and special application distribution transformers. Although oil-type transformers are more commonly used, demand for dry-type transformers is growing, because they are less flammable and have applications in high-density office buildings, windmills, offshore drilling platforms, naval vessels and high-volume industrial plants.

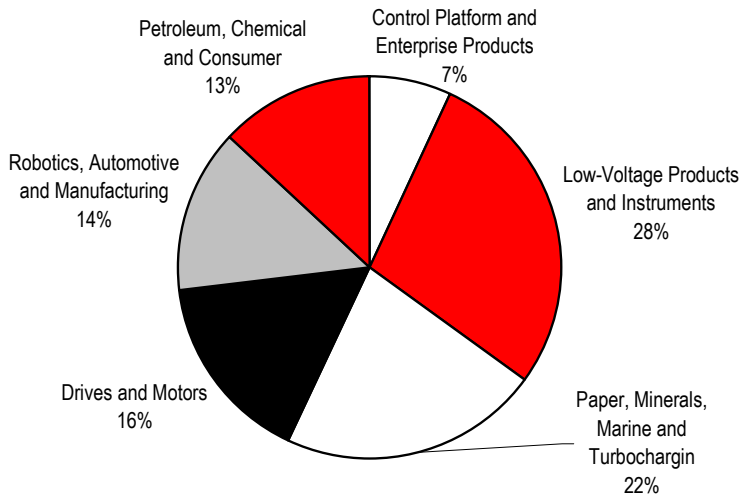
Automation Technologies

The Automation Technologies division designs and produces systems, products, software and services for the automation and optimisation of industrial and commercial processes. Key technologies include measurement and control, instrumentation, process analysis, drives and motors, power electronics, robots and low-voltage products. This division had approximately 150 manufacturing, software and application centres and 56,600 employees in 2003.

Stand-alone products, often sold in cooperation with channel partners such as distributors, wholesalers and OEMs, account for approximately 60% of the division's sales volumes. Systems sales account for about 20% of total division revenues, and the service business accounts for the remaining 20% of division revenues.

The Automation Technologies division manufactures products and systems relating to process automation, factory automation, and building automation. It provides its customers with the full range of ABB's products on a stand-alone basis, or as part of systems involving conceptual design, detailed engineering, project management, installation and commissioning, as well as after-sales services and system optimisation during the full life span of the system.

Figure 73. Automation Technologies Business Breakdown



Source: Company data.

LOW-VOLTAGE PRODUCTS AND INSTRUMENTS

Figure 74. Low Voltage Products and Instruments Overview

Key Activities/Products	Customers	Competition	Market Share
Circuit breakers	Industrial Customers	Schneider	14%
Controls	Construction Companies	Legrand	12%
Switches		ABB	9%
Fuse gear		Siemens	9%
Connectors		GE	6%
Terminal blocks			
Protection and monitoring devices			

Source: Company data.

The Low-Voltage Products and Instruments business area manufactures circuit breakers, controls, switches and fuse gear that are used in industrial electrical applications to protect, switch and control industrial equipment. The unit also produces connectors, terminal blocks and protection and monitoring devices that are used primarily in industrial applications. This business area also makes line protection products, wiring accessories and enclosures and cable systems that are primarily used for control and protection in building installations. In addition, it produces European Installation Bus/Powernet systems, which integrate and automate a building's electrical installations, ventilation, security and data communication networks. The process instrumentation products manufactured by this business area interact with the division's Open Control System products and include products for the measurement of process variables such as pressure, temperature, volume and flow. The various analytical measurement devices produced by this business area form an important part of instrumentation and control systems. These devices measure chemical characteristics while process instrumentation products measure physical characteristics. The analytical product offerings include gas analysers, chromatographs, spectrometers and paper quality control systems, which perform either sample-based or continuous measurement of properties such as chemical or physical composition (for example, the water and fibre content of paper or the composition of gas), energy content and environmental emissions. These products are sold separately or through the end-user business areas as part of complete systems.

PAPER, MINERALS, MARINE AND TURBOCHARGING

Figure 75. Paper, Minerals, Marine and Turbocharging Overview

Key Activities/Products	Customers	Competition	Market Share
Quality control systems for pulp and paper mills	Industrial Customers	ABB	38%
Control systems	Pulp and Paper Companies	Honeywell	26%
Drive systems	Shipbuilding Companies	Metso	13%
On-line sensors	Oil Exploration Companies	Invensys	7%
Actuators and field instruments	Upstream Oil Industry	Yokogawa	5%
Electric equipment		Siemens	3%
Drives		Emerson	2%
Motors and equipment for automation and supervisory control		Alstom	1%
Power and automation technologies for ships			

Source: Company data.

The Paper, Minerals, Marine and Turbocharging business area offers quality control systems for pulp and paper mills, control systems, drive systems, on-line sensors, actuators and field instruments. The metals and minerals business area offers specialised products and services, as well as total production systems. The unit designs, plans, engineers, supplies, erects and commissions electric equipment, drives, motors and equipment for automation and supervisory control within a variety of areas including mining, mineral handling, aluminium smelting, hot and cold steel applications and cement production. The marine field business area provides global shipbuilders with power and automation technologies for luxury cruise liners, ferries, tankers, offshore oilrigs and special purpose vessels. The unit designs, engineers, builds, supplies and commissions electrical systems and software for marine power generation, power distribution and diesel electric propulsion, as well as turbochargers to improve efficiency for diesel and gasoline engines. The main markets for these products and services are manufacturers of vessels within the oil and gas upstream industries (such as exploration/production and shuttle transport) and the cruise and ferry industries.

DRIVES AND MOTORS

Figure 76. Drives and Motors Overview

Key Activities/Products	Customers	Competition	Market Share
Low- and medium-voltage AC drive products	Industrial Customers	ABB	10%
Power electronics products	Construction Companies	Siemens	7%
Static excitation and synchronising systems	Engineering Companies	TECO	5%
High power rectifiers	Shipbuilding Companies	Emerson	4%
Frequency converters	Electric Grid Operators	GE	4%
Large range of electrical motors and generators	Metal-Industry Companies		
Synchronous motors			

Source: Company data.

The Drives and Motors business area focuses on the ongoing development of low-voltage and medium-voltage AC drive products and systems for industrial, commercial and residential applications. Drives provide motion and torque while adding control and efficiency to equipment such as fans, pumps, compressors, conveyors, kilns, centrifuges, mixers, hoists, cranes, extruders, printing machinery and textile machines. The business division's drives are used in the building automation, marine, power, transportation and manufacturing industries, among others. The Drives and Motors business area also produces a range of power electronics products. It produces static excitation and synchronising systems that provide stability for power stations, as well as high power rectifiers that convert AC power to DC power for very high-amperage applications such as furnaces in zinc plants and aluminium and magnesium smelters. The business area also manufactures frequency converters that use state-of-the-art semiconductor technology to convert

electrical power into the type and frequency required by individual customers. In addition, this business area supplies a large range of electrical motors and generators, including high-efficiency motors that conform to leading environmental and efficiency standards. This business area manufactures synchronous motors for highly demanding applications and a full range of low and high-voltage induction motors.

ROBOTICS, AUTOMOTIVE AND MANUFACTURING

Figure 77. Robotics, Automotive and Manufacturing Overview

Key Activities/Products	Customers	Competition	Market Share
Industrial robots and related equipment	Automotive Industry	Fanuc	24%
Production automation systems	Industrial Customers	ABB	18%
Related Software	Metal-Industry Companies	Kuka	16%
Related Services	Glass-Industry Companies	Yaskawa	16%
	Telecom Equipment Industry	Kawasaki	7%

Source: Company data.

The Robotics, Automotive and Manufacturing business area develops and manufactures industrial robots and related equipment for the automotive industry and other manufacturing industries. The products and systems are used in such areas as press shop, body shop, paint shop, power train assembly, trim and final assembly. In addition to serving the automotive industry, this business area provides complete production automation systems for industry segments ranging from metal and glass fabrication to telecommunications. Manufacturers use the business area's flexible automation and advanced robotics products for applications involving multiple tasks such as welding, material handling, painting, picking, packing and palletising. This business area incorporates software developed by its engineers into its automation products and the power products manufactured by the Power Technologies division to maximise energy efficiency and provide a secure power supply for manufacturing lines. Services include design and project management, engineering, installation, training and life-cycle care of the complete production line.

PETROLEUM, CHEMICAL AND CONSUMER

Figure 78. Petroleum, Chemical and Consumer Overview

Key Activities/Products	Customers	Competition	Market Share
Control systems	Chemical Industry	ABB	37%
Instruments and analytic devices	Food and Beverage Industry	Honeywell	16%
Safety systems	Pharmaceutical Industry	Emerson	14%
Drives and motors	Oil and Gas Industry	Invensys	13%
Onshore, offshore and sub sea production technology	Agricultural Industry	Yokogawa	8%
Gas gathering and processing		Siemens	5%
Refining, transportation and distribution applications		Hitachi	1%
Related software and services		Alstom	1%

Source: Company data.

The Petroleum, Chemical and Consumer business area supplies application-specific equipment and systems to the fine chemical, food and beverage, pharmaceutical, oil and gas, personal care, and agriculture milling industries. Its product portfolio includes control systems, instruments and analytic devices, safety systems, drives and motors. In the petroleum sector, it provides onshore, offshore and sub-sea production technology, gas gathering and processing, refining, transportation and distribution applications. In the pharmaceuticals and fine chemicals areas, the unit provides software and solutions for applications including manufacturing, packaging, quality

control and compliance with regulatory agencies. Like other end-user business areas, it also offers full-service contracts, in which it takes over in-house maintenance activities for customers and applies strategies to reduce overall maintenance costs and help optimise these investments.

CONTROL PLATFORM AND ENTERPRISE PRODUCTS

Figure 79. Control Platform and Enterprise Products Overview

Key Activities/Products	Customers	Competition	Market Share
Control products and systems within the Industrial IT architecture	Pharmaceutical Industry	ABB	22%
Batch control systems	Industrial Customers	Honeywell	18%
Supervisory control and data acquisition systems		Invensys	15%
Programmable logic controls		Emerson	11%
Remote terminal units		Siemens	10%

Source: Company data.

The Control Platform and Enterprise Products business area develops, markets and sells control products and systems within the Industrial IT architecture. It builds batch control systems, supervisory control and data acquisition systems, and, to a lesser but increasing extent, programmable logic controls and remote terminal units. Control systems are the hubs that link instrumentation, devices and systems for control and supervision of an industrial process. They enable customers to integrate their production systems with their enterprise, resource and planning systems, thereby providing a link to their ordering, billing and shipping processes. This linkage, combined with the connection of ABB's Industrial IT Control Systems to field instrumentation and automation power products, allows customers to manage their entire manufacturing and business process based on instantaneous access to useful information. Additionally, this coordination allows customers to employ information received from instrumentation and measurement products to increase production efficiency, optimise their assets and reduce environmental waste. These features of Industrial IT Control Systems enable customers to react quickly to changing circumstances based on accurate information while decreasing the possibility of errors, human or otherwise.

This business area also offers batch control, supervisory control and data acquisition systems. Batch control systems control the production of a variety of products in shorter runs, such as certain pharmaceuticals. Supervisory control and data acquisition systems are used to collect and manage data over wide areas or long distances, such as those involved in operating electric power networks. This business area also provides a comprehensive range of force measurement products designed to improve control, productivity and quality in a wide variety of processes. These products measure flatness, roll force, strip and web tension, strip width, position and torque. These technologies are sold to the metal fabrication, paper and other industries.

Figure 80. ABB: Income Statement ($m)

	Q1-2004A	Q2-2004A	Q3-2004A	Q4-2004E	Q1-2005E	Q2-2005E	Q3-2005E	Q4-2005E	2002A	2003A	2004E	2005E
Revenues	**4,356**	**4,913**	**4,796**	**5,466**	**4,730**	**5,078**	**4,922**	**5,650**	**18,244**	**19,435**	**19,531**	**20,380**
Top-line Growth (Y-o-Y)	*-3.1%*	*-2.9%*	*0.0%*	*7.6%*	*8.6%*	*3.4%*	*2.6%*	*3.4%*	*-23.1%*	*6.5%*	*0.5%*	*4.3%*
Cost of Sales	(3,205)	(3,680)	(3,625)	(4,099)	(3,507)	(3,755)	(3,638)	(4,140)	(13,731)	(14,560)	(14,609)	(15,040)
Gross Profit	1,151	1,233	1,171	1,367	1,224	1,323	1,284	1,510	4,513	4,875	4,922	5,340
Gross Margin	*26.4%*	*25.1%*	*24.4%*	*25.0%*	*25.9%*	*26.0%*	*26.1%*	*26.7%*	*24.7%*	*25.1%*	*25.2%*	*26.2%*
Selling, general & admin expenses	(904)	(932)	(895)	(967)	(836)	(897)	(889)	(1,022)	(4,046)	(3,891)	(3,698)	(3,644)
Amortization expense	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(10)	(41)	(40)	(40)	(40)
Other income (expense), net	(4)	(3)	(11)	(11)	(11)	(11)	(11)	(11)	(91)	(218)	(29)	(44)
Earnings before interest and taxes	**233**	**288**	**255**	**378**	**367**	**404**	**374**	**467**	**335**	**726**	**1,154**	**1,612**
EBIT Growth (Y-o-Y)	*153.3%*	*68.4%*	*-7.6%*	*102.4%*	*57.6%*	*40.4%*	*46.6%*	*23.4%*	*20.1%*	*116.7%*	*59.0%*	*39.7%*
EBIT Margin	*5.3%*	*5.9%*	*5.3%*	*6.9%*	*7.8%*	*8.0%*	*7.6%*	*8.3%*	*1.8%*	*3.7%*	*5.9%*	*7.9%*
EBITDA	**381**	**436**	**397**	**523**	**515**	**555**	**528**	**624**	**898**	**1,310**	**1,737**	**2,221**
EBITDA Margin	*8.7%*	*8.9%*	*8.3%*	*9.6%*	*10.9%*	*10.9%*	*10.7%*	*11.0%*	*4.9%*	*6.7%*	*8.9%*	*10.9%*
Interest and dividend income	31	45	43	42	40	40	40	40	149	145	161	160
Interest and other finance expense	(107)	(90)	(68)	(68)	(71)	(66)	(57)	(51)	(332)	(572)	(333)	(245)
Income from continuing operations before taxes and minority interest	157	243	230	352	336	378	357	456	152	299	982	1,527
Provision for taxes	(62)	(90)	(84)	(130)	(124)	(140)	(132)	(169)	(41)	(89)	(366)	(565)
Minority Interest	(15)	(26)	(24)	(25)	(26)	(26)	(26)	(26)	(73)	(81)	(90)	(104)
Income (loss) from continuing operations	80	127	122	197	186	212	199	261	38	129	526	858
Loss from discontinued operations, net of tax	(76)	(41)	(24)	(33)	(13)	(13)	(13)	(13)	(896)	(719)	(135)	(48)
Reinsurance business	(30)	(7)	(1)	(1)	(1)	(1)	(1)	(1)	-	-	-	-
Oil, Gas and Petrochemicals	(17)	(23)	(22)	(22)	(22)	(22)	(22)	(22)	(139)	(495)	(84)	(88)
Asbestos	(27)	9	(25)	(25)	-	-	-	-	(420)	(146)	(68)	-
Other	(2)	(20)	24	15	10	10	10	10	(337)	(78)	17	40
Net Income (loss)	**4**	**86**	**98**	**164**	**173**	**199**	**186**	**248**	**(858)**	**(590)**	**391**	**810**
Effect of Dilution: Convertible Bonds, net of Tax	-	-	-	-	-	-	-	-	(128)	-	-	-
Adjusted Net Income (loss)	4	86	98	164	173	199	186	248	(986)	(590)	391	810
Number of shares (basic)	2,028	2,028	2,028	2,028	2,028	2,028	2,028	2,028	1,113	1,220	2,028	2,028
Number of shares (diluted)	2,028	2,028	2,028	2,028	2,028	2,028	2,028	2,028	1,145	1,220	2,028	2,028
Basic earnings per share												
Income (loss) from continuing operations	$0.04	$0.06	$0.06	$0.10	$0.09	$0.10	$0.10	$0.13	$0.03	$0.11	$0.26	$0.42
Loss from discontinued operations, net	($0.04)	($0.02)	($0.01)	($0.02)	($0.01)	($0.01)	($0.01)	($0.01)	($0.78)	($0.59)	($0.07)	($0.02)
Net Income (Loss)	$0.00	$0.04	$0.05	$0.08	$0.09	$0.10	$0.09	$0.12	($0.77)	($0.48)	$0.19	$0.40
Income Growth (Y-o-Y)	*-105%*	*-192%*	*-122%*	*-129%*	*4217%*	*132%*	*90%*	*51%*	*0%*	*-37%*	*-140%*	*107%*
Diluted earnings per share												
Income (loss) from continuing operations	$0.04	$0.06	$0.06	$0.10	$0.09	$0.10	$0.10	$0.13	$0.03	$0.11	$0.26	$0.42
Loss from discontinued operations, net	($0.04)	($0.02)	($0.01)	($0.02)	($0.01)	($0.01)	($0.01)	($0.01)	($0.78)	($0.59)	($0.07)	($0.02)
Net Income (loss)	$0.00	$0.04	$0.05	$0.08	$0.09	$0.10	$0.09	$0.12	($0.86)	($0.48)	$0.19	$0.40
Operating Earnings Per Share (Continuing Operations)	$0.04	$0.06	$0.06	$0.10	$0.09	$0.10	$0.10	$0.13	$0.03	$0.11	$0.26	$0.42
Earnings in CHF	**SFr0.05**	**SFr0.08**	**SFr0.07**	**SFr0.12**	**SFr0.11**	**SFr0.13**	**SFr0.12**	**SFr0.16**	**SFr0.04**	**SFr0.13**	**SFr0.31**	**SFr0.51**

Source: Company data; Bear, Stearns International Limited estimates.

Figure 81. ABB: Divisional Breakdown ($m)

	Q1-2004A	Q2-2004A	Q3-2004A	Q4-2004E	Q1-2005E	Q2-2005E	Q3-2005E	Q4-2005E	2002A	2003A	2004E	2005E
Revenues												
Power Technologies	1,852	2,282	2,142	2,498	2,118	2,396	2,249	2,623	7,099	7,780	8,774	9,386
Automation Technologies	2,507	2,700	2,684	3,049	2,755	2,835	2,818	3,201	8,482	9,909	10,940	11,610
Non-Core Activities	184	127	145	84	38	26	30	1	4,105	3,109	540	94
Corporate	(187)	(196)	(175)	(165)	(181)	(179)	(175)	(175)	(1,442)	(1,363)	(723)	(710)
TOTAL	**4,356**	**4,913**	**4,796**	**5,466**	**4,730**	**5,078**	**4,922**	**5,650**	**18,244**	**19,435**	**19,531**	**20,380**
Revenue Growth Rates (YoY)												
Power Technologies	3.8%	17.7%	14.4%	14.4%	14.4%	5.0%	5.0%	5.0%		9.6%	12.8%	7.0%
Automation Technologies	12.4%	9.6%	9.9%	9.9%	9.9%	5.0%	5.0%	5.0%		16.8%	10.4%	6.1%
Non-Core Activities	-80.5%	-87.9%	-79.5%	-79.5%	-79.5%	-79.5%	-79.5%	-99.0%		-24.3%	-82.6%	-82.5%
Corporate	-59.4%	-49.9%	-21.9%	-21.9%	0.0%	0.0%	0.0%	0.0%		-5.5%	-47.0%	-1.8%
TOTAL	**-3.1%**	**-2.9%**	**0.0%**	**7.6%**	**8.6%**	**3.4%**	**2.6%**	**3.4%**		**6.5%**	**0.5%**	**4.3%**
EBIT												
Power Technologies	139	168	110	167	180	208	180	231	428	571	584	799
Automation Technologies	213	260	266	320	303	312	310	352	518	766	1,059	1,277
Non-Core Activities	(2)	(9)	(10)	(3)	(3)	(3)	(3)	(3)	(218)	(112)	(24)	(12)
Corporate	(117)	(131)	(111)	(106)	(113)	(113)	(113)	(113)	(393)	(499)	(465)	(452)
TOTAL	**233**	**288**	**255**	**378**	**367**	**404**	**374**	**467**	**335**	**726**	**1,154**	**1,612**
EBIT Margin												
Power Technologies	7.5%	7.4%	5.1%	6.7%	8.5%	8.7%	8.0%	8.8%	6.0%	7.3%	6.7%	8.5%
Automation Technologies	8.5%	9.6%	9.9%	10.5%	11.0%	11.0%	11.0%	11.0%	6.1%	7.7%	9.7%	11.0%
Non-Core Activities	-1.1%	-7.1%	-6.9%	-6.9%	-0.1%	-0.1%	-0.1%	-0.1%	-5.3%	-3.6%	-4.4%	-12.7%
Corporate	62.6%	66.8%	63.4%	64.2%	62.5%	63.1%	64.6%	64.6%	27.3%	36.6%	64.3%	63.7%
TOTAL	**5.3%**	**5.9%**	**5.3%**	**6.9%**	**7.8%**	**8.0%**	**7.6%**	**8.3%**	**1.8%**	**3.7%**	**5.9%**	**7.9%**

Source: Company data; Bear, Stearns International Limited estimates.

Figure 82. ABB: Balance Sheet ($m)

	Q1-2004A	Q2-2004A	Q3-2004A	Q4-2004E	Q1-2005E	Q2-2005E	Q3-2005E	Q4-2005E	2002A	2003E	2004E	2005E
Cash and cash equivalents	2,583	2,914	2,851	3,229	3,287	3,581	3,740	4,194	2,336	4,669	3,229	4,194
Marketable Securities	1,237	491	745	745	745	745	745	745	589	473	745	745
Receivables, net	5,153	5,347	5,426	6,184	5,352	5,745	5,569	6,392	5,134	5,337	6,184	6,392
Inventories, net	2,821	2,824	2,965	3,379	2,924	3,139	3,043	3,493	2,261	2,605	3,379	3,493
Prepaid Expenses and other	1,684	1,566	1,702	1,940	1,679	1,802	1,747	2,005	2,628	2,002	1,940	2,005
Assets held for sale and in discontinued operations	6,110	3,112	1,800	1,260	882	617	432	-	7,499	6,427	1,260	-
Total Current Assets	19,588	16,254	15,489	16,737	14,869	15,630	15,275	16,828	20,447	21,513	16,737	16,828
Financing Receivables, non-current	1,312	1,249	1,185	1,350	1,169	1,255	1,216	1,396	1,605	1,330	1,350	1,396
Property, Plant, and Equipment, net	2,749	2,695	2,712	2,739	2,767	2,794	2,822	2,850	2,701	2,840	2,739	2,850
Goodwill	2,309	2,306	2,310	2,310	2,310	2,310	2,310	2,310	2,221	2,331	2,310	2,310
Other intangible Assets, net	498	466	444	506	438	470	456	523	587	549	506	523
Prepaid pension & other related benefits	522	518	515	587	508	545	529	607	537	524	587	607
Investments and Other	1,286	1,277	1,154	1,315	1,138	1,222	1,184	1,359	1,435	1,326	1,315	1,359
Total Assets	**28,264**	**24,765**	**23,809**	**25,544**	**23,198**	**24,226**	**23,792**	**25,874**	**29,533**	**30,413**	**25,544**	**25,874**
Accounts payable, trade	2,874	2,946	3,075	3,504	3,033	3,256	3,156	3,622	2,729	2,981	3,504	3,622
Accounts payable, other	1,239	1,195	1,284	1,463	1,266	1,359	1,318	1,513	1,390	1,394	1,463	1,513
Short-term borrowings and current maturities of long-term borrowings	974	939	616	702	608	652	632	726	2,570	1,597	702	726
Accrued Liabilities and Other	4,760	4,683	4,845	5,521	4,779	5,130	4,972	5,707	6,135	5,140	5,521	5,707
Liabilities held for sale and in discontinued operations	4,764	1,980	1,471	1,030	721	505	353	-	5,966	5,100	1,030	-
Total Current Liabilities	14,611	11,743	11,291	12,221	10,406	10,902	10,431	11,568	18,790	16,212	12,221	11,568
Long-term borrowings	5,774	5,176	4,562	4,562	4,562	4,562	4,562	4,562	5,358	6,290	4,562	4,562
Pension and other related benefits	1,773	1,778	1,824	2,079	1,799	1,931	1,872	2,149	1,619	1,794	2,079	2,149
Deferred Taxes	952	958	901	1,027	889	954	925	1,061	911	969	1,027	1,061
Other Liabilities	1,854	1,845	1,868	2,129	1,842	1,978	1,917	2,201	1,584	1,837	2,129	2,201
Total Liabilities	24,964	21,500	20,446	22,017	19,499	20,327	19,707	21,541	28,262	27,102	22,017	21,541
Minority Interest	287	237	242	242	242	242	242	242	258	285	242	242
Stockholders' equity	3,067	3,067	3,067	3,067	3,067	3,067	3,067	3,067	2,027	3,067	3,067	3,067
Retained Earnings	1,851	1,937	1,948	2,112	2,285	2,484	2,670	2,918	2,614	1,847	2,112	2,918
Accumulated other comprehensive loss	(1,767)	(1,838)	(1,756)	(1,756)	(1,756)	(1,756)	(1,756)	(1,756)	(1,878)	(1,750)	(1,756)	(1,756)
Less: Treasury stock, at cost	(138)	(138)	(138)	(138)	(138)	(138)	(138)	(138)	(1,750)	(138)	(138)	(138)
Total Stockholders' Equity	3,013	3,028	3,121	3,285	3,458	3,657	3,843	4,091	1,013	3,026	3,285	4,091
Total Liabilities and Stockholders' Equity	**28,264**	**24,765**	**23,809**	**25,544**	**23,198**	**24,226**	**23,792**	**25,874**	**29,533**	**30,413**	**25,544**	**25,874**

Source: Company data; Bear, Stearns International Limited estimates.

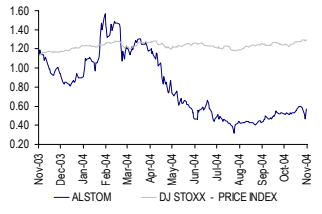
Alstom (ALSO.PA, €0.52, Not Rated)

52-Week Range
€0.31-€1.66

Common Shares (m)
5,447

Equity Market Capitalisation (m)
€2,829

Rel to DJ STOXX



Source: Thomson Datastream.

Alstom should benefit from the current high gas prices, and this may lead to increased growth in coal-fired power plants, and hence in steam turbines, ion which Alstom has a leading position.

Company description

Alstom is one of the largest manufacturers of power generation equipment such as power generators and turbines. It is especially strong in steam turbines but also produces other power generation and conversion equipment, as well as trains and large ships. The company also offers related services.

In the power generation equipment sector, Alstom has installed 15.7% of the world's steam turbines. In Europe and Africa/Middle East it holds the largest market shares of 51% and 30.1%, respectively. The company is also represented in America (7.6% market share) and the Asia/Pacific region, where it has 16.4% of the installed fleet of gas, steam and nuclear steam turbines. The company sold off its Transmission and Distribution activities for €950 million to Areva in January 2004 but remains a major player in the power generation market.

Alstom also manufactures railway carriages, locomotives, railroad signalling equipment, cruise ships (e.g. the Queen Mary 2), ferries, tankers and marina equipment. The TGV, France's high-speed train, and Singapore's automatic railway system are engineered and built by Alstom.

Over the past two years, Alstom incurred a large loss due to a design fault in its gas-fired power turbines (GT24 and GT26), delayed deliveries of trains in the UK and the bankruptcy of one of its client cruise operators. Alstom also faced a decline in demand for power equipment after the bankruptcy of Enron Corp. In order to cope with its financial difficulties, the company received a €3.2 billion aid package in November 2003 from the French government, which is now its largest shareholder with a stake of about 21.4%.

Under the new plan (July 2004) approved by the EU Commission, Alstom expected to raise another €1.5 billion in secured debt and €638 million through a debt-to-equity swap. The capital increase under the new plan (2004) totalled €1.75 billion (only 38% subscribed to the debt-to-equity swap). Although the capital increase was €0.45 billion short, management expects to pay back its bond and other debt-holders in the coming years. Hence, management is convinced that the turnaround has been completed.

In order to compensate for the French government's aid, the European Commission required Alstom to enter into one or more 'industrial partnerships' covering major activities in the energy and transport sector, starting with a 50:50 venture in hydraulic turbines. EU regulators also stated that "virtually no acquisitions" could be made in the transport sector for four years. The company also had to give up its industrial heating division, its cargo locomotive division in Spain and all its train divisions in Australia and New Zealand.

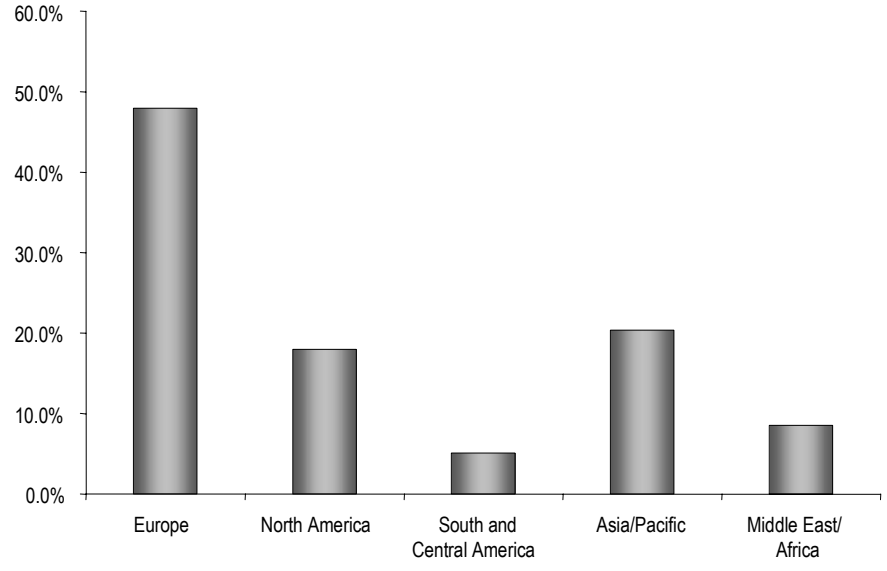
Alstom's sales totalled €16,688 million in fiscal year 2004 (year-end March), with an operating margin of 1.8%. The operating margin is far below the average industry margin. Fiscal year 2005 is expected to be a transition year. The company expects sales and orders to be on a similar level and above FY 2004, respectively, on a comparable basis. On a pro forma basis before exceptions, Alstom forecasts an operating margin in FY 2005 of between 3.5% and 4.0% versus 2.6% in FY 2004.

Alstom's key challenge is to compete for projects that require a strong balance sheet.

Alstom is split into six business divisions: Power Service, Power Environment, Power Conversion, Power Turbo-systems, Marine and Transport. Power Service and Transport are currently the only divisions enjoying favourable market conditions. The growth in the power service segment is triggered by an increasing trend of outsourcing the servicing and maintenance of power generation systems. As a result, the company hopes to achieve a 15% operating margin for March 2006 in the Power Service division. The Transport division aims to achieve an operating margin of 7% in March 2006, resulting from a cost reduction through restructuring. Both the Power Turbo-System and the Power Environment divisions have a new organisation. The company intends to break even and achieve its historical margins in both these divisions in March 2006. No specific guidance is given for the Marine division and the Power Conversion division. The Marine division is currently facing an uncertain market and is therefore trying to develop its order book. The Power Conversion division is undergoing a reorganisation of activities by which it hopes to increase its performance.

Geographical breakdown

Figure 83. Alstom's Sales Breakdown for Fiscal Year 2003



Source: Company data.

Divisional breakdown (description of key products)

The company is divided into six different sectors: Power Turbo-Systems, Power Environment, Power Service, Power Conversion, Transport, Marina and Corporate and Others. The company has restructured the power division into three new sectors: environment, service and turbo-systems and power conversion. While the transport sector contributes the most to the total revenues, Power Service is the most profitable business unit.

Power Turbo-Systems: supplies gas turbines (56MW-281MW), steam turbines (100MW-1,600MW), turbo generators (40MW-1,700MW), turnkey power plants (engineering-procurement-construction or EPC) for large gas and steam turbine applications, electrical and control systems for all types of power plants and repowering and rehabilitation services.

Power Environment: designs, manufactures and supplies a broad range of products and services to the power generation and industrial markets. This range includes clean combustion technologies, all types of boilers, environmental control systems, energy recovery systems, hydro power plant and maintenance retrofit.

Power Service: complements the manufacturing activities of the Power Turbo-Systems and Power Environment Sectors by providing services to customers in all geographic markets. (A portfolio of services from spare parts and field services to full operation and maintenance packages, refurbishment and modernisation of existing plants, technical consultancy services, tailor-made services and 'value packages' and new service product development.)

Transport: designs, manufactures and supplies a broad range of products, systems and services to rail customers worldwide. Fully integrated transport systems, rolling stock of all types, signalling and infrastructure as well as customer services in the fields of maintenance, renovation, customer training and technical consultancy.

Marine: is a specialised shipbuilder based in France focusing on complex, high value-added segments of the marine market (passenger ships, notably cruise-liners, high speed ferries and large private yachts, LNG (liquefied natural gas) carriers and FPSO (Floating Production, Storage and Offloading) vessels or structures, surface naval vessels, research and scientific vessels).

Power Conversion: converts electrical energy into productive plant and machine performance. It provides electrical engineering, systems integration and associated services for the control and automation of industrial processes. It manufactures and supplies electrical products and power electronic equipment, including motors and generators, drives and drive systems.

Corporate and Other: comprises all units accounting for Corporate costs, the International Network and the overseas entities in Australia, New Zealand, South Africa (prior to its disposal) and India which are not reported by Sectors.

Figure 84. Alstom: Income Statement (€m)

	---- 2001 ----		---- 2002 ----		---- 2003 ----		---- 2004 -----		2001	2002	2003	2004
Year-end March	**H1**	**H2**	**H1**	**H2**	**H1**	**H2**	**H1**	**H2**	**FY**	**FY**	**FY**	**FY**
Net Sales	**10651**	**13899**	**11942**	**11511**	**10769**	**10582**	**8854**	**7834**	**24550**	**23453**	**21351**	**16688**
Of which products	*7623*	*9946*	*8932*	*8609*	*8514*	*7860*	*6602*	6184	*17569*	*17541*	*16374*	*12786*
Of which services	*3029*	*3952*	*3010*	*2902*	*2255*	*2722*	*2252*	1650	*6981*	*5912*	*4977*	*3902*
Cost of sales	-8777	-11651	-9988	-9635	-8905	-10282	-7577	-6727	-20428	-19623	-19187	-14304
Of which products	*-6342*	*-8419*	*-7707*	*-7434*	*-7182*	*-8322*	*-5805*	-5548	*-14761*	*-15141*	*-15504*	*-11353*
Of which services	*-2435*	*-3232*	*-2281*	*-2201*	*-1723*	*-1960*	*-1772*	-1179	*-5667*	*-4482*	*-3683*	*-2951*
Selling expenses	-553	-587	-542	-536	-515	-456	-435	-350	-1140	-1078	-970	-785
R&D expenses	-231	-398	-256	-319	-319	-303	-239	-234	-629	-575	-622	-473
Administrative expenses	-596	-606	-633	-603	-488	-591	-471	-355	-1202	-1236	-1079	-826
Operating Income	**494**	**657**	**523**	**418**	**543**	**-1050**	**132**	**168**	**1151**	**941**	**-507**	**300**
Other income (expense), net	-104	-61	-24	-366	-188	-367	-397	-714	-165	-390	-555	-1111
Other intangible assets amortisation		-55	-31	-33	-32	-35	-31	-29	-55	-64	-67	-60
Goodwill Amortization	-148	-158	-148	-138	-144	-140	-135	-121	-305	-286	-284	-256
Earning Before Interest and Tax	**242**	**384**	**320**	**-119**	**178**	**-1591**	**-431**	**-696**	**626**	**201**	**-1413**	**-1127**
Financial income (expense)	-46	-161	-145	-149	-128	-142	-220	-240	-207	-294	-270	-460
Pre-tax income	**195**	**224**	**175**	**-268**	**50**	**-1733**	**-651**	**-936**	**419**	**-93**	**-1683**	**-1587**
Income tax (charge) credit	-79	-95	-62	52	-36	299	29	-280	-174	-10	263	-251
Share in net income (loss) of equity investments	-3	-1	-1	2	2	1		0	-4	1	3	
Dividend on redeemable pref shares of a subsidiary	0	-7	-7		0		0		-14			
Minority interests	-11	-27	-14	-10	-5	-10	-2	4	-37	-23	-15	2
Net income	**103**	**101**	**92**	**-231**	**11**	**-1443**	**-624**	**-1212**	**204**	**-139**	**-1432**	**-1836**
Earnings per share (€)												
Basic and diluted	0.48	0.47	0.43	-1.07	0.04	-5.12	-2.22	-4.10	0.95	-0.65	-5.08	-4.07
Before goodwill amortisation - basic and diluted	1.16	1.46	1.26	-0.28	0.67	-4.50	-1.63	-3.59	2.62	0.98	-3.84	-3.37

Source: Company data.

Figure 85. Alstom: Divisional Breakdown (€m)

	----- 2001 -----		----- 2002 -----		------ 2003 ------		------ 2004 ------		2001	2002	2003	2004
	H1	H2	H1	H2	H1	H2	H1	H2	FY	FY	FY	FY
Sales												
Power Turbo-systems					2,413	1,444	1,211	1,170			3,857	2,381
Power Environment					1,457	1,641	1,331	1,347			3,098	2,678
Power Service					1,350	1,328	1,361	1,386			2,678	2,747
Industrial Turbines					592	676	210	0			1,268	210
Power	**5,091**	**6,949**	**6,671**	**6,305**	**5,812**	**5,089**	**4,113**	**3,903**	**12,040**	**12,976**	**10,901**	**8,016**
Transport	1,767	2,633	2,022	2,391	2,339	2,733	2,297	2,565	4,400	4,413	5,072	4,862
Marine	933	908	606	635	725	843	822	175	1,841	1,240	1,568	997
Power Conversion								0				
Contracting	1,160	1,325	759					0	2,485	759		
Corporate and other	145	230	147	102	115	90	60	181	375	251	205	241
Transmission & Distribution	1,555	1,854	1,737	2,077	1,778	1,827	1,562	1,010	3,409	3,814	3,605	2,572
Total sales (actual)	**10,651**	**13,899**	**11,942**	**11,510**	**10,769**	**10,582**	**8,854**	**7,834**	**24,550**	**23,453**	**21,351**	**16,688**
EBIT												
Power Turbo-systems							-219	-242			-1527	-461
Power Environment							-29	-151			107	-180
Power Service							123	104			304	227
Industrial Turbines							7	0			53	7
Power			**188**	**148**	**133**	**-1196**	**-118**	**-289**	**313**	**271**	**-1063**	**-407**
Transport			113	18	43	-156	-150	-39	171	83	-113	-189
Marine			40	4	15	-3	-2	-38	76	32	12	-40
Power Conversion												
Contracting						0		0	219	28		
Corporate and other			95	95	70	-116	-32	-220	-44	-49	-46	-252
Transmission & Distribution					61	20	6	-51	196	122	81	-45
Total EBIT	**0**	**0**	**436**	**265**	**322**	**-1451**	**-296**	**-637**	**931**	**487**	**-1129**	**-933**
EBIT Margin												
Power Turbo-systems							-18.1%	-20.7%			-39.6%	-19.4%
Power Environment							-2.2%	-11.2%			3.5%	-6.7%
Power Service							9.0%	7.5%			11.4%	8.3%
Industrial Turbines							3.3%				4.2%	3.3%
Power			2.8%	2.3%	2.3%	-23.5%	-2.9%	-7.4%	2.6%	2.1%	-9.8%	-5.1%
Transport			5.6%	0.8%	1.8%	-5.7%	-6.5%	-1.5%	3.9%	1.9%	-2.2%	-3.9%
Marine			6.6%	0.6%	2.1%	-0.4%	-0.2%	-21.7%	4.1%	2.6%	0.8%	-4.0%
Power Conversion												
Contracting									8.8%	3.7%		
Corporate and other			64.6%	93.1%	60.9%	-128.9%	-53.3%	-121.5%	-11.7%	-19.5%	-22.4%	-104.6%
Transmission & Distribution					3.4%	1.1%	0.4%	-5.0%	5.7%	3.2%	2.2%	-1.7%
Total EBIT Margin			**3.7%**	**2.3%**	**3.0%**	**-13.7%**	**-3.3%**	**-8.1%**	**3.8%**	**2.1%**	**-5.3%**	**-5.6%**

Source: Company data.

Figure 86. Alstom: Balance Sheet (€m)

	2000	----- 2001 ------		----- 2002 ------		----- 2003 -----		----- 2004 ------	
	H2	H1	H2	H1	H2	H1	H2	H1	H2
ASSETS									
Goodwill, net	**3,810**	**6,312**	**5,310**	**4,508**	**4,612**	**4,586**	**4,440**	**3,931**	**3,424**
Other acquired intangible assets, net			**1,187**	**1,156**	**1,170**	**1,177**	**1,168**	**974**	**956**
Property, plant and equipment, net	**2,163**	**2,704**	**2,788**	**2,781**	**2,788**	**2,563**	**2,331**	**1,940**	**1,569**
Share in net assets of equity investments	66	81	323	139	301	303	245	249	160
Other fixed assets, net	1,296	1,004	1,301	1,557	1,326	1,327	1,294	1,239	1,217
Goodwill, other acquired intangible assets and fixed assets	**7,335**	**10,101**	**10,909**	**10,141**	**10,197**	**9,955**	**9,478**	**8,333**	**7,326**
Inventories and contracts in progress, net	3,327	4,951	6,049	5,913	5,593	1,444	4,608	3,744	2,887
Trade receivables, net	4,545	6,341	7,029	5,031	4,730	5,567	4,855	4,686	3,462
Other accounts receiveable, net	1,959	3,854	2,816	2,989	3,304	4,195	2,265	2,602	2,022
Deferred taxes	1,091	1,633	1,088	2,181	1,486	3,248	1,831	1,884	1,561
Other current assets	**9,832**	**15,147**	**15,894**	**13,933**	**13,627**	**11,206**	**11,728**	**11,032**	**8,371**
Short term investments	175	282	496	356	331	265	142	98	39
Cash and cash equivalents	2,247	3,608	2,524	2,609	1,905	2,126	1,628	1,671	1,427
Short term investments and cash and cash equivalents	**2,421**	**3,890**	**3,020**	**2,965**	**2,236**	**2,390**	**1,770**	**1,769**	**1,466**
Total Assets	**20,679**	**30,769**	**30,911**	**29,220**	**27,546**	**26,800**	**24,807**	**23,018**	**18,724**
SHAREHOLDERS' EQUITY, PROVISIONS AND LIABILITIES									
Shareholders' equity	**1,986**	**2,012**	**2,090**	**2,025**	**1,752**	**2,198**	**758**	**183**	**29**
(including cumulative translation adjustments)	*-46*	*-38*	*-61*	*-100*	*-141*				
Minority interests	**33**	**48**	**102**	**135**	**91**	**91**	**95**	**94**	**68**
Bonds Reimbursersable with shares									**152**
Undated subordinated notes		**250**	**250**	**250**	**250**	**250**			
Provisions for risks and charges	**4,262**	**6,672**	**4,591**	**4,307**	**3,849**	**3,197**	**3,698**	**3,500**	**3,489**
Accrued pension and retirement benefits	**667**	**917**	**1,058**	**951**	**994**	**984**	**972**	**937**	**842**
Redeemable preference shares of a subsidiary			205	205	205	205			
Borrowings, bonds, and notes issued	2,739	3,974		4,686		4,107			
Bank overdrafts (maturity less than 1 year)	821	1,243		333					
Debt	3,560	5,217	4,653	5,019	4,300	4,312	5,039	5,554	4,107
Securitisation of future receivables			1,578		1,735	1,762	1,292	522	265
Financial Debt	**3,560**	**5,217**	**6,231**	**5,019**	**6,035**	**6,075**	**6,331**	**6,076**	**4,372**
(of which long-term portion)	*999*	*1,385*	*2,352*	*2,553*	*3,644*		*3,647*	*2,390*	*3,829*
(of which short-term portion)	*2,561*	*3,833*	*3,879*	*2,466*	*2,391*		*2,684*	*3,686*	*543*
Customers' deposits and advances, net	3,538	6,861	6,205	6,270	4,221	4,269	3,541	3,085	2,714
Trade payables	3,646	4,703	6,540	5,646	5,564	5,116	4,629	4,132	3,130
Deferred taxes	570	855	103	1,102	47	50	37	55	30
Accrued contract costs, other payables and accrued expenses	2,417	3,235	3,536	3,311	4,538	4,570	4,746	4,956	3,898
Current liabilities	**10,171**	**15,653**	**16,384**	**16,329**	**14,370**	**14,006**	**12,953**	**12,228**	**9,772**
Total Liabilities	20,679	30,769	30,911	29,220	27,546	26,800	24,807	23,018	18,724

Source: Company data.

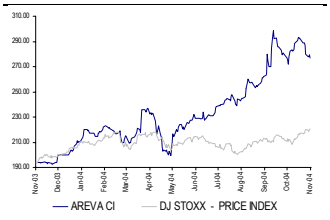
Areva (CEPFi.PA, €278, Not Rated)

52-Week Range
€190-€303

Common Shares (m)
1,429

Equity Market Capitalisation (m)
€397.3 (free float market cap)

Rel to DJ STOXX



Source: Thomson Datastream.

Areva, the world leader in nuclear power technology, could find itself in a 'sweet spot' if western governments decide to revive nuclear power.

Company description

Areva is one of the world's largest nuclear power technology companies, active in uranium mining and the manufacturing and recycling of nuclear fuels and nuclear reactors. The company also produces transmission and distribution systems (acquired from Alstom earlier this year).

Areva is the world leader in the conversion of uranium concentrates extracted from mines into uranium hexafluoride (the intermediate product in the manufacturing process of nuclear fuel) and is the world's largest maker of nuclear reactors.

Areva focuses on two types of business: energy and connectors. The energy business consists of four divisions. Its Front-End Division and Reactor and Services Division have a market share of approximately 25% each. The Back-End Division has a strong foothold in the market it serves; it obtained a market share of 75% in the reprocessing business and 90% in the recycling business. The electricity T&D Division ranks third in the sector behind ABB and Siemens, while the Connectors division ranks third worldwide behind Tyco and Molex.

Areva reported revenues of €8,255 million and an operating income of €342 million in 2003. The energy business had an operating margin of 7.7%, while the connectors business generated a loss of €114 million (-8.5% EBIT margin) due to restructuring costs of €135 million.

For 2004, the company expects to improve its operating income. Within its energy business the main focus will be on the integration and overall strategy of its T&D unit. With the sharp upturn in the connectors industry, the company expects its operating income derived from the connectors division to become positive.

Areva's key challenge is the general downturn in demand for nuclear power, as most countries stopped commissioning new nuclear power stations in the past 20 years. Recently, however, Finland is building a nuclear power station, for which the €3 billion order went to Areva and Siemens (the companies have a JV called Framatome, in which Siemens holds 34%). Areva also won the recycling contract of this project. As we believe that nuclear power could be revived in the western world (essentially due to a lack of alternatives), Areva could end up in the sweet spot.

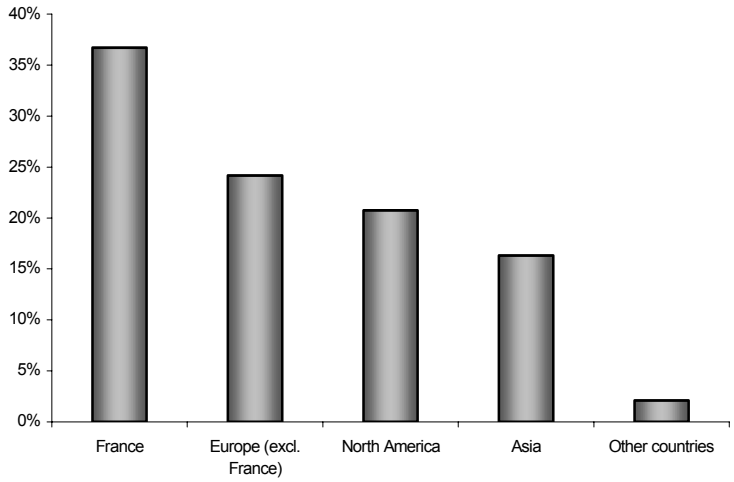
The Areva Group is the result of a merger between CEA-Industrie (CEA is France's Atomic Energy Commission), COGEMA (mining and enriching of uranium) and Framatome ANP. Through the merger, which took effect in September 2001, the French government tried to combine interests in several nuclear power and information technology businesses. There are plans to privatise 35%-40% of the

capital but the French government currently owns 93%. Less than 5% of its capital is traded on the Paris bourse in the form of investment certificates.

Geographical breakdown

Areva has manufacturing facilities in 40 countries and a strong presence in America and Europe, especially in its home country, France. It sees strong potential for growth in the Asian market (particularly China and India) and in Russia where nuclear power generation is projected to double by 2020.

Figure 87. Net Sales by Region, 2003



Source: Company data.

Divisional breakdown (description of key products)

Areva comprises two core businesses: Energy and Connectors. The energy business is split up into four business divisions: Front-End Division, Reactors and Services Division, Back-End Division and the Transmission and Distribution Division. With its two core businesses, Areva is involved in every step of nuclear power production.

Front-end division: combines all of the operations that occur before nuclear power is generated: uranium exploration and mining, concentration, conversion and enrichment services, and nuclear fuel design and fabrication.

Reactor and services division: designs and builds pressurised water reactors, boiling water reactors and research reactors.

Back-end division: treats and recycles fuel after it has been used in nuclear power plants.

Transmission and distribution: supplies equipment systems and services to medium and high voltage energy markets. Its products are used to transmit and distribute electricity from the power plant to the final user. (The acquisition of the whole division from Alstom became effective on January 9, 2004.)

Connectors division: combines technologies and processes needed to design and manufacture passive components called connectors, which are used to transmit electrical or optical signals from a cable to a piece of electrical equipment, or from one printed circuit board to another.

Income statement

Figure 88. Areva: Income Statement (€m)

	----- 2002 -----		----- 2003 -----		2000	2001	2002	2003
	1H	2H	1H	2H	FY	FY	FY	FY
Sales	3,982	4,283	4,137	4,118	9,041	8,902	8,265	8,255
Cost of sales	-2,977	-3,152	-3,150	-2,988	-6,815	-6,956	-6,129	-6,138
Gross Profit	**1,005**	**1,131**	**987**	**1,130**	**2,226**	**1,946**	**2,136**	**2,117**
Research and dev expenses	-164	-168	-141	-144	-394	-377	-332	-285
Sales and marketing expenses	-203	-181	-169	-183	-374	-471	-384	-352
General and administrative expenses	-306	-318	-278	-309	-551	-571	-624	-587
Other operating income expenses	-164	-452	-237	-314	-302	-405	-616	-551
Operating income	**168**	**12**	**162**	**180**	**605**	**122**	**180**	**342**
Financial Income	-1	588	6	328	111	199	587	334
Income before tax and exceptional items	**167**	**600**	**168**	**508**	**716**	**321**	**767**	**676**
Exceptional items	76	213	81	54	78	319	289	135
Income tax	-51	-169	-107	-77	-298	-120	-220	-184
Net income from consolidated businesses	**192**	**644**	**142**	**485**	**496**	**520**	**836**	**627**
Share in net income of equity affiliates	31	52	18	2	443	102	83	20
Net income before goodwill amortization	**223**	**696**	**160**	**487**	**939**	**622**	**919**	**647**
Goodwill amortization	-75	-518	-55	-119	-154	-989	-593	-174
Net income before minority interests	**148**	**178**	**105**	**368**	**785**	**-367**	**326**	**473**
Minority interests in subsidiaries' earnings	-44	-42	-48	-36	-322	-220	-86	-84
Consolidated net income	**104**	**136**	**57**	**332**	**463**	**-587**	**240**	**389**
Average nr. Of outstanding shares	35	35	35	35	29	31	35	35
Net earnings per share (in €)	2.93	3.84	1.61	9.37	15.74	-18.68	6.77	10.98
Net earnings per diluted share	2.93	3.84	1.61	9.37	15.74	-18.68	6.77	10.98

Source: Company data.

Divisional breakdown

Figure 89. Areva: Divisional Breakdown (€m)

	---- 2002 ------		----- 2003 -----		2000	2001	2002	2003
	1H	2H	1H	2H	FY	FY	FY	FY
Sales (Actual)								
Front end	1,300	1,259	1,425	1,258	2,328	2,733	2,559	2,683
Reactors and services	840	1,091	990	1,134	1,675	1,879	1,931	2,124
Back-end	983	1,103	987	1,036	2,210	2,213	2,086	2,023
Energy	3,123	3,453	3,402	3,428	6,213	6,825	6,576	6,830
Connectors	813	747	689	649	2,644	1,966	1,560	1,338
Holding, other operations and consolidated entries	46	83	45	42	184	111	129	87
Total	3,982	4,283	4,136	4,119	9,041	8,902	8,265	8,255
T&D, new Jan 9, 2004								2,859
Operating income after restructuring expenses								
Front end	238	95	168	148	200	362	333	316
Reactors and services	11	70	57	-5	84	45	81	52
Back-end	57	178	49	106	57	10	235	155
Energy	306	343	274	249	341	417	649	523
				0				
Connectors	-95	-311	-62	-52	289	-235	-406	-114
Holding, other operations and consolidated entries	-43	-20	-51	-16	-25	-60	-63	-67
Total	168	12	161	181	605	122	180	342
Operating Margin								
Front end	18.3%	7.5%	11.8%	11.8%	8.6%	13.2%	13.0%	11.8%
Reactors and services	1.3%	6.4%	5.8%	-0.4%	5.0%	2.4%	4.2%	2.4%
Back-end	5.8%	16.1%	5.0%	10.2%	2.6%	0.5%	11.3%	7.7%
Energy	9.8%	9.9%	8.1%	7.3%	5.5%	6.1%	9.9%	7.7%
Connectors	-11.7%	-41.6%	-9.0%	-8.0%	10.9%	-12.0%	-26.0%	-8.5%
Holding, other operations and consolidated entries	-93.5%	-24.1%	-113.3%	-38.1%	-13.6%	-54.1%	-48.8%	-77.0%
Total	4.2%	0.3%	3.9%	4.4%	6.7%	1.4%	2.2%	4.1%

Source: Company data.

Figure 90. Areva: Balance Sheet (€m)

As at December 31	---- 2002 ---- 1H	2H	---- 2003 ----- 1H	2H	2000 FY	2001 FY	2002 FY	2003 FY
Assets								
Fixed assets								
Net goodwill	2,034	1,537	1,435	1,265	2,113	2,195	1,537	1,265
Net intangible assets	493	510	518	482	498	534	510	482
Decommissioning assets		9,223	9,161	9,109			9,223	9,109
Net tangible assets	5,033	4,647	4,477	3,447	5,412	5,321	4,647	3,447
Equity in net assets of affiliates	1,617	1,652	1,610	1,492	1,883	1,674	1,652	1,492
Other long-term notes and investments	3,322	2,580	2,612	3,299	3,232	3,206	2,580	3,299
Total Fixed Assets	**12,499**	**20,149**	**19,813**	**19,094**	**13,137**	**12,930**	**20,149**	**19,094**
Working capital								
Inventories and in-process	2,241	1,960	1,768	1,619	2,470	2,119	1,960	1,619
Trade accounts receivable & related acc	2,458	2,552	2,193	2,234	2,551	2,509	2,552	2,234
Other accounts receivable	1,269	1,400	1,447	1,208	939	1,286	1,400	1,208
Cash and marketable securities	1,701	3,302	3,826	2,036	2,949	1,715	3,302	2,036
Total working capital	**7,669**	**9,214**	**9,234**	**7,097**	**8,909**	**7,629**	**9,214**	**7,097**
Total assets	**20,168**	**29,363**	**29,047**	**26,191**	**22,046**	**20,559**	**29,363**	**26,191**
Liabilities and Shareholders' equity								
Share capital	1,347	1,347	1,347	1,347	1,121	1,347	1,347	1,347
Consolidated premiums and reserves	2,357	2,333	2,362	2,414	2,387	3,156	2,333	2,414
Currency translation reserves	128	100	45	-37	200	271	100	-37
Consolidated net income-current year	104	240	55	389	463	-587	240	389
Total shareholders' equity	**3,936**	**4,020**	**3,809**	**4,113**	**4,171**	**4,187**	**4,020**	**4,113**
Perpetual subordinated debt	216	215	216	215	216	216	215	215
Minority interests in equity of subsidiaries and affiliates	982	988	947	959	2,434	1,004	988	959
Pension and other obligations	492	568	635	609	245	467	568	609
Provisions for risk and liabilities	5,171	14,485	14,369	13,383	4,795	5,116	14,485	13,383
Debt	2,410	2,217	2,107	800	2,596	2,444	2,217	800
Advances and prepayments	3,553	4,066	4,285	3,615	4,245	3,576	4,066	3,615
Trade accounts payable & related accounts	970	1,056	851	1,009	1,331	1,163	1,056	1,009
Other liabilities	2,438	1,748	1,827	1,488	2,011	2,385	1,748	1,488
Total liabilities and shareholders' equity	**20,168**	**29,363**	**29,046**	**26,191**	**22,044**	**20,558**	**29,363**	**26,191**

Source: Company data.

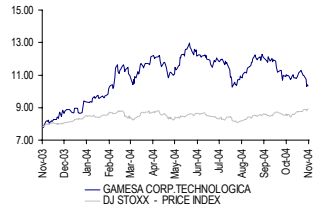
Gamesa (GAM.MC, €10.43, Not Rated)

52-Week Range
€8-€13

Common Shares (m)
243.3

Equity Market Capitalisation (m)
€2,537

Rel to DJ STOXX



Source: Thomson Datastream.

Gamesa is a publicly quoted wind turbine manufacturer with the largest market cap in the world, as it has profited from its utility customer base in the attractive Spanish market. The key challenge for Gamesa now is to achieve growth in international markets.

Company description

Gamesa is involved in wind power and aeronautics. The energy business makes up the bulk (84%) of sales and manufacturing of wind turbines and the development and sale of wind farms. Through Gamesa Eólica, the company produced wind turbines with a total installed capacity of 1,380MW in 2003. In Spain, 1,062MW out of the 1,380MW was installed during 2003, which accounted for a market share of over 70% of the wind turbine market there. The aeronautics division builds aeroplane structures and components for aeroplanes and helicopters and accounts for the remaining 16% of sales.

In May 2003, Gamesa acquired a 100% stake in Made Tecnologias Renovables from Endesa. After selling Made, Endesa set up a framework contract with Gamesa to purchase 1000MW (of which 279MW has already been accounted for the year 2003) in wind turbines over a four-year period. Other big clients of the wind turbine business are Iberdrola (343MW in 2003) and CESA (100MW in 2003). Including Made, Gamesa is the third largest player in the wind turbine industry with a 15% market share after Vestas (35%) and Enercon (18%). Gamesa Energía holds a market share of 30% in the wind-farm development in its home country, Spain. The services division is responsible for the maintenance of 2,000MW (out of total installed capacity in the world of 40,300MW).

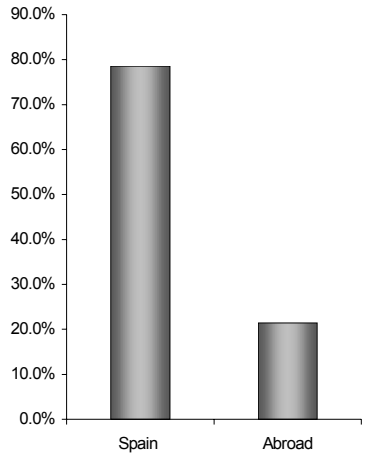
Consolidated revenues totalled €1,654 million in 2003. With an operating margin of 13.7%, Gamesa has the highest margin in its peer group. It will be a key challenge to maintain this high profitability. In 2004, the company expects its revenues to grow by about 24%, resulting in a planned growth in EBITDA of 24% and in net income of 14%. This anticipated increase in revenues and EBITDA will have been mainly driven by strong growth in the wind power generation business, especially the wind turbine manufacturing side. In terms of net income, growth in the different businesses ranges from 11% to 19%.

In our view, the key challenges for Gamesa will be the development and production of megawatt-class turbines and successful international expansion. In the past, Gamesa Eolica was a JV between the Gamesa group and Vestas, where Vestas delivered the technology. Vestas cancelled the technology transfer agreement during 2003 and Gamesa now has to develop its own turbines, which could turn out to be a major challenge, particularly with 2MW+ turbines. Additionally, to avoid being too dependent on the Spanish market, Gamesa needs to gain international market share.

Geographical breakdown

Gamesa has a very strong foothold in Spain and is seeking to expand abroad. Wind turbine expansion is expected to take place in Italy, China, Greece, Germany and the US. In the wind farm development business, the company sees potential in Australia and Canada.

Figure 91. Net Sales Breakdown by Region, 2003



Source: Company data.

Divisional breakdown (description of key products)

The company has two businesses: Aeronautics and Energy. The Energy area contributes approximately 84% to sales. It is split into three different business units: Gamesa Energía, Gamesa Eólica and Gamesa Servicios. Gamesa Eólica is the biggest contributor to the company's bottom line. Gamesa is also involved in Aeronautics: Gamesa Aeronáutica and Gamesa Industrial. The different business units provide the following products and services:

Gamesa Energía: develops, operates and sells wind farms.

Gamesa Eólica: manufactures, sells and installs wind turbines.

Advanced Services: provides integral services in the areas of electricity, telecommunications and control instruments.

Gamesa Aeronáutica: designs, engineers, manufactures and supplies large structural assemblies or complete aircraft parts for subsequent assembly in aircrafts and helicopters (wings, fuselage, stabilisers, engine nacelles and interiors).

Gamesa Industrial: manufactures components of the aeronautics market, including large machinery, parts and subassemblies in composite materials.

Figure 92. Gamesa: Income Statement (€ '000s)

	2000 FY	2001 FY	2002 FY	2003 FY
Revenues				
Net sales	755,756	738,479	1,091,278	1,571,821
Increase in finished goods and work-in-process inventories	43,871	60,829	9,974	0
Capitalized expenses of Group work on fixed assets	105,645	259,781	45,363	51,154
Other operating revenues	5,981	3,520	5,045	31,031
Total Revenues	**911,253**	**1,062,609**	**1,151,660**	**1,654,006**
Expenses				
Decrease in finished goods and work-in-process inventories	0	0	0	-216,968
Materials used in operations and other external expenses	-572,226	-640,442	-620,754	-815,203
Personnel expenses	-107,746	-142,468	-157,881	-196,728
Depreciation and amortization expense	-68,593	-39,126	-57,603	-47,254
Variation in operating allowances	-5,638	-16,466	-16,258	-26,867
Other operating expenses	-62,160	-74,198	-91,732	-99,301
Amortization of consolidation goodwill	-1,104	-1,652	-15,795	-23,286
Operating income	**93,786**	**148,257**	**191,637**	**228,399**
Operating margin	**12.4%**	**20.1%**	**17.6%**	**14.5%**
Gains on fixed assets	761	402	980	1,084
Capital subsidies transferred to income for the year	15,086	1,198	833	3,315
Extraordinary revenues	4,757	12,121	3,823	2,187
Prior years' revenues and income	0	1,806	1,897	6,107
Income from transactions involving treasury stock and own debentures	0	0	144	6,382
Losses on fixed assets	-545	-1,279	-734	-2,243
Variation in tangible fixed asset, intangible asset and control portfolio allowances	0	-11,961	286	2,442
Extraordinary expenses	-5,201	-7,775	-3,717	-6,191
Prior years' expenses and losses	-1,663	-2,613	-2,690	-3,755
Losses on transactions involving treasury stock and own debentures	0	-6,512	-318	-208
Non operating income	**13,195**	**-14,613**	**504**	**9,120**
Earning Before Interest and Taxes	**106,981**	**133,644**	**192,141**	**237,519**
EBIT margin	**14.2%**	**18.1%**	**17.6%**	**15.1%**
Depreciation and amortization expense	-68,593	-39,126	-57,603	-47,254
Amortization of consolidation goodwill	-1,104	-1,652	-15,795	-23,286
EBITDA	**176,678**	**174,422**	**265,539**	**308,059**
EBITDA Margin	**23.4%**	**23.6%**	**24.3%**	**19.6%**
Other financial revenues	1,820	594	1,908	3,282
Income from short term investments	1,885	2,459	1,471	959
Exchange gains	2,578	10,252	2,665	9,521
Reversal of negative consolidation differences	232	0	0	871
Financial and similar expenses on-debts to third parties and similar expenses	-19,213	-26,849	-51,167	-33,427
Losses on investments	-146	0	0	-1,851
Exchange losses	-2,776	-10,908	-2,811	-6,456
Financial Expenses and Revenues	**-15,620**	**-24,452**	**-47,934**	**-27,101**
Consolidated income before taxes	**91,361**	**109,192**	**144,207**	**210,418**
Corporate income tax	-22,630	-28,165	-5,688	-8,658
Consolidated income for the year	**68,731**	**81,027**	**138,519**	**201,760**
Income attributed to minority interests	-23,675	-18,965	-2,909	30
Income for the year attributed to the parent company	**45,056**	**62,062**	**135,610**	**201,790**
Earning per Share	**0.56**	**0.77**	**1.67**	**2.49**
Nr. of Shares (million)	**81**	**81**	**81**	**81**

Source: Company data.

Figure 93. Gamesa: Divisional Breakdown (€m)

	---- 2001 ---		---- 2002 -----		----- 2003 -----		2004	2001	2002	2003
	1H	2H	1H	2H	1H	2H	1H	FY	FY	FY
Revenues										
G. Energia	22	35	56	289	490	98	60	57	345	588
G. Eolica	190	292	229	354	261	592	513	482	583	853
G. Servicios	51	98	79	72	71	101	118	149	151	172
Energy	263	425	364	715	822	791	691	688	1,079	1,613
G. Aeronautica	175	155	121	116	128	118	141	330	237	246
G. Central	5	10		5	6	2		15	5	8
Goodwill + SESA	0									
Adjustments	-85	-206	-96	-130	-193	-71	1	-291	-226	-264
Total	357	385	390	706	763	840	833	742	1,095	1,603
EBITDA										
G. Energia	21	28	45	123	110	21	46	49	168	131
G. Eolica	33	62	42	80	53	103	94	95	122	156
G. Servicios	3	7	4	6	4	6	7	10	10	10
Energy	57	97	91	209	167	130	147	154	300	297
G. Aeronautica	33	25	26	15	20	22	20	58	41	42
G. Central	2	6	-2	-5	0	-11		8	-7	-11
Goodwill + SESA	0	-1		-3				-1	-3	
Adjustments	-1	-12	-2	-48		-3	-2	-13	-50	-3
Total	91	115	114	168	187	138	165	206	281	325
EBITDA margin										
G. Energia	92.4%	81.8%	80.7%	42.5%	22.4%	21.4%	76.7%	86.0%	48.7%	22.3%
G. Eolica	17.6%	21.1%	18.3%	22.6%	20.3%	17.4%	18.3%	19.7%	20.9%	18.3%
G. Servicios	6.7%	6.7%	5.1%	8.3%	5.6%	5.9%	5.9%	6.7%	6.6%	5.8%
Energy	21.8%	22.7%	25.1%	29.2%	20.3%	16.4%	21.3%	22.4%	27.8%	18.4%
G. Aeronautica	18.8%	16.2%	21.3%	13.1%	15.6%	18.6%	14.2%	17.6%	17.3%	17.1%
G. Central	40.0%	60.0%		-100.0%	5.0%	-565.0%		53.3%	-140.0%	-137.5%
Goodwill + SESA										
Adjustments	1.1%	5.9%	1.7%	37.2%	0.0%	4.2%	-200.0%	4.5%	22.1%	1.1%
Total	25.5%	29.8%	29.1%	23.7%	24.5%	16.4%	19.8%	27.8%	25.7%	20.3%

Source: Company data.

Figure 94. Gamesa: Balance Sheet (€m)

As at December 31	2000	2001	2002	2003
Assets				
Fixed and other noncurrent assets				
Start-up expenses	16,360	8,328	6,297	6,674
Intangible assets, net	123,748	155,125	170,706	198,674
Tangible fixed assets, net	285,970	529,995	201,075	251,767
Long-term investments, net	7,156	17,861	19,323	16,112
Treasury stock	9,551	12,655	13,606	
Total fixed and other noncurrent assets	**442,785**	**723,964**	**411,007**	**473,227**
Consolidation Goodwill	955	256,316	298,496	307,829
Deferred charges	1,653	3,598	7,358	4,549
Current Assets				
Due from shareholders for capital calls		33		6
Inventories - wind-powered facilities			379,213	156,563
Inventories - other		253,864	274,018	228,630
Inventories	**170,689**	**253,864**	**653,231**	**385,193**
Trade receivables for sales and services	239,755	223,071	262,181	613,925
Recievables from Group companies	8,566	4,925	52,322	92,112
Other accounts receivable	22,481	72,677	98,919	105,323
Allowances	-660	-1,033	-724	-5,510
Accounts Receivable	**270,142**	**299,640**	**412,698**	**805,850**
Short term investments	61,251	79,476	133,297	107,948
Short term treasury stock				14,607
Cash	14,107	21,088	33,851	33,603
Accrual Accounts	1,484	2,107	1,918	1,804
Total current Assets	**517,673**	**656,208**	**1,234,995**	**1,349,011**
Total	**963,066**	**1,640,086**	**1,951,856**	**2,134,616**
Shareholders' Equity				
Capital stock	40,550	40,550	40,550	40,550
Reserves of the Parent Company	69,824	75,027	82,574	71,254
Reserves at consolidated companies	45,025	79,233	133,177	249,209
Income attributable to the parent company	45,146	62,062	135,610	201,790
Interim dividend				-29,499
Total shareholders' equity	**200,545**	**256,872**	**391,911**	**533,304**
Minority interests	33,793	18,265	10,782	2,416
Deferred revenues	20,682	24,350	23,081	30,960
Provisions for contingencies and expenses	40,841	33,776	30,720	51,486
Long-term debt				
Payables relating to wind-powered facilities		258,845	9,042	7,646
Other payables to credit institutions		243,068	347,322	579,330
Payable to credit institutions	**235,791**	**501,913**	**356,364**	**586,976**
Other payables	39,089	143,060	89,112	119,217
Total long term debt	**274,880**	**644,973**	**445,476**	**706,193**
Current Liabilities				
Payables relating to wind-powered facilities		39,743	289,043	102,120
Other payables to credit institutions		191,146	343,032	195,127
Payable to credit institutions	**111,305**	**230,889**	**632,075**	**297,247**
Payable to Group companies	1,283	2,755	10,943	19,026
Trade accounts payable	220,797	284,981	260,926	408,080
Other nontrade payables	57,497	141,367	142,656	79,352
Operating allowances		96	1,490	3,099
Short-term provision for contingencies and expenses				1,851
Accrual accounts	1,443	1,762	1,796	1,602
Total current liabilities	**392,325**	**661,850**	**1,049,886**	**810,257**
Total shareholders' equity and liabilities	**963,066**	**1,640,086**	**1,951,856**	**2,134,616**

Source: Company data.

Nordex AG

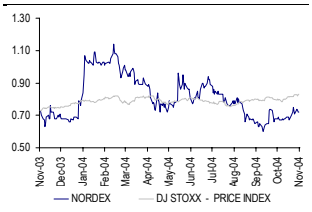
(NDXG.DE, €0.71, Not Rated)

52-Week Range
€0.59-€1.15

Common Shares (m)
52

Equity Market Capitalisation (m)
€36.95

Rel to DJ STOXX



Source: Thomson Datastream.

Nordex, a German wind power manufacturer, has made tremendous progress with its turnaround, but still lacks the balance sheet to pre-finance large projects. This, and internationalisation, represent its key challenges.

Company description

Nordex AG is a German wind turbine manufacturer. It produces, installs and maintains wind turbines with a focus on high-capacity turbines (typically megawatt-class turbines) and develops wind farms from 600kW to 2500kW. At the moment, the company is developing the N80 model, which specifically targets the Offshore wind power market.

The company's revenues decreased substantially during 2003, with sales plummeting to €215 million from €445 million in 2002, while EBIT decreased from €18 million to a loss of €63 million. These losses were due to project problems in the Havoygavlen project in Norway, declining demand in Germany (Nordex's biggest market) and international start-up problems, which weakened the company's balance sheet, and as a result Nordex lost business. Nordex is currently implementing a restructuring plan to overcome its operational and organisational difficulties.

With sales declining 50% in 2003, the company's market share dropped 2.9 percentage points from 6.8%. Nordex is ranked sixth (320MW newly installed capacity in 2003) in the world, but is closely followed by REpower (292MW newly installed capacity in 2003). In Germany, the company erected 127.3MW in 2003, accounting for 50% of sales. However, given the declining growth in the German market, the company intends to focus more on international expansion.

Despite its lower sales in the third quarter, the company expects to achieve its EBIT target of a loss of €28 million in FY 2004 and a positive €3 million in FY 2005.

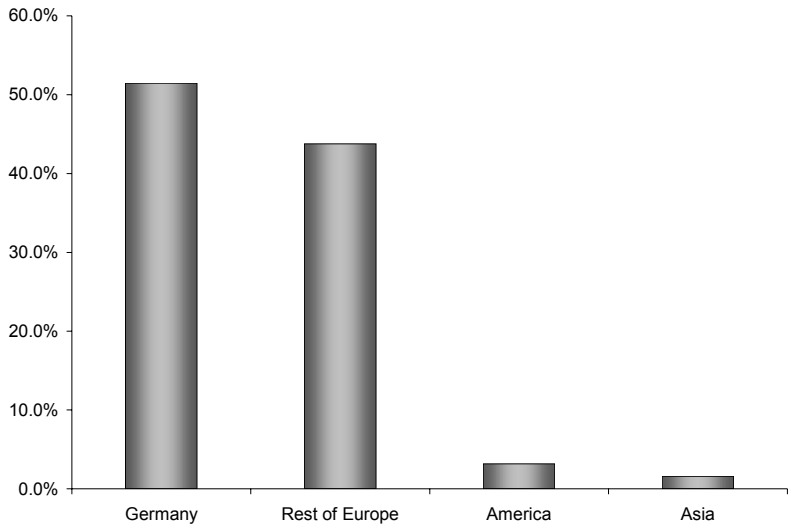
In our view, Nordex' largest challenge is to regain trust from its customers, following the substantial deterioration of its balance sheet strength. While the company's outlook has probably improved over the past few quarters, we expect companies of its size to struggle in the future, given that their balance sheet does not allow any significant project financing activities.

Nordex has been pursuing a rigorous restructuring programme over the past few quarters. It has completed 70% of the plan and expects to finalise it in December 2004. After the operational restructuring, the company will start its financial restructuring programme. In order to increase its prospects of winning large orders, Nordex has to show a reliable operational performance and a strong balance sheet, which is part of its restructuring plan. In 2003, the company sold wind turbines with a performance guarantee to Norway and Egypt but they have not produced wind power at the promised performance guarantee, for which the company had to pay heavy penalties. Hence it has a lot of ground to make up in this area.

Geographical breakdown

The company has a very strong foothold in Germany. As its home market is maturing and declining in terms of newly-installed capacity, Nordex is looking for ways to expand its installed base abroad. It sees strong growth in Asia (China, Japan and Korea) and Europe, especially Portugal and the UK. Nordex is also trying to enter the US and Australian markets through partnerships.

Figure 95. Nordex: Geographical Breakdown of Sales, 2003



Source: Company data.

Figure 96. Nordex: Income Statement (Quarterly) (€'000s)

	2001				2002				2003				2004	
As at September 30	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**
Sales	63,004	66,841	87,466	129,207	95,817	85,862	106,391	151,111	89,437	60,972	35,781	10,012	66,721	53,701
Changes in inventories and other own work capitalized	9,495	-731	145	8,324	2,607	-5,000	18,752	-5,411	6,836	-1,102	-3,313	2,199		
Total Revenues	**69,129**	**59,706**	**96,961**	**128,476**	**95,962**	**94,186**	**108,998**	**146,111**	**108,189**	**55,561**	**42,617**	**8,910**	**63,408**	**55,900**
Other operating income	526	3,142	1,209	396	661	352	1,162	5,827	572	974	460	7,605	3,529	2,449
Cost of materials	-50,767	-42,684	-77,171	-103,269	-77,879	-69,951	-82,942	-115,791	-95,912	-48,076	-41,064	-6,547	-53,277	-44,191
Personnel costs	-5,695	-7,641	-8,084	-7,881	-8,184	-9,600	-8,508	-10,893	-10,699	-10,363	-10,353	-10,222	-8,910	-8,214
Depreciation/amortization	-1,752	-664	-1,657	-1,843	-1,534	-1,944	-2,277	-3,264	-2,515	-3,434	-2,972	-1,854	-2,377	-2,554
Goodwill amortization		-457	-252	-381	-284	-285	-284	-284	-421	-421	-421	126	-284	-284
Other operating expenses	-9,484	-8,719	-6,886	-10,208	-6,116	-10,666	-10,869	-13,561	-11,572	-10,665	-8,331	-12,349	-10,301	-7,620
EBIT	**1,957**	**2,683**	**4,120**	**5,290**	**2,626**	**2,092**	**5,280**	**8,145**	**-12,358**	**-16,424**	**-20,064**	**-14,331**	**-8,212**	**-4,514**
Depreciation and amortization	**-1,752**	**-1,121**	**-1,909**	**-2,224**	**-1,818**	**-2,229**	**-2,561**	**-3,548**	**-2,936**	**-3,855**	**-3,393**	**-1,728**	**-2,661**	**-2,838**
EBITDA	**205**	**1,562**	**2,211**	**3,066**	**808**	**-137**	**2,719**	**4,597**	**-15,294**	**-20,279**	**-23,457**	**-16,059**	**-10,873**	**-7,352**
One-off items										-37,274	-6,600	-65,032		
Operating profit/loss after one-off items	**1,957**	**2,683**	**4,120**	**5,290**	**2,626**	**2,092**	**5,280**	**8,145**	**-12,358**	**-53,698**	**-26,664**	**-79,363**	**-8,212**	**-4,514**
Financial result	-920	-1,036	323	763	342	913	181	-84	-278	-818	-896	-2,129	-1,184	-1,339
Foreign currency effects	-32	-1	70	-37	16	-93	148	-71	-4	27	-88	65	1,226	-987
Income/ loss before taxes	**1,005**	**1,646**	**4,513**	**6,016**	**2,984**	**2,912**	**5,609**	**7,990**	**-12,640**	**-54,489**	**-27,648**	**-81,427**	**-8,170**	**-6,840**
Income taxes	-585	-810	588	-4,770	-616	-207	-1,703	-1,462	2,342	15,891	-2,461	6,443	-843	-36
Other taxes				-65				-34				-106	-17	0
Net loss/income for the year	**420**	**836**	**5,101**	**1,181**	**2,368**	**2,705**	**3,906**	**6,494**	**-10,298**	**-38,598**	**-30,109**	**-75,090**	**-9,030**	**-6,876**
Earnings per share				0.02	0.05	0.05	0.08	0.12	-0.20	-0.74	-0.58	-1.44	-0.17	-0.13
Nr. of outstanding shares (million)				52	52	52	52	52	52	52	52	52	52	52

Source: Company data.

Figure 97. Nordex: Income Statement (€'000s)

As at September 30	2000 FY	2001 FY	2002 FY	2003 FY
Sales	272,670	346,518	439,181	196,202
Changes in inventories and other own work capitalized	6,076	19,075		
Total Revenues	**270,191**	**354,272**	**445,257**	**215,277**
Other operating income	1,974	5,273	8,002	9,611
Cost of materials	-203,777	-273,891	-346,563	-191,599
Personnel costs	-19,206	-29,301	-37,185	-41,637
Depreciation/amortization	-3,725	-5,916	-9,019	-10,775
Goodwill amortization	0	-1,090	-1,137	-1,137
Other operating expenses	-32,243	-35,297	-41,212	-42,917
EBIT	**13,214**	**14,050**	**18,143**	**-63,177**
Depreciation and amortization	**-3,725**	**-7,006**	**-10,156**	**-11,912**
EBITDA	**9,489**	**7,044**	**7,987**	**-75,089**
One-off items				-108,906
Operating profit/loss after one-off items	**13,214**	**14,050**	**18,143**	**-172,083**
Financial result	-2,865	-870	1,352	-4,121
Foreign currency effects				
Income/loss before taxes	**10,349**	**13,180**	**19,495**	**-176,204**
Income taxes	-3,884	-5,577	-3,988	22,215
Other taxes	-30	-65	-34	-106
Net loss/income for the year	**6,435**	**7,538**	**15,473**	**-154,095**
Earnings per share		0.14	0.30	-2.96
Nr. of outstanding shares (million)		52	52	52

Source: Company data.

Figure 98. Nordex: Balance Sheet (€'000s)

As at September 30	2000 FY	2001 FY	2002 FY	2003 FY
Intangible assets	5,825	22,806	28,792	24,589
Tangible assets	14,639	24,707	39,561	31,186
Financial assets	983	1,027	1,038	1,340
Medium and long-term assets	**21,447**	**48,540**	**69,391**	**57,115**
Inventories	13,904	31,396	61,396	88,232
Trade receivables and future receivables from production orders	98,427	109,942	144,891	48,428
Receivables from affiliated companies	11,808	17,044	17,440	1,485
Receivables from affiliated companies	9	7	0	50
Other assets	3,003	15,314	22,598	19,824
Short-term assets	**113,247**	**142,307**	**184,929**	**69,787**
Securities		0	572	4,592
Cash and cash equivalents	2,634	61,080	48,504	4,617
Current Assets	**129,785**	**234,783**	**295,401**	**167,228**
Deferred tax assets	553	6,163	0	23,941
Prepaid expenses	1,316	2,467	4,179	3,681
Total assets	**153,101**	**291,953**	**368,971**	**251,965**
Shareholders' equity and liabilities				
Issued share capital	307	52,050	52,050	52,050
Share premium account	6,047	124,843	124,843	124,843
Retained earnings			0	-3,347
Profit carried forward	3,225	2,814	10,352	25,415
Net loss/income for the year	6,435	7,538	15,063	-154,095
Shareholders' equity	**16,014**	**187,245**	**202,308**	**44,866**
Pension provisions	0	367	440	490
Tax provisions	3,179	6,515	5,757	1,300
Other provisions	16,517	29,889	36,717	71,929
Provisions	**19,696**	**36,771**	**42,914**	**73,719**
Liabilities to banks	180		0	49,308
Future liabilities from production orders	0	1,142	1,200	88
Trade payables	107,274	52,730	78,904	39,093
Advance payments received			0	19,414
Liabilities to affiliated companies	0	40	19,015	580
Liabilities to subsidiaries		0	11	285
Other liabilities	7,132	7,213	21,389	19,890
Liabilities	**114,586**	**61,125**	**120,519**	**128,658**
Deferred tax liabilities	2,640	6,810	3,226	4,722
Deferred income	165	1	4	0
Total shareholders' equity and liabilities	**153,101**	**291,952**	**368,971**	**251,965**

Source: Company data.

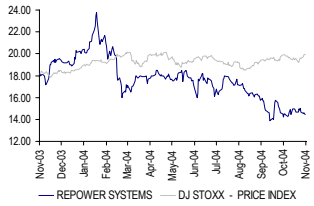
REpower Systems AG (RPWGn.DE, €14.28, Not Rated)

52-Week Range
€14-€24

Common Shares (m)
5.4

Equity Market Capitalisation (m)
€77.1

Rel to DJ STOXX



Source: Thomson Datastream.

REpower is a German wind turbine producer and wind farm developer that has recently installed the world's largest wind turbine, at 5MW. Holding a leading technology position, REpower's key challenges relate to its limited ability to pre-finance larger projects.

Company description

REpower develops, produces and installs wind turbines and is also involved in the development of wind farms. It was formed in 2001 through the incorporation and merger of the company's 'predecessor companies' – pro + pro Energiesysteme GmbH & Co. KG, Jacobs Energie GmbH, BWU-Anlagenfertigung und -service GmbH and BWU-Brandenburgische Wind- und Umwelttechnologien GmbH, and the incorporation of Regenerative Energien Denker & Dr. Wulf GmbH & Co. KG (Denker & Wulf AG) into the company.

REpower predominantly focuses on multi-megawatt wind turbines (more than 1MW). It offers wind turbines with a capacity of 600KW, 750KW, 1.5MW (the models MD77 and MD70) and 2.0MW (MM82 and MM70). It recently erected the first prototype of a 5MW-turbine (the world's largest wind turbine, which is expected to produce wind power at €0.063/KWh) in Brunsbüttel/Germany. The company expects a large revenue opportunity from this turbine, especially in the offshore wind power market. Management plans to start serial production of this turbine in three years, after a year of testing in Brünsbuttel and another two in the Baltic Sea.

REpower is a wind turbine manufacturer with a low degree of vertical integration. It does not manufacture any of the larger components of wind turbines, such as towers, blades or gear boxes, and has one of the lowest net capital employed rates in the industry.

In 2001, REpower acquired an 84% equity stake in Denker & Wulf A.G. This subsidiary is involved in wind farm development in Germany, and in 2001, its sales contributed 34% to REpower's revenues. In 2003, it contributed a total of approximately 40-50 wind turbines (out of a total of 188). Originally, REpower expected to receive a stable contribution in sales from this business. However, following the decline in the German market, revenues from wind farm development projects by Denker & Wulf could decline in the future (the company estimates 25% in 2004). REpower's business also includes licensing, which contributed total income of €2.4 million in 2003.

The company installed 291MW in 2003 (compared to 223MW in 2002), which accounts for a world market share of 3.5%. Of the 291MW, 97% was installed in Germany. The company was the fourth largest player (10.7% market share) in the wind turbine industry in Germany in 2003 after Enercon (33.4%), Vestas (23.5%) and GE Wind (11.2%). Since then, its position in Germany has improved and it has increased its market share to 11%, which makes it the third largest player in Germany. Due to the decline in the German market, the company is focusing on

opportunities in the rest of Europe. Italy, France and Portugal have already given substantial orders for 2004. The company expects to install a total of 190 turbines in 2004, of which 50 are expected to be abroad.

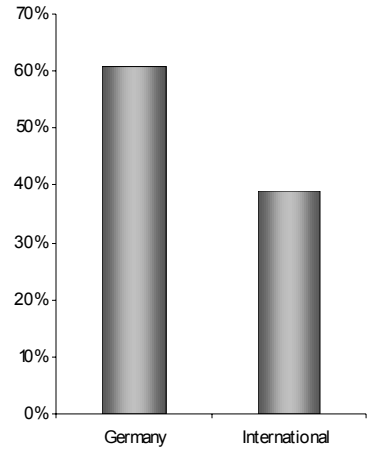
REpower's total sales were €285 million in 2003, with an EBIT margin of 4.5%. Although this was a 20% increase in sales over 2002, the EBIT margin fell significantly to 4.5% from 10.3% the year before. Looking to 2005, management expects a positive margin development as well as double-digit growth. The company plans to achieve substantial growth outside of Germany, which should also help it to reduce its strong second-half seasonality (which is typical for the German market, as the commissioning of wind farms is generally motivated by year-end tax saving activities).

Given REpower's relatively weak balance sheet, the company's key challenge is its limited ability to provide project pre-financing. Particularly with regard to offshore wind farms, pre-financing is going to be a major challenge, unless future operators such as utilities or project financing banks choose to increase their risk appetite (which is probably only going to happen after wind turbine manufacturers have established a track record with offshore technology). An additional challenge is international expansion, given that a company of its size will find it difficult to build up and maintain sales, service and maintenance centres.

Geographical breakdown

The company is based in Germany, where it has a 10.7 % market share. It is also starting to build up its business presence in the rest of Europe. The following graph is based on the order backlog on December 31, 2003. New international revenues are expected to come from France, Italy, Portugal and Japan.

Figure 99. REpower: Geographical Breakdown Based on Order Backlog, December 31, 2003



Source: Company data.

Figure 100. REpower: Income Statement (Quarterly) (€'000s)

	2002				2003				2004	
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q
Sales	22,704	50,515	64,221	117,047	32,954	44,828	39,910	167,798	21,375	44,354
Changes in finished goods and work progress	-1,153	3,280	-114	-5,502	3,464	-2,832	20,458	-7,346	19,792	-1,212
Own work capitalized								0		
Total Revenues	**21,551**	**53,795**	**64,107**	**111,544**	**36,418**	**41,996**	**60,368**	**160,451**	**41,167**	**43,142**
Other operating income	225	47	102	996	556	536	942	2,184	730	1,362
Costs of materials/cost of purchased services	-16,465	-41,373	-47,712	-77,475	-28,403	-32,714	-50,763	-122,407	-33,482	-35,135
Personnel	-3,644	-4,204	-4,696	-4,190	-5,090	-6,054	-5,853	-7,224	-5,805	-6,368
Depreciation on property, plant & equipment (& intangible assets)	-472	-570	-613	-731	-792	-637	-1,302	-1,154	-1,178	-1,098
Depreciation on goodwill	-113	-113	-113	-323	-113	-113	-113	-223	-168	-112
Other operating expenses	-4,252	-5,013	-2,321	-11,825	-3,773	-4,569	-4,237	-15,059	-4,561	-7,322
EBIT	**-3,169**	**2,569**	**8,752**	**17,997**	**-1,198**	**-1,554**	**-960**	**16,569**	**-3,297**	**-5,531**
EBIT margin	**-14.0%**	**5.1%**	**13.6%**	**15.4%**	**-3.6%**	**-3.5%**	**-2.4%**	**9.9%**	**-15.4%**	
Depreciation and goodwill	**585**	**683**	**726**	**1,054**	**905**	**750**	**1,415**	**1,377**	**1,346**	**1,210**
EBITDA	**-2,584**	**3,252**	**9,478**	**19,051**	**-293**	**-804**	**455**	**17,946**	**-1,951**	**-4,320**
EBITDA Margin	**-12%**	**6%**	**15%**	**17%**	**-1%**	**-2%**	**1%**	**11%**	**-5%**	**-10%**
Income/expenses from net interest	-338	120	54	146	-6	162	-513	593	-503	-475
Income from investments	0	0	0	905	0	0	0	141	30	30
Income/expenses from financial assets accounted according to the equity method	0	0	-15	-568	-80	-21	227	-395	0	0
Depreciation on financial assets and shares in project corporations	-39	0	0	0	-285	0	0			
Financial Income	**-338**	**120**	**39**	**444**	**-86**	**141**	**-285**	**54**	**-473**	**-445**
Income before taxes	**-3,507**	**2,690**	**8,791**	**18,441**	**-1,284**	**-1,413**	**-1,245**	**16,623**	**-3,769**	**-5,975**
Taxes on income	1,395	-1,100	-3,605	-7,323	388	483	323	-6,676	1,402	2,191
Other taxes	-11	-13	-8	-25	-25	-179	151	-51	-18	-27
Income before minority interest	**-2,124**	**1,577**	**5,179**	**11,092**	**-920**	**-1,109**	**-771**	**9,897**	**-2,385**	**-3,811**
Minority interests	-103	-15	-131	-637	-175	-36	53	-797	67	243
Net income/loss	**-2,227**	**1,562**	**5,048**	**10,455**	**-1,095**	**-1,144**	**-718**	**9,099**	**-2,318**	**-3,568**
Profit per share	-0.62	0.29	0.93	1.94	-0.20	-0.21	-0.13	1.69	-0.43	-0.66
Average number of shares in circulation (million)	3.6	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4

Source: Company data.

Figure 101. REpower: Income Statement Yearly (€'000s)

	1999	2000	2001	2002	2003
Sales	47,740	76,040	141,640	254,486	285,489
Changes in finished goods and work progress	1,820	1,578	5,022	-3,489	13,744
Own work capitalized					
Total Revenues	49,561	77,617	146,662	250,998	299,233
Other operating income	879	2,166	3,100	1,369	4,218
Costs of materials/cost of purchased services	-42,334	-52,777	-104,284	-183,024	-234,287
Personnel	-2,103	-5,582	-10,619	-16,734	-24,221
Depreciation on property, plant & equipment (& intangible assets)	-1,389	-1,817	-1,702	-2,386	-3,885
Depreciation on goodwill	0	0	-482	-662	-562
Other operating expenses	-3,340	-9,418	-14,276	-23,412	-27,638
EBIT	1,273	10,188	18,399	26,149	12,857
Depreciation and goodwill	1,389	1,817	2,184	3,048	4,447
EBITDA	2,662	12,005	20,583	29,197	17,304
EBITDA Margin	5%	15%	14%	12%	6%
Income/expenses from net interest	-315	-1,219	-1,915	-18	237
Income from investments	161	149	154	905	141
Income/expenses from financial assets accounted according to the equity method	0	0	0	-583	-268
Depreciation on financial assets and shares in project corporations				-39	-285
Financial Income	-155	-1,265	-1,943	265	-176
Income before taxes	1,119	8,923	16,455	26,414	12,681
Taxes on income	-522	-3,394	-6,288	-10,633	-5,481
Other taxes	-7	-13	-22	-57	-103
Income before minority interest	589	5,517	10,145	15,724	7,097
Minority interests	-246	-752	-1,155	-886	-955
Net income/loss	343	4,765	8,990	14,838	6,142
Profit per share	0.46	0.71	2.84	3.03	1.14
Average number of shares in circulation (million)	2.10	6.74	3.17	4.90	5.40

Source: Company data.

Figure 102. REpower: Balance Sheet (€m)

Balance sheet	2002		2003		2004	1999	2000	2001	2002	2003
In (€) at December 31	1HY	2HY	1HY	2HY	1H	FY	FY	FY	FY	FY
Liquid Assets	15.0	11.6	0.6	0.9	1.8	3.3	17.1	2.9	11.6	0.9
Shares in project corporations	2.0	1.2	1.6	0.4	4.9	0.1	0.7	2.0	1.2	0.4
Future accounts receivable from contract orders	20.5	4.3	33.8	1.0	10.7	0.2	2.1	2.7	4.3	1.0
Short-term investments/marketable securities	-	-	-	-	-	-	-	-	-	-
Trade accounts receivable	39.5	88.9	38.3	115.9	52.9	5.8	22.9	26.4	88.9	115.9
Intragroup receivables	0.4	0.7	1.0	3.3	0.7	0.0	6.4	0.3	0.7	3.3
Accounts receivable from project corporations	1.8	16.6	4.8	13.1	5.2	0.6	1.0	1.7	16.6	13.1
Inventories	40.4	43.1	53.2	53.7	91.7	7.8	12.3	23.3	43.1	53.7
Deferred tax	5.5	-	4.4	-	-	-	-	-	-	-
Short-term prepaid expenses and deferred charges	7.8	2.6	10.1	17.1	20.3	5.8	8.7	4.7	2.6	17.1
Current Assets	143.0	169.0	147.7	205.3	188.2	23.5	71.3	63.9	169.0	205.3
Property, plant and equipment	15.5	18.3	20.9	28.5	33.6	5.6	8.4	14.0	18.3	28.5
Intangible assets	1.0	2.2	2.0	2.9	2.9	1.1	0.9	0.9	2.2	2.9
Goodwill	1.7	1.5	1.2	1.8	1.3	2.7	2.4	2.0	1.5	1.8
Financial assets	0.8	0.3	0.7	1.1	1.1	1.2	1.5	0.7	0.3	1.1
Financial assets accounted according to the equity method			-	-	1.0	-	-	-	-	-
Borrowings	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1
Deferred taxes	-	0.0	-	1.0	8.7	-	-	-	0.0	1.0
Long-term prepaid expenses and deferred charges			-	-	-	3.5	4.2	-	-	-
Non-current assets	19.2	24.7	26.0	39.0	52.0	10.9	13.4	17.6	24.7	39.0
Total Assets	162.2	193.7	173.7	244.3	240.2	34.4	84.7	81.5	193.7	244.3
Liabilities	-	-	-	-	-	-	-	-	-	-
Short-term loans and short-term percentage of long-term loans	1.7	6.1	20.5	21.9	38.1	5.2	27.2	14.6	6.1	21.9
Trade accounts payable	20.4	24.1	13.3	50.2	25.1	4.5	8.8	10.8	24.1	50.2
Notes payable	-	-	-	-	3.1	-	-	-	-	-
Accounts due to project corporations	0.0	0.0	0.0	0.0	0.2	2.7	-	0.6	0.0	0.0
Liabilities to project companies	0.4	-	1.1	0.7	-	-	-	0.8	-	0.7
Advance payments received	6.3	1.4	0.7	2.4	7.5	1.8	10.7	0.9	1.4	2.4
Provisions	15.8	21.6	21.4	33.1	29.8	7.1	8.8	12.9	21.6	33.1
Deferred sales	2.4	1.3	0.6	0.0	0.0	0.3	0.5	0.1	1.3	0.0
Income tax liabilities	8.1	13.0	0.7	4.4	4.9	-	2.4	6.5	13.0	4.4
Other short-term liabilities	3.3	8.2	1.3	7.4	2.6	3.3	7.3	8.1	8.2	7.4
Long-term loans	6.8	6.3	5.9	8.9	22.1	3.5	7.0	7.3	6.3	8.9
Deferred taxes	2.6	0.8	3.0	0.7	1.6	0.5	1.1	1.9	0.8	0.7
Total long-term liabilities		-	7.1	8.9	9.7	23.7	4.0	8.2	9.2	7.1
Minority interests	1.4	2.2	2.1	3.0	2.6	0.5	1.3	1.5	2.2	3.0
Subscribed capital	5.4	5.4	5.4	5.4	5.4	2.9	2.9	3.4	5.4	5.4
Capital reserve	79.4	79.4	79.4	79.4	79.4	-	-	3.4	79.4	79.4
Balance-sheet profit/balance-sheet loss (incl. Profit reserves)	8.3	23.8	18.3	26.8	17.6	2.1	6.7	9.0	23.8	26.8
Total equity capital	93.1	108.6	103.1	111.5	102.4	5.0	9.7	15.8	108.6	111.5
Total liabilities	162.2	193.7	173.7	244.3	240.2	34.4	84.7	81.5	193.7	244.3

Source: Company data.

Siemens (SIEGn.DE, €60.49, $78.75, Outperform, PT: €80, $104)

Stock Rating
Outperform

Sector Rating
Market Overweight

Price Target (2005 year-end)
€80

52-Week Range
€53-€69

EPS (adjusted)
2003: €2.95/$3.85
2004E: €3.23/$4.21
2005E: €4.01/$5.23

P/E
2003: 22.0x
2004E: 16.5x
2005E: 15.1x

Common Shares (m)
891

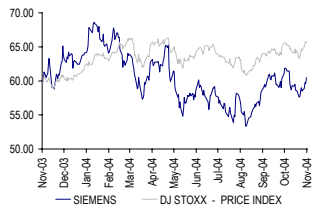
Equity Market Capitalisation (m)
€56,228

True Book Value per Share
€33

Est. 3-Yr (2003-06) CGR EPS Growth Rate
16.8%

EPS is not materially affected by factoring in options expense.

Rel to DJ STOXX



Source: Thomson Datastream.

Siemens is the top pick in our coverage universe. In our view, Siemens is likely to profit from its shift from an engineering-centric to a commercially driven company, and from its gearing to structural growth markets (primarily power and medical equipment).

Key points

- Siemens, together with ABB, is the top pick in our coverage universe. In our view, Siemens is likely to profit from its shift from an engineering-centric to a commercially-driven company, and from its gearing towards structural growth markets (power and medical equipment).
- Positive gearing towards future structural growth markets. The company is positively geared towards end-markets that should be transitioning into structural growth markets over the next few years. These include power generation, power transmission & distribution, and medical technology.
- Significant bottom-line potential. We believe that even without accretive acquisitions, Siemens can grow its bottom line between 2003 and 2006 with a CAGR of 16.8%, while our five-year earnings CAGR forecast is 12.4%.

Investment risks

- Technical risks, slowdown in capital expenditure in telecom, automation and power equipment.

Investment positives

- Siemens' management is in the midst of cultural change. The company is transitioning from an engineering-centric organisation to a commercially-driven company with the intended effect of raising the EBIT margin trend.
- Siemens holds a top position in some highly valuable businesses, e.g. Medical Technology, Automation & Drives, Power Generation and OSRAM (Lighting Technology).
- The company is geared towards structural growth markets such as Power Generation, Power Transmission & Distribution, and Medical Technologies.
- Major earnings growth potential (about 17% CAGR over a period of three years).

Valuation

- We value Siemens on 17.5x 2005E earnings, which suggests a 2005E year-end fair value of €80. The stock is currently trading on 15.1x 2005E earnings.
- While Siemens typically trades on 16-20x 1-year forward-looking, it is now trading at only 13.3x 2006E earnings, which we consider a compelling level.

Investment summary

Siemens is the top pick in our coverage universe. In our view, Siemens is likely to profit from its shift from an engineering-centric to a commercially-driven company, and from its gearing towards structural growth markets (power and medical equipment).

We like the stock for a number of reasons:

- **Positive gearing towards future structural growth markets.** The company is positively geared towards end-markets that should be transitioning into structural growth markets over the next few years. These include power generation, power transmission & distribution, and medical technology.

- **Telecom equipment recovery.** The company should continue to profit from a telecommunication equipment recovery, which should raise EBIT for the I&C group to €627 million in 2004 (from a loss of €21 million in 2003). While the company is struggling in the mobile handsets space, it is benefiting strongly from the recovery in the wireless equipment market. Regarding the still sluggish market conditions in the wireline equipment segment, Siemens' financial performance has improved drastically following cost cuts and extensive restructuring.

- **Stronger company now than before the downturn.** In our view, Siemens has managed the downturn better than many of its peers, especially with regard to telecom equipment and engineering companies. While Lucent, Nortel, Marconi, Alcatel, Alstom, Invensys and other main competitors have suffered financially quite considerably in the past couple of years, Siemens has managed to maintain an extremely robust balance sheet and to increase its profitability over the same period. Siemens' net debt level reached a record high of €10.7 billion in third-quarter 2001 but was reduced to €2.3 billion in third-quarter 2004. The company's FCF level has been consistently positive since fourth-quarter 2001.

We continue to view Siemens as a profitability-driven story with a robust debt and cashflow level – a situation in which the stock will be entirely driven by earnings expectations and not by worries over debt or cashflow concerns, in our view.

In terms of profitability, Siemens has the following attractive characteristics:

- **Significant bottom-line potential.** We believe that, even without making accretive acquisitions, Siemens can grow earnings between 2003 and 2006 at a CAGR of 16.8%, while our five-year earnings CAGR forecast is 12.4%.

- **Geared to power generation.** The near-term outlook for power generation already looks more attractive than it did a year ago, while the longer-term outlook is very positive, in our view. We expect growth to be driven by the rampant demand in China and capacity replacement and extension needs in Europe and the US. As we believe the European generation mix will shift in favour of gas-fired power plants,

we expect Siemens and GE to be the preferred equipment suppliers, given their dominance in this industry. We see China as the most attractive growth market, with the biggest need for power generation equipment in the short to medium term and believe Siemens PG should treat China as its strategic market.

- **Geared to the power transmission and distribution market.** We are enthusiastic about the growth outlook for the transmission and distribution of power. Driven by a combination of severe underinvestment in the west and the need for more extended and reliable power grids in growth areas such as China, we believe it will transition into a structural growth market within a few years. We estimate growth rates can more than double from the current 4% to about 8%-10% in the second half of the decade. We believe that Siemens and ABB are very well positioned to leverage their strong market positioning here.

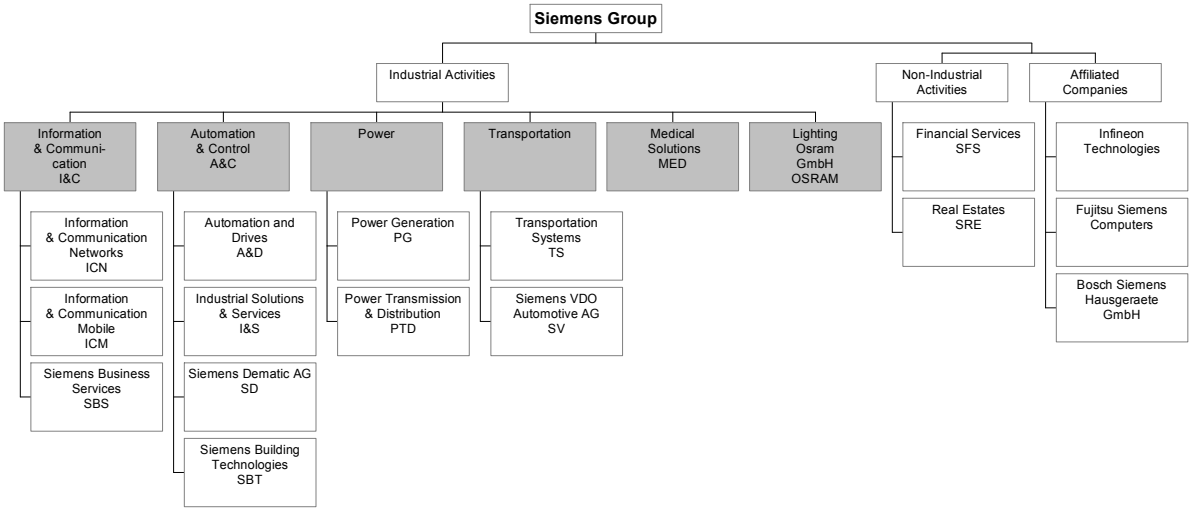
- **Commercially better-managed company.** Siemens is in the middle of a cultural shift from an engineering-centric conglomerate to a profitability-driven company. We view the increased frequency of management changes on a divisional level as one indicator for this cultural shift. In the three years between the pre-recession year 2000 and the recovery year 2003, Siemens exchanged about 40% of divisional heads – a speed and ferocity unparalleled in Siemens' annals. In terms of more tangible indicators, we estimate that Siemens' mid-cycle EBIT margin has been 2.9% in the past (1987-98) and is 5.3% currently. We estimate that this margin will rise further to 7.1% over the next few years. This compares to Siemens' internal margin target of a minimum of 7.8% (the aggregate of the company's divisional 'Operation 2003' margin targets). Hence, there is still a shortfall of 0.7 percentage points between our future mid-cycle margin expectations and the company's minimum margin target requirement. We estimate this shortfall translates into a valuation discrepancy of €6.4 billion, or €6.88 per share.

- **New CEO promising.** Heinrich von Pierer, highly respected CEO of Siemens since 1992, is due to become chairman of the advisory board in January 2005. His successor is Klaus Kleinfeld, former manager of Siemens North America, who has an excellent track record as a turnaround manager. We view it as positive that von Pierer's successor is a manager with a proven track record within Siemens and who has been successful both in Germany and abroad.

Company description

Siemens, headquartered in Munich, is Europe's largest electronics and electrical engineering firm, with about €74 billion in sales (2003). The company has operations worldwide in the automation and control, information and communications, lighting, medical, power, and transportation sectors. It is also one of the world's leading mobile handset makers (with a global market share of about 7%).

Figure 103. Siemens: Organisation Chart

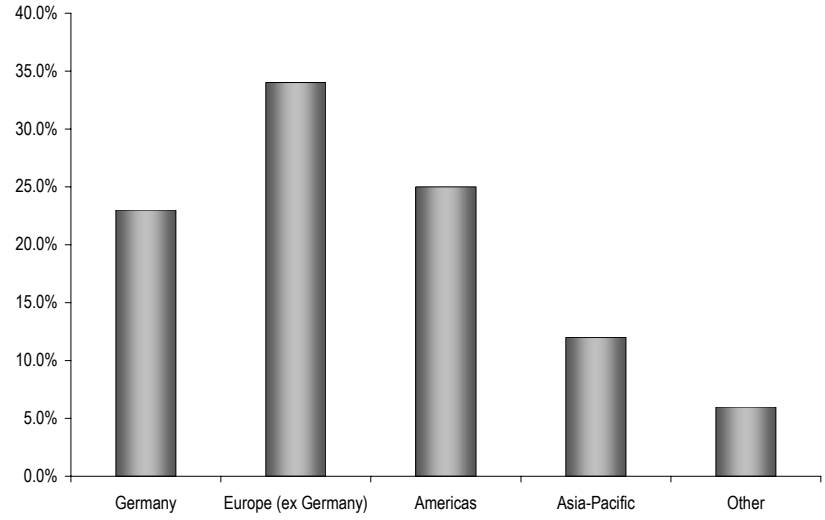


Source: Company data; Bear, Stearns International Limited.

Geographical breakdown

Siemens' end-markets are mostly in Europe, with 57% of sales (23% of sales in Germany). The Americas follow with 25% of sales, while Asia-Pacific contributes about 12%.

Figure 104. Siemens: Geographical Sales Breakdown, 2003A

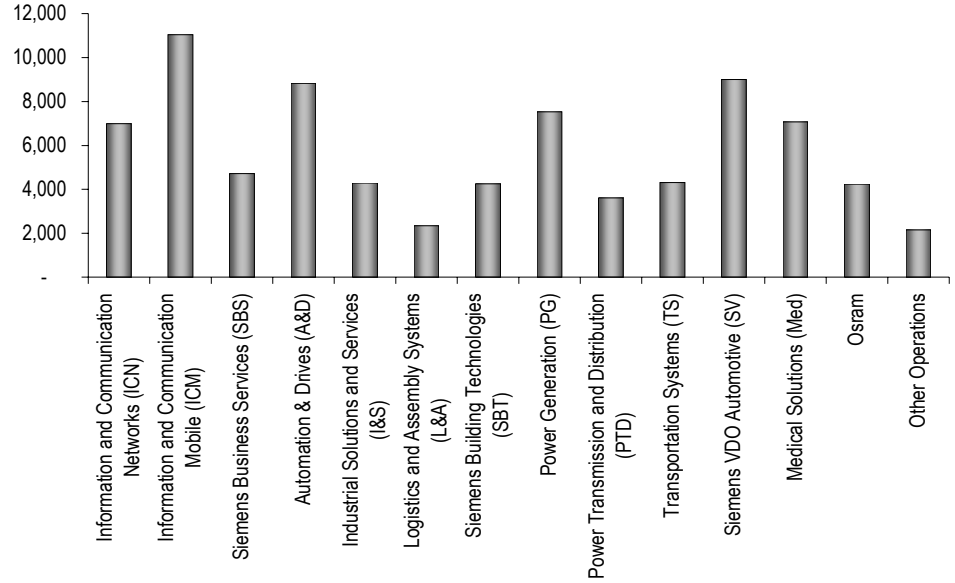


Source: Company data.

Divisional breakdown

Siemens' largest sales generator is its telecom equipment activities (22% of revenues), while Power Generation (PG) contributes about 9% to sales and Power Transmission & Distribution about 4%.

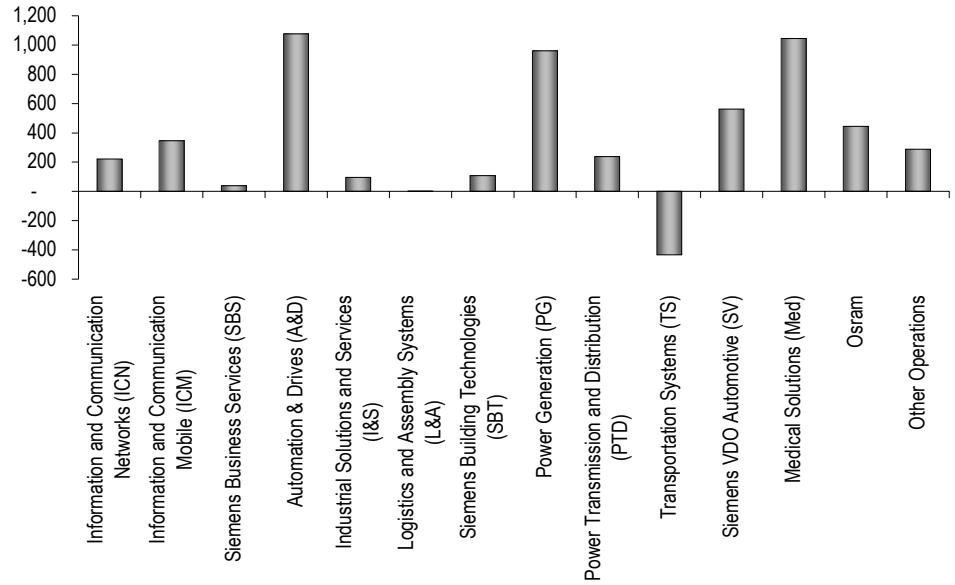
Figure 105. Siemens: Divisional Sales Contribution, 2004 (€m)



Source: Company data.

Siemens has about 14% sales and 24% EBIT exposure to the power equipment market (the combination of its Power Generation and Power Transmission & Distribution businesses). The company also has 22% EBIT exposure to the Automation Equipment and 21% EBIT exposure to the Medical Equipment markets. Other significant earnings contributors are Telecom Equipment (Information & Communications) (11%), VDO Automotive (10%), and Lighting (OSRAM) (9%).

Figure 106. Siemens: Divisional EBIT Contribution, 2004 (€m)



Source: Company data.

POWER GENERATION OFFERING

Siemens Power Generation (PG) develops, builds and supplies power generation equipment and offers associated services predominantly in the area of conventional, fossil fuel power plants.

Siemens PG provides customers worldwide with a full range of equipment necessary for the efficient conversion of energy into electricity and heat. The division also customises gas and steam turbines in the smaller output range, which can be used as drives for compressors or large pumps, to meet specific project needs. PG offers a broad range of power plant technology, with activities that include: development and manufacture of key components, equipment, and systems; planning, engineering and construction of new power plants; and comprehensive servicing, retrofitting and modernising of existing facilities. Power Generation consists of three businesses, each with a clear market focus on specific customer groups and technologies: Fossil Power Generation; Industrial Applications; and Instrumentation and Control. Fossil Power Generation is by far the largest of the businesses, accounting for approximately 77% of total sales in fiscal 2003.

Fossil Power Generation includes power plants and systems engineering as well as components and equipment engineering and manufacturing, such as fossil fuel-fired power plants, co-generation heat and power plants. PG's fossil fuel power generation business concentrates on turbo generators, gas and steam turbines in the larger power range, with an emphasis on combined-cycle gas and steam power plants. PG also performs power plant service, such as maintenance, rehabilitation and operations. PG's installed base of thermal power plant capacity of more than 500GW provides the company with a good opportunity to grow its service business. Industrial Applications includes steam and gas turbines in the small and medium power ranges, as well as turbo generators, turbo compressors, compressor solutions for the oil and gas industry, and offers complete engineering services for power plants. PG's activities encompass design, engineering, supply and service. PG develops and manufactures steam turbines for application in industrial, municipal and independent heat and power generation and for mechanical drives as well as turbo compressors. In addition, PG offers combined cycle power plants. In the renewable energy sector, PG also offers biomass power plants, but no wind turbines, which we find a clear deficit, given that wind power is the strongest growth area within power generation.

PG's product line in the area of Power Generation equipment has expanded in fiscal 2003 through the acquisition of the small gas turbine (3-15 megawatts) business of ALSTOM, which was completed in April 2003, and Alstom's medium gas turbine (15-50 megawatts) and industrial steam turbine businesses, which was completed in July 2003. Management sees the products and services of Alstom as complementing the existing portfolio of the company's Industrial Applications division, in which the purchased activities are being integrated. The acquisition enabled Siemens to provide a complete range of products and services from one source to its customers and gives PG a leading position worldwide in the marketplace for industrial power and compressor solutions. With an installed base of approximately 3,500 gas turbines and 4,100 steam turbines, the acquisition also creates new opportunities to grow the company's service business.

Siemens PG also has a 34% stake in Framatome, a joint venture with Areva in nuclear power generation equipment. PG is also active in the area of hydropower generation, through a joint venture with Voith.

POWER TRANSMISSION & DISTRIBUTION OFFERING

The Power Transmission & Distribution (PTD) division supplies energy utilities and large industrial power users with equipment, systems and services used to process and transmit electrical power from the source, typically a power plant, to various points along the power transmission network and to distribute power via a distribution network to the end-user.

PTD provides its customers with turnkey transmission systems and distribution substations, discrete products and equipment for integration by its customers into larger systems; and information technology systems and consulting services relating to the design and construction of power transmission and distribution networks. PTD offers the following products and services, presented roughly in the order in which they are used in a power transmission and distribution network. Each group of products and services described corresponds to an internal division of the same name unless otherwise indicated:

- Power systems control equipment and information technology systems, including computerised power management systems used to operate power transmission networks, determine customer needs and regulate the flow of power from power plants to the distribution network (offered through the Energy Management and Information Systems division).

- Transformers, including both the power transformers used at the beginning of the transmission process to step up the voltage of the power generated by power plants to a voltage that can be carried efficiently on the power network, and the distribution transformers and their components used at the end of the distribution process to step down power from high voltage to lower voltage levels for the end-user.

- High voltage products and ready-to-use systems, in both alternating and direct current, used in the physical transmission of power from power plants to the distribution network before the voltage is stepped down for distribution in populated areas, including ready-to-operate indoor and outdoor high voltage substations and the switchgear and protection systems required to control the flow of power and prevent damage to the power transmission network.

- Protection and substation control systems including equipment and systems used at power distribution network substations, such as relays and computerised protection and control equipment (offered through the Power Automation division).

- Medium voltage equipment including circuit breakers and distribution switchgear systems and components that regulate the flow of power on the distribution network before it is stepped down to a low voltage level for the end-user.

In addition to PTD's equipment and systems, the division offers a growing range of services and integrated solutions for various stages in the power transmission and distribution process. These include: technical support and maintenance services and, to an increasing extent, outsourcing projects and operations; consulting relating to the planning, design and optimisation of power transmission and distribution networks; information technology services and solutions to support customer management and energy trading; training programmes; and metering services for electric, gas and heat.

The division also provides analytical and consulting services, as well as equipment and systems in the power quality field that are designed to improve the availability and reliability of power transmitted by analysing and reducing the causes of power fluctuations and failures. PTD's growing services business aims specifically at responding to the division's customers' increasing demands for these services. For very large-scale projects, PTD works together with Siemens' Industrial Solutions and Services Group, which assists with facility construction, and with Siemens Financial Services, which provides financing for the company's customers.

Figure 107. Siemens: Income Statement (€m)

Income Statement	Q1-2004A	Q2-2004A	Q3-2004A	Q4-2004A	Q1-2005E	Q2-2005E	Q3-2005E	Q4-2005E	Q1-2006E	Q2-2006E	Q3-2006E	Q4-2006E	FY 2004A	FY 2005E	FY 2006E
Net Sales	**18,329**	**17,794**	**18,216**	**20,828**	**19,634**	**18,492**	**19,034**	**21,862**	**20,698**	**19,492**	**20,059**	**23,056**	**75,167**	**79,023**	**83,305**
Sales Growth (Year-over-Year)	*-2.7%*	*-2.4%*	*4.8%*	*5.3%*	*7.1%*	*3.9%*	*4.5%*	*5.0%*	*5.4%*	*5.4%*	*5.4%*	*5.5%*	*1.3%*	*5.1%*	*5.4%*
Cost of Sales	(12,871)	(12,705)	(12,816)	(15,130)	(14,263)	(13,433)	(13,827)	(15,881)	(15,036)	(14,159)	(14,571)	(16,748)	(53,522)	(57,404)	(60,514)
Gross Profit on Sales	**5,458**	**5,089**	**5,400**	**5,698**	**5,371**	**5,059**	**5,207**	**5,981**	**5,663**	**5,333**	**5,488**	**6,308**	**21,645**	**21,619**	**22,792**
Gross Margin	*29.8%*	*28.6%*	*29.6%*	*27.4%*	*27.4%*	*27.4%*	*27.4%*	*27.4%*	*27.4%*	*27.4%*	*27.4%*	*27.4%*	*28.8%*	*27.4%*	*27.4%*
Research and Development Expenses	(1,246)	(1,246)	(1,264)	(1,307)	(1,146)	(1,072)	(1,100)	(1,221)	(1,173)	(1,103)	(1,127)	(1,271)	(5,063)	(4,539)	(4,674)
Marketing, Selling and General Administration	(3,350)	(3,213)	(3,287)	(3,717)	(3,258)	(3,049)	(3,129)	(3,472)	(3,335)	(3,138)	(3,205)	(3,615)	(13,567)	(12,908)	(13,293)
Other Operating Income (Expense), net	99	(423)	13	155	136	127	130	145	139	131	134	151	(156)	538	554
Income (loss) from investments in other companies, net	105	777	70	79	69	65	66	74	71	67	68	77	1,031	274	283
Income (expense) from financial assets and marketable securities, net	(38)	113	(5)	-	-	-	-	-	-	-	-	-	70	-	-
Interest Income (expenses) of Operations, net	(1)	5	11	3	3	2	3	3	3	3	3	3	18	10	11
Other Income (expenses), net	52	72	70	60	53	49	51	56	54	51	52	58	254	208	215
Gains on Sales and Dispositions of significant business interest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other special items	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Income (loss) before Income Taxes	**1,079**	**1,174**	**1,008**	**971**	**1,228**	**1,182**	**1,229**	**1,566**	**1,422**	**1,342**	**1,412**	**1,711**	**4,232**	**5,204**	**5,887**
EBIT Margin	*5.9%*	*6.6%*	*5.5%*	*4.7%*	*6.3%*	*6.4%*	*6.5%*	*7.2%*	*6.9%*	*6.9%*	*7.0%*	*7.4%*	*5.6%*	*6.6%*	*7.1%*
Income Taxes	(320)	84	(157)	(268)	(307)	(295)	(307)	(391)	(355)	(336)	(353)	(428)	(661)	(1,301)	(1,472)
Effective Tax Rate	*29.7%*	*-7.2%*	*15.6%*	*27.6%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*25.0%*	*15.6%*	*25.0%*	*25.0%*
Minority Interests	(33)	(48)	(36)	(49)	(42)	(44)	(43)	(44)	(43)	(43)	(43)	(43)	(166)	(172)	(173)
Net Income (loss)	**726**	**1,210**	**815**	**654**	**880**	**843**	**879**	**1,130**	**1,024**	**963**	**1,016**	**1,239**	**3,405**	**3,731**	**4,242**
Income Growth (Year-over-Year)	*39.3%*	*113.0%*	*29.0%*	*-9.7%*	*21.2%*	*-30.4%*	*7.9%*	*72.8%*	*16.4%*	*14.3%*	*15.6%*	*9.7%*	*39.3%*	*9.6%*	*13.7%*
Basic Net Income (loss) per Share	**0.82**	**1.36**	**0.92**	**0.73**	**0.99**	**0.95**	**0.99**	**1.27**	**1.15**	**1.08**	**1.14**	**1.39**	**3.82**	**4.19**	**4.76**
Diluted Net Income (loss) per Share	**0.82**	**1.36**	**0.91**	**0.70**	**0.95**	**0.91**	**0.95**	**1.22**	**1.10**	**1.04**	**1.09**	**1.33**	**3.66**	**4.01**	**4.56**
Diluted Adjusted Net Income per Share	**0.82**	**0.91**	**0.91**	**0.70**	**0.95**	**0.91**	**0.95**	**1.22**	**1.10**	**1.04**	**1.09**	**1.33**	**3.23**	**4.01**	**4.56**

Source: Company data; Bear, Stearns International Limited estimates.

Figure 108. Siemens: Divisional Sales and EBIT Breakdown (€m)

Divisional Sales	Q1-2004A	Q2-2004A	Q3-2004A	Q4-2004A	Q1-2005E	Q2-2005E	Q3-2005E	Q4-2005E	Q1-2006E	Q2-2006E	Q3-2006E	Q4-2006E	FY 2004A	FY 2005E	FY 2006E
Operations Groups															
Information and Communication Networks (ICN)	1,700	1,618	1,678	1,998	1,768	1,605	1,694	2,020	1,828	1,683	1,777	2,118	6,994	7,087	7,406
Information and Communication Mobile (ICM)	2,957	2,661	2,446	2,978	3,369	2,534	2,581	3,157	3,571	2,665	2,707	3,324	11,042	11,642	12,267
Siemens Business Services (SBS)	1,210	1,121	1,140	1,245	1,234	1,166	1,186	1,295	1,296	1,224	1,245	1,360	4,716	4,880	5,124
Automation & Drives (A&D)	2,050	2,102	2,208	2,469	2,173	2,228	2,340	2,617	2,303	2,362	2,481	2,774	8,829	9,359	9,920
Industrial Solutions and Services (I&S)	997	983	1,001	1,309	1,147	1,130	1,151	1,374	1,204	1,187	1,209	1,443	4,290	4,803	5,043
Logistics and Assembly Systems (L&A)	542	503	568	725	564	523	591	761	592	549	620	799	2,338	2,439	2,561
Siemens Building Technologies (SBT)	1,040	996	997	1,214	1,082	1,036	1,037	1,275	1,136	1,088	1,089	1,338	4,247	4,429	4,650
Power Generation (PG)	1,902	1,713	1,933	1,979	1,997	1,799	2,049	2,098	2,117	1,907	2,172	2,224	7,527	7,942	8,419
Power Transmission and Distribution (PTD)	820	793	822	1,176	869	841	871	1,247	939	908	941	1,346	3,611	3,828	4,134
Transportation Systems (TS)	1,049	1,017	1,019	1,225	944	915	917	1,262	991	961	963	1,325	4,310	4,038	4,240
Siemens VDO Automotive (SV)	2,039	2,162	2,502	2,298	2,345	2,486	2,627	2,413	2,462	2,611	2,758	2,534	9,001	9,871	10,365
Medical Solutions (Med)	1,648	1,708	1,670	2,046	1,747	1,810	1,770	2,169	1,852	1,919	1,876	2,299	7,072	7,496	7,946
Osram	1,073	1,088	1,029	1,050	1,127	1,142	1,080	1,103	1,183	1,200	1,134	1,158	4,240	4,452	4,675
Other Operations	432	478	472	768	497	502	496	806	522	527	520	847	2,150	2,301	2,416
Total Operating Groups	**19,459**	**18,943**	**19,485**	**22,480**	**20,862**	**19,718**	**20,391**	**23,596**	**21,995**	**20,790**	**21,493**	**24,888**	**80,367**	**84,567**	**89,166**
Corporate items, pensions and eliminations	(1,259)	(1,325)	(1,408)	(1,802)	(1,309)	(1,378)	(1,464)	(1,874)	(1,362)	(1,433)	(1,523)	(1,949)	(5,794)	(6,026)	(6,267)
Total Operations	**18,200**	**17,618**	**18,077**	**20,678**	**19,552**	**18,340**	**18,927**	**21,722**	**20,633**	**19,357**	**19,970**	**22,939**	**74,573**	**78,541**	**82,899**
Siemens Financial Services (SFS)	132	145	130	155	139	152	137	163	146	160	143	171	562	590	620
Siemens Real Estate (SRE)	385	399	390	410	385	399	390	410	385	399	390	410	1,584	1,584	1,584
Eliminations	(2)	(3)	(3)	(5)	(2)	(3)	(3)	(5)	(2)	(3)	(3)	(5)	(13)	(14)	(14)
Total Financing and Real Estate	**515**	**541**	**517**	**560**	**522**	**548**	**523**	**568**	**528**	**556**	**530**	**575**	**2,133**	**2,161**	**2,190**
Eliminations, Reclassifications and Corporate Treasury	(386)	(365)	(378)	(410)	(401)	(380)	(393)	(426)	(417)	(395)	(409)	(443)	(1,539)	(1,601)	(1,665)
Siemens Worldwide	**18,329**	**17,794**	**18,216**	**20,828**	**19,672**	**18,509**	**19,057**	**21,863**	**20,744**	**19,518**	**20,091**	**23,071**	**75,167**	**79,101**	**83,424**

Divisional EBIT	Q1-2004A	Q2-2004A	Q3-2004A	Q4-2004A	Q1-2005E	Q2-2005E	Q3-2005E	Q4-2005E	Q1-2006E	Q2-2006E	Q3-2006E	Q4-2006E	FY 2004A	FY 2005E	FY 2006E
Operations Groups															
Information and Communication Networks (ICN)	51	37	51	83	56	19	39	172	71	32	50	190	222	286	342
Information and Communication Mobile (ICM)	123	109	64	51	113	83	84	114	101	72	84	115	347	394	372
Siemens Business Services (SBS)	44	26	(2)	(28)	(25)	-	24	26	26	24	25	27	40	25	102
Automation & Drives (A&D)	221	235	308	313	282	290	304	340	299	307	323	361	1,077	1,217	1,290
Industrial Solutions and Services (I&S)	15	26	19	35	34	34	35	41	36	36	36	43	95	144	151
Logistics and Assembly Systems (L&A)	(37)	(30)	14	55	39	37	41	53	41	38	43	56	2	171	179
Siemens Building Technologies (SBT)	39	16	14	39	32	31	31	38	34	33	33	40	108	133	140
Power Generation (PG)	245	274	236	206	220	198	246	252	233	210	261	267	961	915	970
Power Transmission and Distribution (PTD)	51	63	62	62	61	59	61	87	66	64	66	94	238	268	289
Transportation Systems (TS)	32	(289)	(48)	(129)	(47)	(46)	(46)	-	50	48	48	66	(434)	(139)	212
Siemens VDO Automotive (SV)	100	128	174	160	163	173	183	168	171	182	192	176	562	687	722
Medical Solutions (Med)	327	228	219	272	227	235	230	304	241	249	244	299	1,046	996	1,033
Osram	109	116	111	109	117	119	112	114	123	125	118	120	445	462	485
Other Operations	41	137	17	94	61	61	61	99	64	65	64	104	289	282	296
Total Operating Groups	**1,361**	**1,076**	**1,239**	**1,322**	**1,335**	**1,293**	**1,405**	**1,808**	**1,556**	**1,484**	**1,586**	**1,958**	**4,998**	**5,841**	**6,583**
Corporate items, pensions and eliminations	(357)	(108)	(323)	(419)	(271)	(258)	(313)	(394)	(279)	(293)	(317)	(403)	(1,207)	(1,237)	(1,291)
Other interest expenses	(34)	(33)	(31)	(43)	-	-	-	-	-	-	-	-	(141)	-	-
other assets related reconciliation items	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Operations	**970**	**935**	**885**	**860**	**1,064**	**1,035**	**1,092**	**1,414**	**1,277**	**1,191**	**1,269**	**1,555**	**3,650**	**4,605**	**5,292**
Financing and Real Estate Groups															
Siemens Financial Services (SFS)	57	66	67	60	62	69	61	71	65	71	64	76	250	263	275
Siemens Real Estate (SRE)	54	45	10	(1)	27	20	14	16	19	17	16	18	108	77	70
Total Financing and Real Estate	**111**	**111**	**77**	**59**	**89**	**89**	**75**	**86**	**84**	**89**	**80**	**93**	**358**	**340**	**345**
Eliminations, Reclassifications and Corporate Treasury	(2)	128	46	52	75	58	62	65	61	63	63	62	224	260	250
Siemens Worldwide	**1,079**	**1,174**	**1,008**	**971**	**1,228**	**1,182**	**1,229**	**1,566**	**1,422**	**1,342**	**1,412**	**1,711**	**4,232**	**5,204**	**5,887**

Source: Company data; Bear, Stearns International Limited estimates.

Figure 109. Siemens: Balance Sheet (€m)

	Q1-2004A	Q2-2004A	Q3-2004A	Q4-2004A	Q1-2005E	Q2-2005E	Q3-2005E	Q4-2005E	FY2002A	FY2003A	FY2004A	FY2005E
Assets												
Current Assets												
Cash & Cash Equivalents	10,342	13,233	13,284	12,190	14,962	15,752	16,310	17,342	11,196	12,149	12,190	17,342
Marketable Securities	661	2,233	2,096	1,386	1,386	1,386	1,386	1,386	399	650	1,386	1,386
Accounts receivable, net	14,431	14,053	14,621	15,470	15,327	14,404	14,775	16,826	15,230	14,511	15,470	16,826
Intracompany receivables	-	-	-	-	-	-	-	-	-	-	-	-
Inventories, net	10,270	10,979	11,624	11,358	11,588	11,052	11,284	12,713	10,672	10,366	11,358	12,713
Deferred income taxes	1,009	1,147	1,176	1,144	1,173	1,127	1,143	1,288	1,212	1,063	1,144	1,288
Other current assets	5,235	4,515	4,328	4,398	4,850	4,390	4,440	5,077	5,353	4,750	4,398	5,077
TOTAL Current Assets	41,948	46,160	47,129	45,946	49,286	48,110	49,338	54,632	44,062	43,489	45,946	54,632
Long-term investments	6,267	4,283	4,167	4,122	4,122	4,122	4,122	4,122	5,092	5,992	4,122	4,122
Goodwill	6,341	6,078	6,107	6,476	6,476	6,476	6,476	6,476	6,459	6,501	6,476	6,476
Other intangible assets, net	2,207	2,192	2,187	2,514	2,514	2,514	2,514	2,514	2,384	2,358	2,514	2,514
Property, Plant & equipment, net	10,289	10,306	10,347	10,683	10,904	10,242	10,422	11,859	11,742	10,756	10,683	11,859
Deferred Income Taxes	4,162	4,256	4,292	4,811	4,579	4,341	4,447	5,097	3,686	4,359	4,811	5,097
Other assets	4,157	4,068	4,168	4,966	4,529	4,283	4,423	5,100	4,514	4,150	4,966	5,100
Other intracompany receivables	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL ASSETS	**75,371**	**77,343**	**78,397**	**79,518**	**82,410**	**80,089**	**81,743**	**89,799**	**77,939**	**77,605**	**79,518**	**89,799**
Liabilities and Shareholders' Equity												
Current Liabilities												
Short-term debt and current maturities of long-term debt	1,245	1,645	1,667	1,434	1,574	1,539	1,541	1,712	2,103	1,745	1,434	1,712
Accounts payable	7,925	8,469	8,567	9,326	8,965	8,555	8,743	9,982	8,649	8,404	9,326	9,982
Intracompany liabilities	-	-	-	-	-	-	-	-	-	-	-	-
Accrued liabilities	8,946	8,876	8,991	9,240	9,445	8,863	9,029	10,266	9,608	8,884	9,240	10,266
Deferred income taxes	876	939	908	1,522	1,097	1,071	1,126	1,345	661	870	1,522	1,345
Other current liabilities	11,893	11,564	11,707	11,850	12,322	11,507	11,713	13,304	13,691	12,125	11,850	13,304
TOTAL Current Liabilities	30,885	31,493	31,840	33,372	33,403	31,535	32,153	36,609	34,712	32,028	33,372	36,609
Long-term debt	11,233	11,298	11,074	9,785	11,415	10,605	10,624	11,931	10,243	11,433	9,785	11,931
Pension Plans and similar commitments	4,515	4,769	4,934	4,392	4,889	4,617	4,665	5,218	5,326	5,843	4,392	5,218
Deferred income taxes	502	497	496	569	539	508	521	599	195	534	569	599
Other accruals and provisions	3,467	3,694	3,733	4,016	3,900	3,717	3,794	4,328	3,401	3,418	4,016	4,328
Other intracompany liabilities	-	-	-	-	-	-	-	-	-	-	-	-
Minority Interests	606	635	660	529	529	529	529	529	541	634	529	529
Shareholder Equity	2,673	2,673	2,673	2,673	2,673	2,673	2,673	2,673	2,671	2,673	2,673	2,673
Additional paid-in capital	5,076	5,085	5,090	5,121	5,121	5,121	5,121	5,121	5,053	5,073	5,121	5,121
Retained earnings	23,746	23,978	24,793	25,447	26,327	27,169	28,048	29,178	21,471	23,020	25,447	29,178
Accumulated other comprehensive income	(7,244)	(6,779)	(6,896)	(6,386)	(6,386)	(6,386)	(6,386)	(6,386)	(5,670)	(7,051)	(6,386)	(6,386)
Treasury stock	(88)	-	-	-	-	-	-	-	(4)	-	-	-
Total Sharehlders' equity	24,163	24,957	25,660	26,855	27,735	28,577	29,456	30,586	23,521	23,715	26,855	30,586
Total Liabilities and Shareholders' Equity	**75,371**	**77,343**	**78,397**	**79,518**	**82,410**	**80,089**	**81,743**	**89,799**	**77,939**	**77,605**	**79,518**	**89,799**

Source: Company data; Bear, Stearns International Limited estimates.

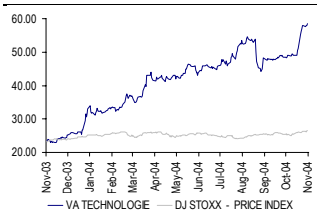
VA Tech (VATE.VI, €58, Not Rated)

52-Week Range
€23-€59

Common Shares (m)
15

Equity Market Capitalisation (m)
€868.5

Rel to DJ STOXX



Source: Thomson Datastream.

VA Tech is the smallest European player in conventional power equipment, but its absence from high-growth markets suggests it has slow growth prospects. Recently, Siemens has announced that it was willing to acquire VA Tech for €55 per share.

Company description

VA Tech constructs metallurgical plants, hydroelectric and combined cycle power plants and electromechanical plants, electricity distribution systems and water treatment systems, and offers industry services for all of its produced lines. It focuses on four key business areas: Metallurgy, Power Generation, Transmission and Distribution and Infrastructure. Metallurgy contributes 24% of total sales, and the combined Energy divisions generate 53% and Infrastructure 23% in 2003.

VA Tech is Austria's largest engineering company. Its Metallurgy division ranks first in its particular niche in the world. It has a market share of 16% and is followed by the German SMS Demag with a 15% market share and the Italian Daniele with 11% market share.

VA Tech's strongest growth market is China – specifically with regard to selling steel plants. The company continues to anticipate further growth in the Chinese steel market.

The company's energy business comprises two divisions (hydropower and gas turbines). The Power Generation division's sales derive from the construction of hydro power plants (67%) and gas turbine plants (33%). With a market share of 17%, VA Tech is the world's third largest player in the hydropower generation market, behind Alstom (33%) and Siemens (17%). However, the company holds a No.1 position in small-scale hydro turbines. The Transmission & Distribution division focuses solely on the high voltage sector. Within this niche market, VA Tech has a market share of 11% compared to other big players like ABB (22%), Areva (13%) and Siemens (11%). The Infrastructure division has a leading position in Austria with a national market share of 18%. According to management, there is a lot of potential in the rest of Europe, as this market, especially Eastern Europe, has a large demand for more equipment.

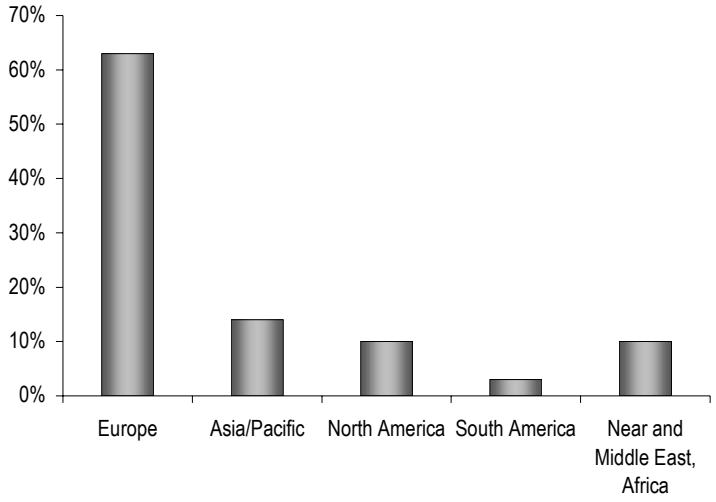
Group sales totalled €3,923 million in 2003 with an EBIT margin of 2.6%, implying respective growth over 2002 of 1.3% and 21.3%. In 2004, the company expects a net loss of €65 million to €70 million, compared to a loss of €15 million in 2003. The company is planning a capital increase to enhance the equity ratio.

The key challenge for VA Tech is its relatively weak balance sheet and hence its ability to bid for larger orders. After disappointments with some larger orders, VA Tech has decided to limit its exposure to them and only bid in cooperation with other companies.

Geographical breakdown

Although VA Tech has a very strong base in Europe, China and India are the key growth areas for the company. Management also sees good market opportunities in Eastern Europe, but this market is clearly much smaller than India or China.

Figure 110. VA Tech's Sales Breakdown, FY 2003



Source: Company data.

Divisional breakdown (description of key products)

The company has four business divisions: Metallurgy, Power Generation, Transmission and Distribution, and Infrastructure.

Metallurgy: supplies engineering and metallurgical plants such as steel plants. It covers the entire cycle of customer plants, including integration, steel-making, continuous casting and environmental technology, rolling mill, strip processing and pipe and tube technology, automation and metallurgy services. Additionally it offers mineral and reduction technology.

Power generation division: supplies electro-mechanical equipment and services for hydro and combined cycle power plants and refurbishes the power plants.

Transmission and distribution: supplies electrical power transmission and distribution systems. Its business focuses on switches, transformers and the automation business in the high voltage market.

Infrastructure: supplies holistic electromechanical and electronic plants, systems and services in the industrial plant, building systems, automation, drive and traction technology areas, IT services.

Figure 111. VA Tech: Income Statement Quarterly (€m)

	2002				2003				2004		2001	2002	2003
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	FY	FY	FY
Sales	863	925	892	1,191	802	921	1,023	1,176	914	1,026	3,999	3,872	3,923
Expenses for materials and services received	-707	-777	-745	-971	-666	-771	-853	-965	-773	-866	-3,319	-3,201	-3,255
Gross profit	**156**	**148**	**147**	**220**	**137**	**151**	**170**	**211**	**141**	**160**	**680**	**671**	**669**
Gross margin					*17.0%*	*16.3%*	*16.7%*	*17.9%*	*15.4%*	*15.6%*	*17.0%*	*17.3%*	*17.0%*
Other operating income	14	30	56	33	27	12	31	22	36	9	245	132	91
Marketing and sales expenses	-59	-62	-58	-66	-56	-59	-56	-57	-57	-59	-285	-245	-228
Administration expenses	-62	-63	-79	-77	-56	-59	-62	-60	-57	-55	-293	-280	-238
Other operating expenses	-31	-35	-28	-55	-25	-27	-39	-50	-34	-21	-201	-149	-141
EBITA	**19**	**17**	**39**	**54**	**26**	**17**	**44**	**65**	**30**	**34**	**146**	**129**	**153**
EBITA margin					*3.2%*	*1.9%*	*4.3%*	*5.6%*	*3.3%*	*3.3%*	*3.7%*	*3.3%*	*3.9%*
Amortization of goodwill	-8	-8	-9	-21	-8	-12	-10	-21	-15	-6	-63	-46	-52
EBIT	**11**	**9**	**29**	**34**	**18**	**6**	**34**	**44**	**15**	**28**	**83**	**83**	**101**
EBIT margin	*1.3%*	*1.0%*	*3.3%*	*2.8%*	*2.2%*	*0.6%*	*3.3%*	*3.7%*	*1.7%*	*2.7%*	*2.1%*	*2.2%*	*2.6%*
Interest income (expense)	-30	-32	-31	-46	-27	-27	-33	-36	-31	-33	-107	-138	-122
investment income	0	0	1	4	0	3	0	-6	2	-1	81	5	-3
Other financial income (expense)	-2	-45	-5	11	1	1	-1	3	2	-2	-15	-41	4
Net Financial Income	-32	-76	-35	-31	-25	-23	-34	-38	-26	-37	-41	-174	-121
Earnings before Tax	**-21**	**-67**	**-6**	**3**	**-8**	**-18**	**0**	**6**	**-11**	**-9**	**42**	**-91**	**-19**
Taxes	-6	-2	-5	-1	-4	-1	-2	4	-3	-2	-36	-14	-3
Minority interests	5	6	2	-1	4	2	4	-3	7	0	26	12	7
Profit/loss for the period	**-22**	**-63**	**-8**	**0**	**-7**	**-16**	**1**	**7**	**-8**	**-11**	**32**	**-93**	**-15**
Earnings per share											**2.2**	**-6.3**	**-1.0**
Before goodwill amortization											**6.4**	**-3.2**	**2.4**
Average no. of shares outstanding (m)											**14.75**	**14.75**	**14.99**

Source: Company data.

Figure 112. VA Tech: Divisional Breakdown Quarterly (€m)

	2002				2003				2004		2001	2002	2003
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	FY	FY	FY
Order intake													
Metallurgy	230	272	213	335	242	310	229	371	454	453	1004	1050	1152
Power generation									255	134			
Transmission & Distribution	408	267	225	308	363	249	248	326	369	316	1350	1208	1186
Infrastructure	159	234	155	194	177	223	202	206	230	234	607	742	808
Hydro Power Generation	244	340	78	349	250	342	151	306			1059	1011	1049
Water Systems	47	85	63	30	65	49	82	55	49	59	335	225	251
Order Backlog													
Metallurgy	1116	1128	901	954	947	1065	1029	1123	1334	1518	1120	954	1123
Power generation									1556	1476			
Transmission & Distribution	1181	1115	1015	930	993	953	905	866	954	1002	1082	930	866
Infrastructure	442	524	503	504	539	582	591	570	603	616	330	504	570
Hydro Power Generation	1535	1690	1601	1397	1456	1587	1517	1562			1444	1397	1562
Water Systems	379	413	411	298	294	294	340	320	333	342	369	298	320
Sales													
Metallurgy	225	238	225	336	189	233	262	292	253	279	1114	1024	976
Power generation									230	223			
Transmission & Distribution	303	310	273	372	257	287	306	356	243	269	1197	1258	1206
Infrastructure	140	149	173	177	137	169	191	225	177	223	568	639	722
Hydro Power Generation	165	186	172	235	188	212	229	290			671	758	919
Water Systems	46	68	59	102	46	42	49	68	35	54	317	275	205
EBITA													
Metallurgy	-3.2	3.9	5.7	9.5	14.3	11.5	14.9	24	14.6	19.2	-72	15.9	64.7
Power generation									13.5	13.7			
Transmission & Distribution	15.8	10	9.2	25.2	3	3.7	5.8	22.5	6	0.3	64	60.2	35
Infrastructure	2.3	2.9	14.1	14.9	3.7	4.7	8.6	16.9	5.9	7.7	27	34.2	33.9
Hydro Power Generation	8.9	11.7	15.5	25.6	10.4	14.6	16.5	22.3			44	61.7	63.8
Water Systems	-3.8	-9.9	-12.8	-10.6	-6.5	-11.2	-9.1	-3.6	-9.7	-6.8	10	-37.1	-30.4
EBIT													
Metallurgy	-6	1.3	3.3	7.5	11.8	9.2	12	21.5	12.1	16.6	-111	6.1	54.5
Power generation									12	12.4			
Transmission & Distribution	13.5	6.9	6.7	22.9	0.6	1.4	3.5	10.3	-4.1	-0.9	50	50	15.8
Infrastructure	1.6	2.2	13.5	14.3	3	4	7.8	14.5	5.3	6.8	26	31.6	29.3
Hydro Power Generation	7.6	10.5	14.1	24.3	9	13.2	15	20.9			38	56.5	58.1
Water Systems	-4.2	-10.4	-15.1	-25	-7.7	-16	-12	-6.7	-9.7	-6.8	9	-54.7	-42.4

Source: Company data.

Figure 113. VA Tech: Balance Sheet (€m)

Fiscal year	2001	2002	2003
Assets			
Tangible assets	520	451	393
Intangible assets	32	27	23
Goodwill Financial assets	420	378	341
Financial assets	120	125	90
Advance payments made (net)	2	5	4
Trade accounts receivable	98	68	119
Other interest bearing assets	55	48	40
Other non-interest bearing assets	66	16	17
Deferred taxes	70	68	70
Non-current assets	**1,383**	**1,186**	**1,097**
Inventories	349	286	228
Advance payments made (net)	48	43	71
Trade accounts receivable	1,250	1,104	1,100
Other interest bearing assets	42	63	18
Other non-interest bearing assets	267	317	325
Cash and cash equivalents	792	648	744
Current assets	**2,749**	**2,461**	**2,485**
Assets	**4,133**	**3,647**	**3,583**
Equity and liabilities			
Share capital	109	109	109
Capital reserves	267	267	271
Retained earnings	201	85	70
Equity	**578**	**462**	**450**
Minority interests	55	44	27
Equity incl. minority interests	**632**	**505**	**477**
Liabilities to banks	630	502	338
Trade accounts payable	10	2	2
Provision for pensions, severance payments and long-service bonuses			
Deferred taxes	30	29	27
Advance payments received	53	57	90
Other interest bearing liabilities	40	16	31
Other non-interest bearing liabilities	42	49	19
Non-current liabilities	**1,100**	**939**	**799**
Liabilities to banks	257	129	134
Trade accounts payable	770	675	806
Advance payments received	450	342	359
Other provisions	551	490	400
Other interest bearing liabilities	45	92	82
Other non-interest bearing liabilities	327	475	525
Current liabilities	**2,400**	**2,202**	**2,307**
Equity and liabilities	**4,133**	**3,647**	**3,583**

Source: Company data.

Vestas (VWS.CO, DKK76.50, Peer Perform)

Stock Rating
Peer Perform

Sector Rating
Market Overweight

Price Target
NA

52-Week Range
€70-€117

EPS
2003: -€1.78
2004E: €3.74
2005E: €6.15

P/E
2003: NM
2004E: 48x
2005E: 12.4x

Common Shares (m)
175

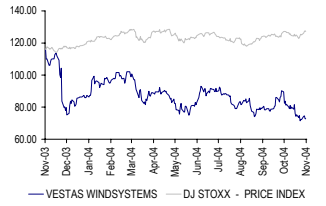
Equity Market Capitalisation (m)
DKK13,380

True Book Value per Share
DKK50

Est. 3-Yr (2003-05) CGR EPS Growth Rate
N.M.

EPS is not materially affected by factoring in options expense.

Rel to DJ STOXX



Source: Thomson Datastream

Following the entry of Siemens into the wind power market through the acquisition of Bonus Energy, we downgraded Vestas to Peer Perform from Outperform (October 20). Although Vestas is the market leader in the wind power market, it is now up against massive competitors such as GE and Siemens, and we view this competition as the key threat to the company.

Key points

- Following Siemens' entry into the wind power market through the acquisition of Bonus Energy, we recently downgraded Vestas to Peer Perform from Outperform. Although Vestas is the market leader in the wind power market, it is now up against massive competitors such as GE and Siemens, which is the key threat to the company, in our view.

- We expect the German market to show its typical positive seasonality patterns again in 2004, hence to show significant sequential quarterly growth rates until December, from which we expect Vestas to benefit. We also view the US market positively for 2005, following the extension of the PTC.

- The European Wind Energy Association estimates that about 10,000MW of offshore wind farms will be installed by 2010 in Europe. Given Vestas' significant offshore track record, we believe it has a very good opportunity to maintain its dominant market share in this segment. This could be a significant growth accelerator, as Vestas is expected to install about 3,100MW during 2004.

- While Vestas seems to trade on a low earnings multiple (12x 2005E P/E), we have a comparably low confidence level into our earnings estimates for Vestas, following the potential for severe competitive pressure from GE Wind and Siemens Wind.

Investment risks

- Technical Risks, competition from GE Wind and Siemens Wind, regulatory environment in key end-markets.

Investment positives

- Vestas is the market leader in the wind turbine market, which is the segment of the power equipment market with the highest growth rates (around 15%).

Valuation

- We value Vestas at a 18x one-year forward-looking PE multiple, but we have a comparably low confidence level in our earnings numbers following the entry of Siemens into the wind power market, with all that implies for the intensification of competition.

Investment summary

Following the entry of Siemens into the wind power market through the acquisition of Bonus Energy, we downgraded Vestas to Peer Perform from Outperform. Although Vestas is the market leader in the wind power market, it is now up against massive competitors such as GE and Siemens, which is the key threat to the company, in our view.

We believe that the stock could be driven by the following:

- **Concerns about market share development.** Following the entry of Siemens into the wind power market, we believe that Vestas could suffer from increased competition in Europe. The company has already lost market share to GE Wind, particularly in North America, and the fear is that Siemens Wind will establish a similar track record in Europe. GE has managed to increase its world market share from 8% to about 18% within only two years. We believe companies like Siemens and GE have four major competitive advantages over pure-play wind turbine manufacturers: a well-established international distribution and service network; world-class engineers in related business areas such as automation or transportation technology; good relationships with utilities and hence, cross-selling opportunities; and the balance sheet strength and the finance arm to offer larger-scale project financing.

- **Good fundamental market outlook.** We expect the German market to show its typical positive seasonality patterns again in 2004, hence to show significant sequential quarterly growth rates until December, from which we expect Vestas to benefit. We also view the US market positively for 2005, following the extension of the PTC. We expect Vestas to regain some of its lost market share in the US for two major reasons: it can now build a manufacturing plant in North America and compete against GE Wind on an equal currency basis (Vestas has lost some competitive strength, following the weakness of the dollar); and we expect US wind farm developers to avoid making themselves too dependent on one supplier – GE Wind. Hence, we expect them to diversify their supplier base, from which Vestas could benefit, as some developers have given large orders to GE Wind in the past years, e.g. GE enabled FPL to swap a gas turbine order (which the company wanted to cancel) against a wind turbine order without paying cancellation fees for the cancelled gas turbine order.

- **Offshore track record.** The European Wind Energy Association estimates that about 10,000MW of offshore wind farms will be installed by 2010 in Europe. Given Vestas' significant progress in this market, we believe it has a very good opportunity to maintain its dominant market share in this segment. This could be a significant growth accelerator for the company, as it is expected to install about 3,100MW during 2004.

Company description

Vestas, a Danish company, is the world's largest wind turbine manufacturer with a global market share of about 35%. The company generates sales of about €2.6 billion (2004E) at an EBIT margin of around 3%. In 2003, Vestas installed a total capacity of 2,667MW.

Vestas produces wind turbines in the range of 850kW to 3.0MW. It has a leading position in the offshore wind power market, having installed the bulk of the larger offshore wind farms. Vestas has installed more than 11,000 turbines globally.

In 2004, it took over its Danish rival NEG Micon, which was the No.3 wind turbine manufacturer.

Vestas is active around the globe and probably the only stand-alone wind turbine manufacturer with a global reach in terms of sales and service centres. The company has lost market share to GE Wind over the past two years, specifically in the US, as GE Wind was very successful at leveraging its close relationships with US utilities as well as having the better cost basis, given its US manufacturing plants. Vestas has no manufacturing operations in North America. Hence, its competitive positioning has declined against GE Wind, given the dollar's weakness versus the euro. However, as the PTC (Production Tax Credit) has now been extended in the US, Vestas should be able to reverse the trend of declining competitive advantage, as it can build a manufacturing plant in North America, which will enable it to compete on a dollar basis against its US rival.

Offshore

With the erection of the largest offshore wind farm in the world to date at the Horns Reef site in the North Sea off the west coast of Denmark, Vestas has reinforced its position as the world's leading manufacturer of wind turbines for both onshore and offshore sites.

From April to December 2002, Vestas erected and commissioned 80 V80-2.0MW offshore turbines at the Horns Reef site – sufficient to supply around 150,000 households.

The Horns Reef project was not without teething problems. Vestas had to reassemble all the turbines onshore after the wind farm showed some serious damage to its electrical installations as the salty offshore air had been more aggressive than originally anticipated. We believe Vestas has gained valuable experience in this project, as the company resolved problems that had not been expected in the project planning phase.

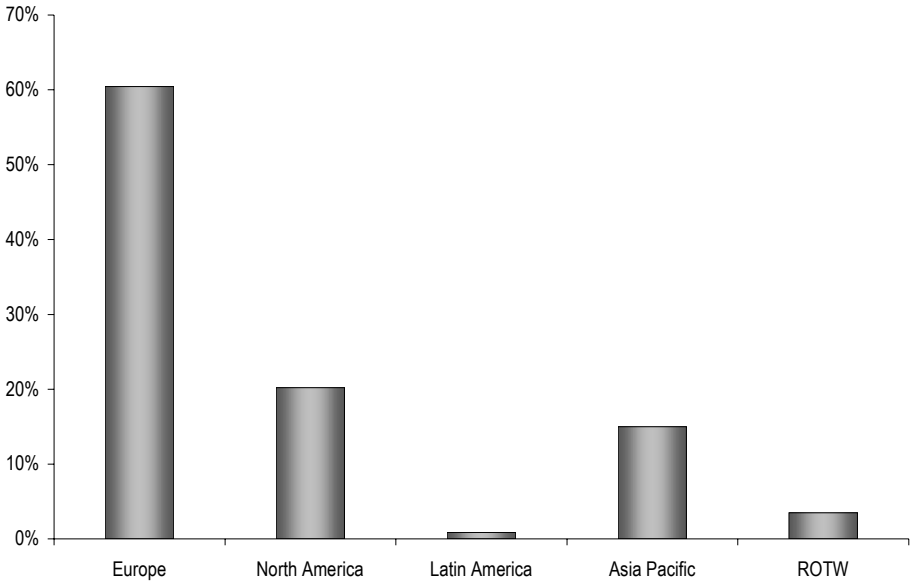
Following the Horns Reef project, Vestas was chosen as the turbine supplier for the first two major offshore wind farms in the UK. Vestas has erected 30 units of V80-2.0MW offshore turbines in the North Hoyle wind power plant, approximately 7km

off the north coast of Wales. The second project consists of 30 units of V80-2.0MW offshore turbines, located at Scroby Sands, approximately 3km from Great Yarmouth in Norfolk on the east coast of England. The company also has more offshore orders in the pipeline.

Geographical breakdown

As the European wind power market is much bigger than any other wind power market, Vestas' strongest foothold is in Europe. North America was fairly sizeable for Vestas in 2003 but virtually collapsed during 2004, given the expiry of the Production Tax Credit (PTC), which was only extended in late 2004.

Figure 114. Vestas: Geographical Breakdown, 2003A



Source: Company data.

Divisional breakdown (key products)

Divisionally, Vestas is divided into functional business units (such as nacelles, blades, control systems and towers) and key geographical areas. The company produces turbines ranging from 850kW to 3MW. It plans to have a 4.5MW turbine ready by 2006, targeting the offshore market.

Figure 115. Vestas: Income Statement (€m)

	1H 2004E	2H 2004E	2003	2004E	2005E	2006E	2007E	2008E
Net Turnover	**911.2**	**1,692.2**	**2,361.3**	**2,603.4**	**3,436.7**	**4,434.1**	**5,311.5**	**6,412.4**
Top-Line Growth (yoy)	3%	15%	6%	10%	32%	29%	20%	21%
Production Costs	828.3	1,480.7	2,198.7	2,309.0	2,921.2	3,768.9	4,514.7	5,450.6
Gross Profit	**82.9**	**211.5**	**162.6**	**294.4**	**515.5**	**665.1**	**796.7**	**961.9**
Gross Margin	*9.1%*	*12.5%*	*6.9%*	*11.3%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*
Distribution Expenses	34.6	64.3	67.2	98.9	137.5	177.4	212.5	256.5
Administrative Expenses	32.8	60.9	67.5	93.7	137.5	177.4	212.5	256.5
Capacity Costs	67.4	125.2	134.7	192.7	274.9	354.7	424.9	513.0
Profit before financial Items	**15.5**	**86.3**	**27.9**	**101.8**	**240.6**	**310.4**	**371.8**	**448.9**
EBIT Margin	*1.7%*	*5.1%*	*1.2%*	*3.9%*	*7.0%*	*7.0%*	*7.0%*	*7.0%*
Income from Investments in associated companies	0.2	0.4	0.6	0.7	0.7	0.7	0.7	0.7
Financial Income	0.6	0.6	9.7	1.1	8.1	11.9	17.8	26.0
Financial Expenses	26.2	26.2	52.4	52.4	55.5	67.1	80.9	93.0
Net Financials	-25.4	-25.2	-42.1	-50.6	-46.8	-54.5	-62.4	-66.3
Profit after Financial Items	-9.9	61.1	-14.2	51.2	193.8	255.9	309.4	382.6
Received on Receivable from Vestas India written down	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0
Write down of financial fixed assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Profit from sale of Shares in Gamesa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Profit before Tax	**-9.9**	**61.1**	**-13.0**	**51.2**	**193.8**	**255.9**	**309.4**	**382.6**
Corporation Tax	-2.5	15.3	18.0	12.8	48.5	64.0	77.3	95.6
Profit before Minority Interest	-7.4	45.8	-31.0	38.4	145.4	191.9	232.0	286.9
Minority Interest	-0.3	-0.3	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Net Profit for the Year	**-7.7**	**45.6**	**-31.5**	**37.9**	**144.9**	**191.4**	**231.5**	**286.4**
Restructuring charge, adjusted for tax	12.6	37.7	0.0	50.3	0.0	0.0	0.0	0.0
Adjusted Net Profit for the Year	**4.9**	**83.2**	**-31.5**	**88.1**	**144.9**	**191.4**	**231.5**	**286.4**
Number of Shares (millions)	174.91	174.91	131.49	174.91	174.91	174.91	174.91	174.91
Reported EPS (EUR)	-0.04	0.26	-0.24	0.22	0.83	1.09	1.32	1.64
Adjusted EPS (EUR)	**0.03**	**0.48**	**-0.24**	**0.50**	**0.83**	**1.09**	**1.32**	**1.64**
Reported EPS (DKK)	-0.33	1.94	-1.78	1.61	6.15	8.13	9.84	12.17
Adjusted EPS (DKK)	**0.21**	**3.54**	**-1.78**	**3.74**	**6.15**	**8.13**	**9.84**	**12.17**

Source: Company data; Bear, Stearns International Limited estimates.

Figure 116. Vestas: Balance Sheet (€m)

Balance Sheet	2001	2002	2003	2004E	2005E	2006E
Assets						
Completed R&D Projects	29.2	46.3	78.9	80.5	82.1	83.7
Goodwill	18.4	13.7	20.7	21.1	21.5	22.0
Software	0.1	5.0	7.4	7.5	7.7	7.9
Development Projects in Progress	15.0	23.9	24.2	24.7	25.2	25.7
Intangible Assets	**62.7**	**88.9**	**131.2**	**133.8**	**136.5**	**139.2**
Land and Buildings	137.8	175.8	202.3	223.0	294.4	379.9
Plant and Machinery	83.7	159.8	174.7	192.6	254.3	328.1
Other Fixtures, Fittings, Tools and Equipment	35.0	44.8	69.9	77.1	101.7	131.3
Property, Plant & Equipment in Progress	25.4	23.9	21.7	23.9	31.6	40.7
Property, Plant & Equipment	**281.9**	**404.3**	**468.6**	**516.6**	**682.0**	**879.9**
Investments in Associated Companies	3.0	2.3	1.9	1.9	2.0	2.0
Other Receivables	2.0	1.7	4.0	4.1	4.2	4.2
Other Investments, Deposits, etc	2.8	3.0	3.0	3.1	3.1	3.2
Fixed asset Investments	**7.8**	**7.0**	**8.9**	**9.1**	**9.3**	**9.4**
Fixed Assets	**352.4**	**500.2**	**608.7**	**659.6**	**827.8**	**1,028.6**
Inventories	**313.5**	**403.8**	**447.3**	**492.0**	**541.2**	**595.4**
Trade Receivables	280.5	494.1	475.6	523.2	575.5	633.0
Sales Value of Orders in Progress	375.5	491.7	459.8	506.9	669.2	863.4
Receivables from associates	11.1	3.2	7.3	8.0	10.6	13.7
Other Receivables	181.2	109.2	123.5	136.2	179.7	231.9
Corporation Tax	6.5	20.0	17.4	19.2	25.3	32.7
Deferred Tax Assets	13.7	17.8	27.2	30.0	39.6	51.1
Prepayments	8.9	12.7	6.5	7.2	9.5	12.2
Receivables	**877.4**	**1,148.7**	**1,117.3**	**1,230.7**	**1,509.4**	**1,838.0**
Receivables	3.3	5.1	4.8	5.3	7.0	9.0
Cash at Bank and in Hand	35.9	53.9	38.2	269.7	395.7	593.4
Current Assets	**1,230.1**	**1,611.5**	**1,607.6**	**1,997.7**	**2,453.4**	**3,035.8**
Total Assets	**1,582.5**	**2,111.7**	**2,216.3**	**2,657.3**	**3,281.2**	**4,064.4**
Liabilities						
Share Capital	47.4	50.1	50.0	320.0	320.0	320.0
Share Premium Account	167.5	239.2	218.9	218.9	218.9	218.9
Retained Earnings	533.1	581.6	558.8	596.7	741.5	932.9
Proposed Dividends for the year	21.2	10.6	-	-	-	-
Equity	**769.2**	**881.5**	**827.7**	**1,135.6**	**1,280.4**	**1,471.8**
Minority Interests	**1.5**	**1.5**	**2.0**	**2.0**	**2.0**	**2.0**
Provision for deferred Taxes	36.0	50.1	53.2	58.7	77.4	99.9
Warranty Provision	114.3	150.4	156.4	172.4	227.6	293.7
Other Provision	11.5	2.0	16.8	18.5	24.5	31.5
Pension Obligations	-	-	1.2	1.3	1.7	2.3
Provisions	**161.8**	**202.5**	**227.6**	**250.9**	**331.3**	**427.4**
Mortgage Debt	100.9	105.8	99.2	99.2	99.2	99.2
Credit Institutions	14.3	74.5	141.9	141.9	141.9	141.9
Long-term Debt	**115.2**	**180.3**	**241.1**	**241.1**	**241.1**	**241.1**
Short-term Share of Long-term Debt	12.0	27.0	25.6	28.2	37.3	48.1
Prepayments from Customers	29.8	48.8	107.6	118.6	156.6	202.1
Bank Loans	78.9	245.1	191.0	191.0	191.0	191.0
Trade Payables	266.3	348.0	401.5	442.7	584.4	753.9
Corporation Tax	11.4	12.6	9.8	10.8	14.3	18.4
Other Payables	136.4	164.4	182.4	201.1	265.5	342.5
Short-term debt	**534.8**	**845.9**	**917.9**	**992.4**	**1,249.0**	**1,556.0**
Debt	**650.0**	**1,026.2**	**1,159.0**	**1,233.5**	**1,490.1**	**1,797.1**
Liabilities and Equity	**1,582.5**	**2,111.7**	**2,216.3**	**2,657.3**	**3,281.2**	**4,064.4**

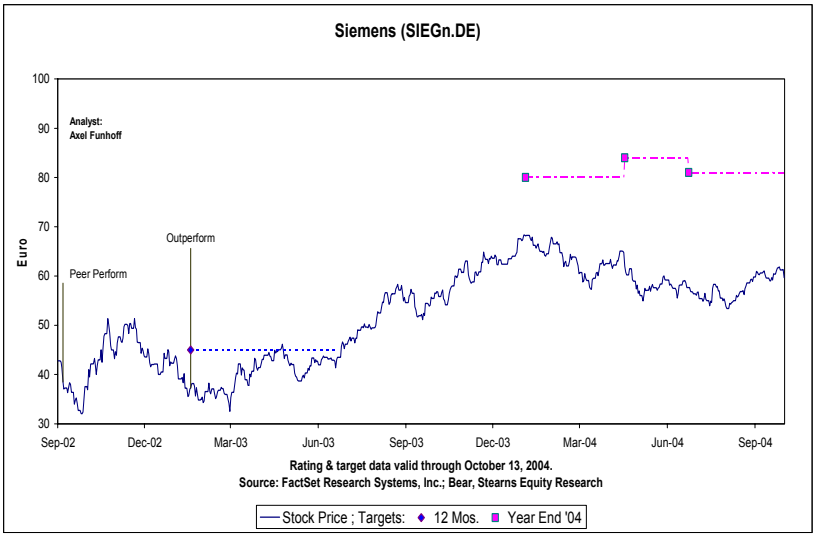
Source: Company data; Bear, Stearns International Limited estimates.

Companies mentioned:

ABB	(ABBZn.VX, SFr7.00, Outperform)
Alcatel	(CGEP.PA, €12.12, Not Rated)
Alstom	(ALSO.PA, €0.52, Not Rated)
Areva	(CEPFi.PA, €278, Not Rated)
Emerson Electric Co.	(EMR, $67.33, Not Rated)
Endesa	(ELE.MC, €16.52, Not Rated)
Fanuc	(6954.T, ¥6680, Not Rated)
Gamesa	(GAM.MC, €10.43, Not Rated)
GE	(GE.N, $36.11, Not Rated)
Hitachi	(6501.T, ¥654, Not Rated)
Honeywell	(HON, $35.46, Not Rated)
Iberdrola	(IBE.MC, €17.52, Not Rated)
Invensys	(ISYS.L, 16.5p, Not Rated)
Kawasaki	(7012.T, ¥159, Not Rated)
Lucent	(LU, $4.01, Not Rated)
Marconi	(MONI.L, 591p, Not Rated)
Metso Automation	(MEO1V.HE, €11.98, Not Rated)
Molex	(MOLXA.B, €29.54, Not Rated)
Nordex	(NDXG.DE, €0.71, Not Rated)
Nortel	(NT, $3.30, Peer Perform)
REpower Systems AG	(RPWGn.DE, €14.28, Not Rated)
Schneider	(SCHN.PA, €53.45, Peer Perform)
Siemens	(SIEGn.DE, €60.49, Outperform)
Tyco	(TYC, $33.71, Not Rated)
VA Tech	(VATE.VI, €58, Not Rated)
Vestas	(VWS.CO, DKK76.5, Peer Perform)
Yokogawa	(6841.T, ¥1460, Not Rated)

Addendum

Important Disclosures



BSC Recommendation History since September 13, 2002 for:

Siemens (SIEGn.DE) - Euro

Date	Stock Price	Rating	Target
**Analyst: Axel Funhoff			
18-Sep-02	41.37	PEER PERFORM	
30-Jan-03	37.05	OUTPERFORM	45.00
16-Jan-04	68.15	OUTPERFORM	80.00
29-Apr-04	62.00	OUTPERFORM	84.00
05-Jul-04	57.67	OUTPERFORM	81.00

Addendum

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