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MarketLine Industry Profile

# Global Heavy Electrical Equipment

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# **EXECUTIVE SUMMARY**

#### Market value

The global heavy electrical equipment market grew by 3.4% in 2010 to reach a value of \$95.4 billion.

#### Market value forecast

In 2015, the global heavy electrical equipment market is forecast to have a value of \$120.9 billion, an increase of 26.8% since 2010.

# Market segmentation I

Wind Turbines is the largest segment of the global heavy electrical equipment market, accounting for 41.8% of the market's total value.

# Market segmentation II

Asia-Pacific accounts for 38.4% of the global heavy electrical equipment market value.

#### Market share

GE is the leading player in the global heavy electrical equipment market, generating a 31.9% share of the market's value.

# **Market rivalry**

Market players are well-established and benefit from scale economies, boosting rivalry and discouraging new entrants.

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## MARKET OVERVIEW

#### Market definition

The global heavy electrical equipment market is deemed to be the revenues accrued by manufacturers from the production of power-generating equipment and other heavy electrical equipment, including power turbines, heavy electrical machinery intended for fixed-use and large electrical systems. The market value excludes cables and wires. Any currency conversions used in this report are calculated using constant 2010 annual average exchange rates.

# Market analysis

The global heavy electrical equipment market has decelerated in recent years to show moderate growth. It is expected to continue to grow moderately over the forecast period. Despite strong growth in developing economies such as China and Brazil, sluggish developed markets have limited the global market's growth in recent years.

The global heavy electrical equipment market had total revenues of \$95.4 billion in 2010, representing a compound annual growth rate (CAGR) of 5.7% for the period spanning 2006-2010. Growth is being driven by the wind turbines segment, which has grown with a CAGR of 16% over the corresponding period.

The wind turbines segment was also the market's most lucrative in 2010, with a total revenue of \$39.9 billion, equivalent to 41.8% of the market's overall value. The generators and sets segment contributed revenue of \$28.9 billion in 2010, equating to 30.3% of the market's aggregate value.

The performance of the market is forecast to decelerate, with an anticipated CAGR of 4.9% for the five-year period 2010-2015, which is expected to drive the market to a value of \$120.9 billion by the end of 2015. Despite weak economic conditions expected in many markets globally over the next few years, the market's growth will driven by continued increases in electricity consumption, which are already above pre-crisis levels, and further investments in sustainable forms of generation, that will further increase the wind turbines importance to the industry.

# **MARKET DATA**

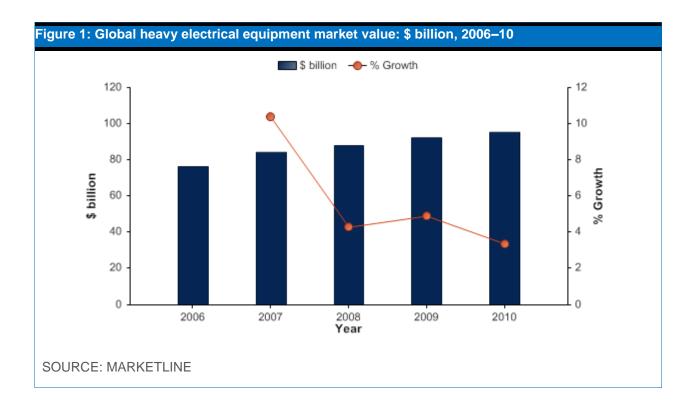
#### Market value

The global heavy electrical equipment market grew by 3.4% in 2010 to reach a value of \$95.4 billion.

The compound annual growth rate of the market in the period 2006–10 was 5.7%.

Year	\$ billion	€ billion	% Growt
2006	76.40	57.5	
2007	84.30	63.5	10.40%
2008	87.90	66.20	4.30%
2009	92.3	69.5	0.04
2010	95.40	71.80	3.40%

SOURCE: MARKETLINE



# MARKET SEGMENTATION

# **Category segmentation**

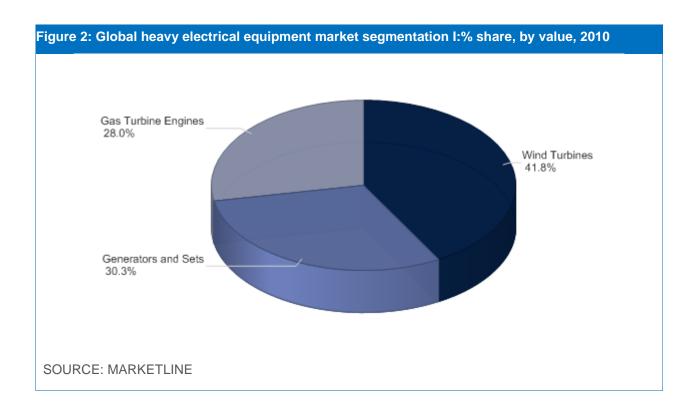
Wind Turbines is the largest segment of the global heavy electrical equipment market, accounting for 41.8% of the market's total value.

The generators and sets segment accounts for a further 30.3% of the market...

Table 2: Global heavy electrical equipment market segmentation I:% share, by value, 2010

Category
Wind Turbines
41.80%
Generators and Sets
30.30%
Gas Turbine Engines
27.90%

Total
SOURCE: MARKETLINE

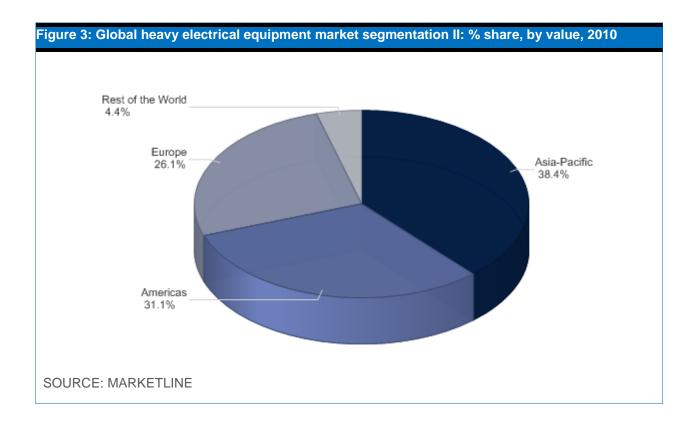


# **Regional segmentation**

Asia-Pacific accounts for 38.4% of the global heavy electrical equipment market value.

Americas accounts for a further 31.1% of the global market.

Category	% Share
Asia-Pacific	38.40%
Americas	31.10%
Europe	26.10%
Rest of the World	4.30%
Total	100.0

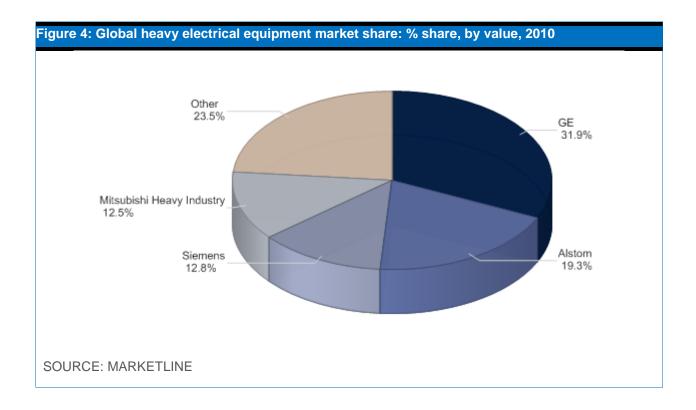


#### **Market share**

GE is the leading player in the global heavy electrical equipment market, generating a 31.9% share of the market's value.

Alstom accounts for a further 19.3% of the market.

Company	% Share
GE	31.90%
Alstom	19.30%
Siemens	12.80%
Mitsubishi Heavy Industry	12.50%
Other	23.50%
Total	100.00%



# MARKET OUTLOOK

#### Market value forecast

In 2014, the Turkish OTC pharmaceuticals market is forecast to have a value of \$1,976 million, an increase of 41.6% since 2009.

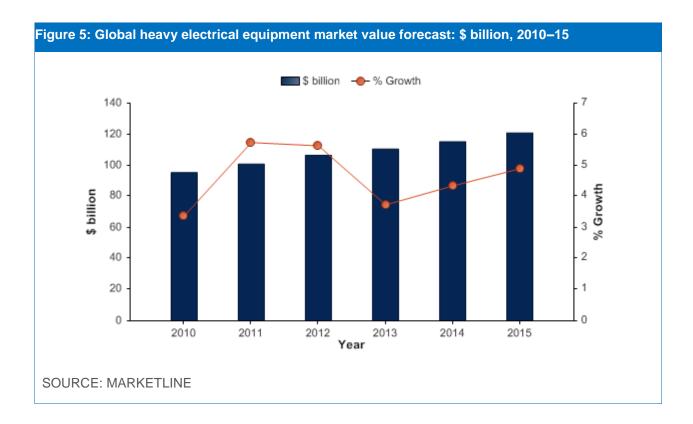
The compound annual growth rate of the market in the period 2009–14 is predicted to be 7.2%.

Table 5: Global heavy electrical equipment market value forecast: \$ billion, 2010–15

Year	\$ billion	€ billion	% Growth
2010	95.40	71.80	3.40%
2011	100.80	75.90	5.70%
2012	106.50	80.20	5.60%
2013	110.50	83.20	3.70%
2014	115.30	86.80	4.30%
2015	120.90	91.10	4.90%

CAGR: 2010–15 4.90%

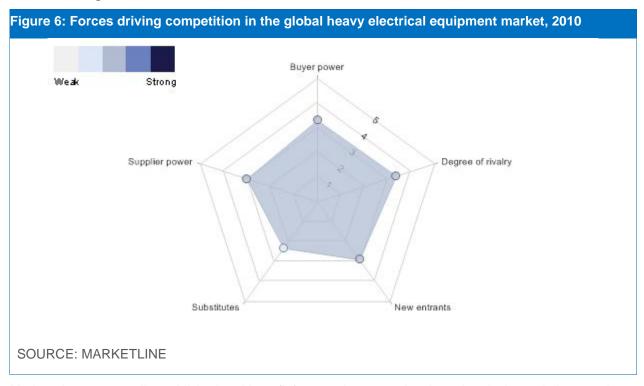
SOURCE: MARKETLINE



# **FIVE FORCES ANALYSIS**

The heavy electrical equipment market will be analyzed taking manufacturers of heavy electrical equipment as players. The key buyers will be taken as power utilities, independent power producers and construction engineering firms and developers, and steel, copper, aluminum and other metal producers along with a variety of fabricated products and electronic components manufacturers as the key suppliers.

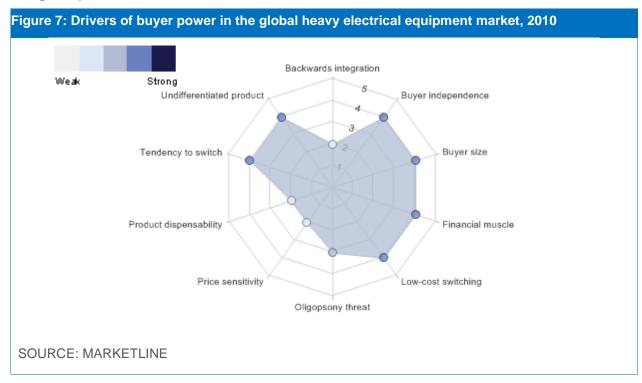
# **Summary**



Market players are well-established and benefit from scale economies, boosting rivalry and discouraging new entrants.

Market players are dependent upon suppliers of raw materials, such as steel and copper; however some of them were able to integrate backwards, meaning they are less reliant upon suppliers. With copper, steel and nickel being among the major materials consumed, volatility in prices may have an adverse impact on the companies going forward. There are few substitutes to heavy electrical equipment for end-users that are economically viable for buyers. Entry to the market is costly and requires high capital outlay, meaning that exit barriers are also high. This proves off-putting for new entrants.

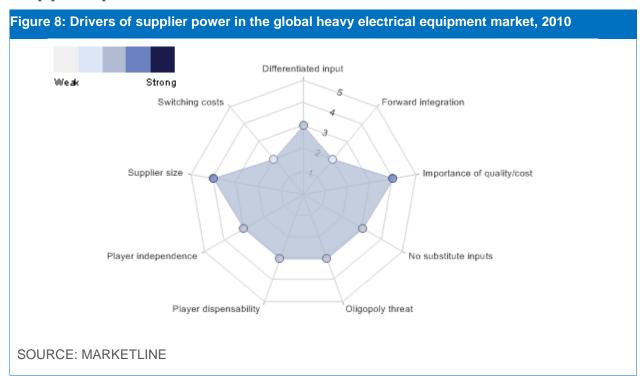
## **Buyer** power



There are a large number of buyers present within the global heavy electrical equipment market. Robust economic growth in developing countries such as China and India, combined with rapid urbanization and growth in fixed investment spending (especially in infrastructure such as roads and electricity generation), will work to boost demand for electric power equipment in such regions. Even in developed countries, rising ecological concerns and investment in alternative sources of power generation should benefit heavy electric power equipment sales. Research by the European Wind Energy Association (EWEA) estimates that 8,600 MW of new wind energy capacity was installed in the EU in 2009. Indeed, many governments throughout Europe, and the developed world more generally, have embarked on increasingly ambitious programs in recent years to reduce dependence on non-renewables such as coal and oil.

The sheer number of buyers means players have many potential customers, detracting from buyer power somewhat. However, buyers vary in size and needs. This means that there is no consistency of business, with market players working on medium- or long-term contracts for buyers who may not require the same services in the immediate short term. As a result, buyers are in a more powerful position. However market players also generate a large portion of their revenue from smaller industrial customers. Market players are able to differentiate their products to a certain extent; however the products are generally quite similar, meaning that market players must compete heavily on price. On the other hand, buyers are reliant on products offered within this market in order to maintain their own business, weakening their position slightly. Overall, buyer power is assessed as moderate.

# Supplier power



The main suppliers to this market are the manufacturers of raw materials (steel, copper, aluminum, mineral oil and various plastics), fabricated products, and electronic components. Steel and aluminum manufacturers tend to be large and few in number, reinforcing their power over market players to a certain extent.

Furthermore, the price of raw materials is volatile, and can vary year on year having adverse impact on the companies' revenues. Market players attempt to overcome price fluctuations through the adoption of hedging strategies and by entering into long-term contracts with suppliers where possible, which can often lead to financial penalties if broken and rising switching costs. Some larger companies, such as Siemens, have integrated backwards into the manufacture of their own components for power generation equipment.

Mitsubishi is also engaged in diversified operations, including the production of metals. This reduces supplier power somewhat. Additionally, many of the larger market players are able to operate a worldwide supply chain management network, meaning they are able to source quality raw materials at the best cost. Market players are diversified in their operations, however many of their operations include the production of metals. These metals cannot be substituted, as they are required specifically for their chemical and physical properties. This serves to increase supplier power. Overall, supplier power is assessed as moderate.

#### **New entrants**

SOURCE: MARKETLINE

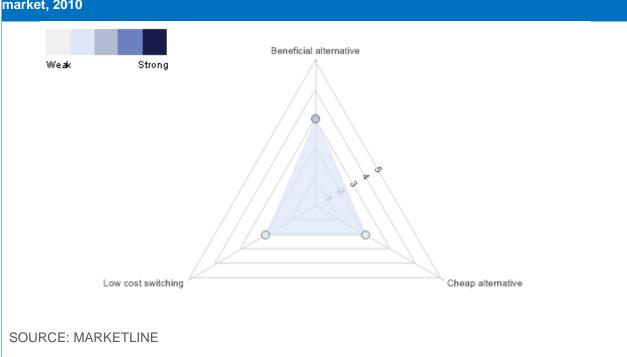
Figure 9: Factors influencing the likelihood of new entrants in the global heavy electrical equipment market, 2010 Distribution accessible Weak Strong 5 Weak brands Incumbents acquiescent Undifferentiated product Little IP involved Suppliers accessible Little regulation Scale unimportant Low fixed costs Market growth Low-cost switching

The global heavy electrical equipment market is dominated by few international incumbents. Large manufacturers benefit from economies of scale. To succeed within this market, newcomers need to be able to compete with them, meaning large scale operations need to be set up. Large capital outlay is required and the subsequent high entry and exit barriers tend to discourage new entrants. It is possible for small companies to enter this market by occupying a niche position: different buyers may need a variety of different products. Technology and production development is essential here to compete successfully. A global push to change the way electricity is generated and used is forcing big equipment makers, such as GE or Siemens, to rethink their strategies. Power-equipment makers that can find a new niche to thrive in—whether gas, wind, or transmission—will fare better than those too reliant on carbon intensive energy sources, such as coal. With further emphasis on carbon efficiency and energy security, alternative energy generation is likely to continue to grow and will require investment in suitable generating infrastructure, including wind turbines.

Overall, growth rates have been modest in recent years; however, there is scope for expansion in certain geographical areas e.g. the emerging markets of Asia-Pacific which are characterized by large population numbers and high rates of economic growth, as well as growth in fixed investment spending (especially in infrastructure, such as roads and electricity generation). These prospects are enticing for new entrants. Overall, the likelihood of new entrants in the global heavy electrical equipment market is moderate.

#### Threat of substitutes

Figure 10: Factors influencing the threat of substitutes in the global heavy electrical equipment market, 2010



There are some potential sources of indirect competition in this market. End-users wishing to generate power could use alternative such as solar, which do not require the turbines and related equipment used in thermal and wind generation. Some companies might opt for using gas rather than electricity as an energy source, and this act as a substitute to heavy electrical equipment used in autogeneration.

However, overall there is a weak threat of substitutes to this market.

# **Degree of rivalry**

SOURCE: MARKETLINE

Figure 11: Drivers of degree of rivalry in the global heavy electrical equipment market, 2010

Weak Strong

Competitor size

Easy to expand

Undifferentiated product

Storage costs

Lack of diversity

Number of players

Low cost switching

The global heavy electrical equipment market tends towards increased concentration and sees dominance of large scale incumbents, namely Alstom, General Electric, Mitsubishi and Siemens, which together hold approximately 76.5% of the total market share by value. High fixed costs and low switching costs for buyers intensify rivalry between players. In addition to this, exit barriers are high, with the divestment of specialized assets being a costly necessity. However, many of the large market players operate in diversified markets, meaning they are less reliant on revenues from electrical components and equipment sales. Rivalry is eased by the generally strong market growth rates in recent years. Overall, rivalry is assessed as moderate.

# LEADING COMPANIES

#### **ALSTOM**

lead office:	3 Avenue Andre Malraux, 92309 Levallois-Perret Cedex, FRA
elephone:	33 1 41 49 20 00
-ax:	33 1 41 49 24 85
Website:	www.alstom.com
inancial year-end:	March
Ticker:	ALO
Stock exchange:	Paris

Alstom specializes in the manufacturing and supply of transport and energy infrastructure. The group designs, supplies, and maintains a range of products used for power generation, including turbines, alternators, and boilers. It has operations in about 70 countries throughout the world.

In FY2009, the group operated through three business divisions: power systems, power service and transport. Later, a merger of power systems and power service into a single Alstom power sector was announced.

The power systems business designs, manufactures, and supplies a broad range of products and systems in the power generation industry for coal, gas, oil and biomass power plants. This business provides steam turbines, gas turbines, wind turbines, generators, and power plant engineering. It also focuses on boilers and emissions control equipment in the power generation, petrochemical, and industrial markets. It also supplies wind and hydro equipment as well as conventional islands for nuclear power plants.

Power service provides a complete range of services, support, and equipment to the thermal power generation industry on a global scale.

This business offers a wide range of services, including the following: power plant management - tailored service packages including operation and maintenance agreements for plants' full life cycles; consulting and support - technical services, training, monitoring, and diagnostics, performance analysis; and performance improvement - modernization, upgrades, and lifetime extensions. It also offers field services, including outage management, field repairs, erection, commissioning, construction and supervision. In addition, this business offers new spare parts, and improved and reconditioned components.

Power service helps its customers maximize plant performance, availability, and reliability, meeting their business goals in asset lifecycle management, performance improvements, risk management, cost management, and environmental compliance. Power service operates through 25 dedicated manufacturing workshops and technical expertise centers. In addition, it maintains 32 dedicated field service hubs, operating in 70 countries around the world.

The transport division serves the urban transit, the regional/intercity passenger travel markets, and the freight markets all over the world with rail transport products, systems, and services. Alstom designs, develops, manufactures, commissions, and maintains trains. It develops and implements system solutions

for rail control. The group also designs and manages the creation of new railway lines, as well as offers customers maintenance and renovation programs to keep their assets safe and productive. The division markets each of these as stand-alone offerings or combined within turnkey system solutions, according to each customer's requirements.

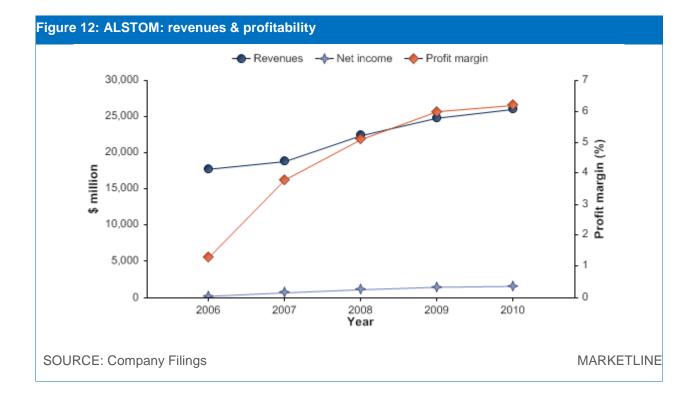
#### **Key Metrics**

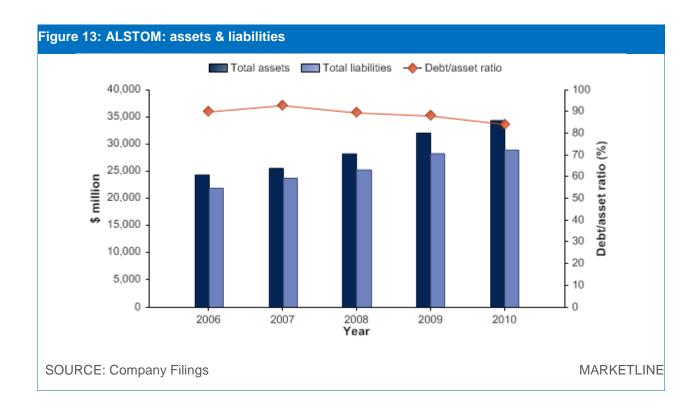
The company recorded revenues of \$26,031 million in the fiscal year ending March 2010, an increase of 4.9% compared to fiscal 2009. Its net income was \$1,612 million in fiscal 2010, compared to a net income of \$1,481 million in the preceding year.

ble 7: ALSTOM: key financia	als (\$)				
\$ million	2005	2006	2007	2008	2009
Revenues	32,212.0	36,031.0	38,072.0	41,459.0	44,267.0
Net income (loss)	6,130.0	7,175.0	11,946.0	8,195.0	8,400.0
Total assets	57,732.0	68,008.0	75,452.0	78,299.0	95,505.0
Total liabilities	24,568.0	26,714.0	26,056.0	27,862.0	38,043.0
Employees	90,924	100,735	98,200	96,717	99,834
SOURCE: Company Filings				N	MARKETLINI

able 8: ALSTOM: key financ	ials (€)				
€ million	2006	2007	2008	2009	2010
Revenues	13,413.0	14,208.0	16,908.0	18,739.0	19,650.0
Net income (loss)	181.0	538.0	862.0	1,118.0	1,217.0
Total assets	18,408.0	19,336.0	21,345.0	24,244.0	25,978.0
Total liabilities	16,568.0	17,961.0	19,100.0	21,360.0	21,877.0
SOURCE: Company Filings					MARKETLIN

Ratio	2006	2007	2008	2009	201
Profit margin	1.30%	3.80%	5.10%	6.00%	6.20%
Revenue growth	3.80%	5.90%	19.00%	10.80%	4.90%
Asset growth	-3.50%	5.00%	10.40%	13.60%	7.20%
Liabilities growth	-5.90%	8.40%	6.30%	11.80%	2.40%
Debt/asset ratio	90.00%	92.90%	89.50%	88.10%	84.20%
Return on assets	1.00%	2.90%	4.20%	4.90%	4.80%
Revenue per employee	\$298,358	\$289,562	\$294,714	\$304,587	\$340,269
Profit per employee	\$4,027	\$10,965	\$15,025	\$18,172	\$21,07





# **General Electric Company**

ole 10: General Electric (	Company: key facts
Head office:	3135 Easton Turnpike, Fairfield, Connecticut 06828 0001, USA
Telephone:	1 203 373 2211
Website:	www.ge.com
Financial year-end:	December
Ticker:	GE
Stock exchange:	New York
SOURCE: Company Webs	ite

General Electric (GE) is a diversified technology, media and financial services company. Its products and services include aircraft engines, power generation, water processing, security technology, medical imaging, business and consumer financing, media content and industrial products. The company serves customers in more than 100 countries. It has 235 manufacturing plants located in 40 states in the US and Puerto Rico and 240 manufacturing plants located in 41 other countries.

The company operates through five business segments: capital finance, technology infrastructure, energy infrastructure, NBC universal, and consumer and industrial.

The capital finance segment offers a broad range of financial products and services worldwide. Its services include commercial loans, operating leases, fleet management, financial programs, home loans, credit cards, personal loans and other financial services. This segment operates through various product lines including: commercial lending and leasing, consumer, real estate, energy financial services, and GE Commercial Aviation Services.

The technology infrastructure segment provides essential technologies to developed, developing and emerging countries. It helps in building healthcare, transportation and technology infrastructure. This segment operates through various sub-segments including aviation, enterprise solutions, healthcare and transportation. Aviation produces, sells and services jet engines, turboprop and turbo shaft engines, and related replacement parts for the use in military and commercial aircraft. It also produces global aerospace systems and equipment, including airborne platform computing systems, power generation and distribution products, mechanical actuation products and landing gear, and various engine components. The company sells its aviation products and services to airframe manufacturers, airlines and government agencies.

Enterprise Solutions offers integrated solutions using sensors for temperature, pressure, moisture, gas and flow rate as well as non-destructive testing inspection equipment, including radiographic, ultrasonic, remote visual and eddy current. Enterprise Solutions also offers security and life safety technologies, including intrusion and access control, video surveillance and sensor monitoring equipment, fire detection and real estate and property control. In addition, it provides protection and control, communications, power sensing and power quality products and services. Enterprise solutions sells its products and services to residential, commercial and industrial end-users, including utilities, original equipment manufacturers, electrical distributors, retail outlets, airports, railways, and transit authorities.

The healthcare business includes medical imaging and information technologies, medical diagnostics, patient monitoring systems, disease research, drug discovery and biopharmaceutical manufacturing

technologies. Healthcare manufactured technologies include patient monitoring, diagnostic cardiology, ultrasound, bone densitometry, anesthesiology and oxygen therapy, and neonatal and critical care devices. Its product services also include remote diagnostic and repair services for medical equipment manufactured by GE and by others, as well as computerized data management and customer productivity services.

Transportation offers various products and maintenance services including diesel electric locomotives, transit propulsion equipment, motorized wheels for off-highway vehicles, gearing technology for wind turbines, drill motors, marine and stationary power generation, and railway signaling and office systems. It serves railroad, transit, mining, oil and gas, power generation and the marine industries.

The energy infrastructure segment is engaged in the development, implementation and improvement of products and technologies that harness resources such as wind, oil, gas and water. It includes energy, oil & gas, and the water & process technologies business. The energy business serves power generation, industrial, government and other customers worldwide with products and services related to energy production, distribution and management. It offers wind turbines, aircraft engine derivatives, gas turbines and generators, and motors and control systems.

Energy also offers water treatment solutions including the supply and related services of specialty chemicals, water purification systems, pumps, valves, filters and fluid handling equipment. The oil & gas business designs and manufactures surface and subsea drilling and production systems, equipment for floating production platforms, compressors, turbines, turbo-expanders, high pressure reactors, industrial power generation and a broad portfolio of auxiliary equipment.

NBC Universal (NBCU) is a diversified media and entertainment company focused on the development, production and marketing of entertainment, news and information to a global audience. NBCU, which is 80% owned by GE and 20% owned by Vivendi, is engaged in the production and distribution of film and television programming. The company also operates cable/satellite networks around the world, theme parks, and investment and programming activities in multimedia and the internet.

Its cable/satellite television networks include USA, Bravo, CNBC, SYFY, MSNBC, Oxygen, UniHD, Chiller, Sleuth, mun2 and branded channels across Europe, Asia and Latin America.

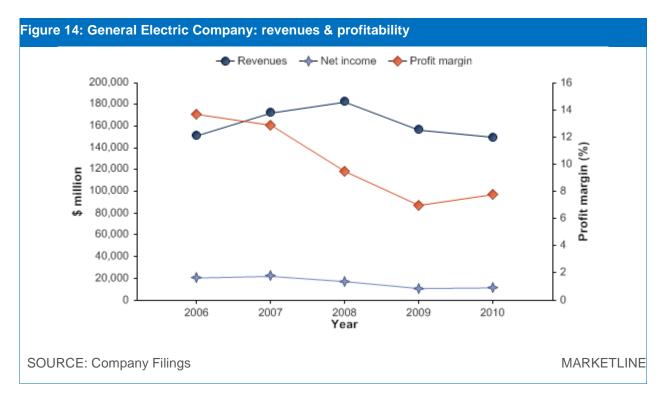
The consumer and industrial segment sell and service major home appliances including refrigerators, freezers, electric and gas ranges, cooktops, dishwashers, clothes washers and dryers, microwave ovens, room air conditioners, and residential water systems for filtration, softening and heating. These products are marketed under GE Monogram, GE Profile, GE, GE Cafe and Hotpoint brand names. This segment manufactures and sells a variety of lamp products for commercial, industrial and consumer markets, including incandescent, halogen, fluorescent discharge, and light emitting diodes, automotive and miniature products. It provides electrical equipment and systems including transformers, meters, relays, circuit breakers, panel boards and general purpose controls for residential, commercial, consumer and industrial applications.

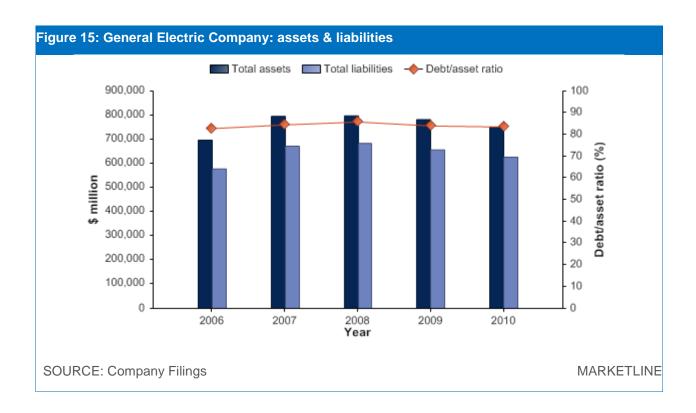
#### **Key Metrics**

The company recorded revenues of \$150,211 million in the fiscal year ending December 2010, a decrease of 4.2% compared to fiscal 2009. Its net income was \$11,644 million in fiscal 2010, compared to a net income of \$11,025 million in the preceding year.

\$ million	2006	2007	2008	2009	2010
Revenues	151,568.0	172,488.0	182,515.0	156,783.0	150,211.00
Net income (loss)	20,742.0	22,208.0	17,410.0	11,025.0	11,644.00
Total assets	697,273.0	795,683.0	797,769.0	781,818.0	751,200.0
Total liabilities	577,681.0	672,120.0	684,157.0	656,682.0	627,000.0
Employees	319,000	327,000	323,000	304,000	287,000

Ratio	2006	2007	2008	2009	2010
Profit margin	1.30%	3.80%	5.10%	6.00%	6.20%
Revenue growth	3.80%	5.90%	19.00%	10.80%	4.90%
Asset growth	-3.50%	5.00%	10.40%	13.60%	7.20%
Liabilities growth	-5.90%	8.40%	6.30%	11.80%	2.40%
Debt/asset ratio	90.00%	92.90%	89.50%	88.10%	84.20%
Return on assets	1.00%	2.90%	4.20%	4.90%	4.80%
Revenue per employee	\$475,135	\$527,486	\$565,062	\$515,734	\$523,383
Profit per employee	\$65,022	\$67,914	\$53,901	\$36,266	\$40,571





# Mitsubishi Heavy Industries, Ltd.

Head office:	16-5, Konan 2-chome, Minato ku, Tokyo 108 8215, JPN
Telephone:	81 3 6716 3111
Fax:	81 3 6716 5800
Website:	www.mhi.co.jp
Financial year-end:	March
Website:	www.mhi.co.jp
Stock exchange:	Tokyo

Mitsubishi Heavy Industries (MHI) is a Japanese manufacturing company engaged in the design, development, manufacture, and sale of industrial equipment and machinery. The company has global operations spanning Asia, Europe, and the Americas.

The company operates through six business divisions: power systems, mass and medium-lot manufactured machinery, machinery and steel structures, aerospace, shipbuilding and ocean development, and other operations.

The power systems division develops energy conservation measures, petroleum substitutes, and new forms of energy. The division is also involved in the nuclear power field as one of the world's leading manufacturers of nuclear power plants. This division is into the manufacturing, installation, sale and repair of boilers, steam turbines, gas turbines, diesel engines, water turbines, wind turbines, the SCR (DeNOx) system, marine machinery, desalination plants, nuclear power plants and equipment, advanced reactor plants, nuclear fuel cycle plants, and nuclear fuel, amongst others.

The mass and medium lot manufactured machinery (MMM) division develops and manufactures products such as engines and forklift trucks for the logistics field. Its air-conditioning and refrigeration systems product line offers a range of air-conditioning products. The industrial machinery unit manufactures extrusion machinery, used in the production of plastic products, beverage filling and packaging machines, and other industrial equipment. This division also includes the paper and printing machinery business in the paper-related equipment field.

The machinery and steel structures division provides a range of equipment and systems applicable for waste treatment, flue gas desulphurization and treatment, environmental control, and transportation.

It also supplies bridges, stacks, hydraulic gates, transportation equipment, tunneling machinery, and other products. The division is also involved with the construction of bridges, parking systems, and leisure and entertainment facilities. This division is also into the manufacturing and installation of petrochemical plants, flue gas desulphurization systems, flue gas CO2 recovery plants, oil and gas production plants, and other chemical plants.

The aerospace division is involved in the manufacturing, installation, sale and repair of fighter jets, helicopters, and other aircraft, structural parts and components of commercial transport aircraft, aero engines, missiles, torpedoes, space systems, and launch services via launch vehicles.

The shipbuilding and ocean development division manufactures a range of large vessels and ocean structures such as crude oil carriers, container ships, cruise ships, car ferries, LPG carriers, LNG carriers, defense vessels, and offshore structures. The other operations of the division include manufacturing equipment related to marine research, survey, and development projects. The division also manufactures equipment and offers other facilities that are used by oil and gas companies.

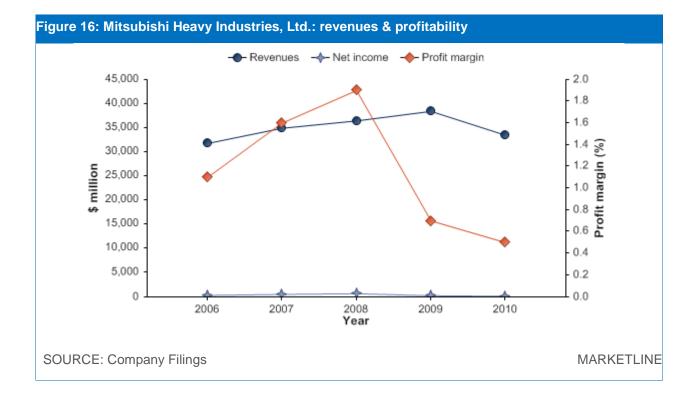
#### **Key Metrics**

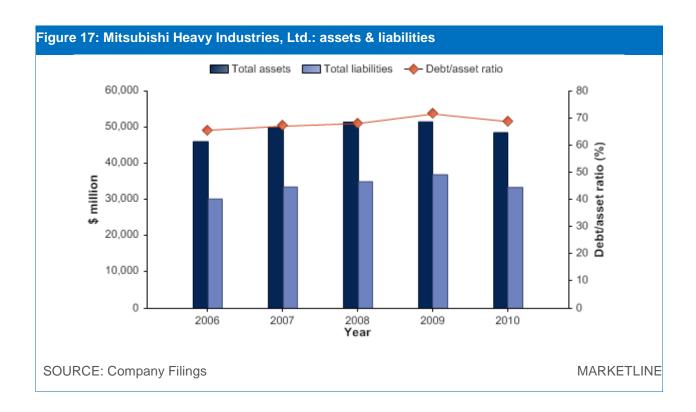
The company recorded revenues of \$33,484 million in the fiscal year ending March 2010, a decrease of 12.9% compared to fiscal 2009. Its net income was \$161 million in fiscal 2010, compared to a net income of \$276 million in the preceding year.

ble 14: Mitsubishi Heavy Ir	dustries, Ltd.	: key financials	s (\$)		
\$ million	2006	2007	2008	2009	2010
Revenues	31,790.3	34,937.3	36,469.6	38,434.7	33,484.3
Net income (loss)	339.5	556.1	698.3	275.7	161.3
Total assets	46,079.6	50,004.8	51,431.3	51,534.5	48,536.0
Total liabilities	30,207.2	33,536.0	35,030.8	36,923.6	33,406.9
Employees	62,212	62,940	64,103	67,416	67,400
SOURCE: Company Filings					MARKETLIN

ble 15: Mitsubishi Heavy I	ndustries, Ltd	.: key financia	ıls (¥)		
¥ million	2006	2007	2008	2009	2010
Revenues	2,792,109.0	3,068,505.0	3,203,085.0	3,375,674.0	2,940,887.0
Net income (loss)	29,817.0	48,840.0	61,332.0	24,217.0	14,163.0
Total assets	4,047,122.0	4,391,865.0	4,517,148.0	4,526,213.0	4,262,859.0
Total liabilities	2,653,062.0	2,945,429.0	3,076,719.0	3,242,961.0	2,934,087.0
SOURCE: Company Filings					MARKETLINI

Ratio	2006	2007	2008	2009	201
Profit margin	1.10%	1.60%	1.90%	0.70%	0.50%
Revenue growth	7.80%	9.90%	4.40%	5.40%	-12.90%
Asset growth	5.60%	8.50%	2.90%	0.20%	-5.809
Liabilities growth	5.90%	11.00%	4.50%	5.40%	-9.509
Debt/asset ratio	65.60%	67.10%	68.10%	71.60%	68.80%
Return on assets	0.80%	1.20%	1.40%	0.50%	0.30%
Revenue per employee	\$511,000	\$555,089	\$568,922	\$570,112	\$496,80
Profit per employee	\$5,457	\$8,835	\$10,894	\$4,090	\$2,39





# Siemens Aktiengesellschaft

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Financial year-end:	September
Website:	SI, SIE
Stock exchange:	New York, Frankfurt

Siemens is a German engineering conglomerate, focused on the electronics and electrical engineering businesses. The group is engaged in diversified businesses, including information and communications, automation and control, power, transportation, medical, and lighting. Siemens operates in about 190 countries spread over the Americas, Europe, the Commonwealth of Independent States (CIS), Africa, Asia, Australia, and the Middle East.

Siemens operates through six business segments: industry sector, energy sector, healthcare sector, Siemens IT solutions and services, Siemens financial services, and equity investments.

The industry sector of Siemens offers a spectrum of products, services, and solutions for the use of resources and energy and for improvements of productivity in industry and infrastructure. Its integrated technologies or holistic solutions address primarily industrial customers, such as process and manufacturing industries, and infrastructure customers, especially in the areas of transport, buildings, and utilities. The portfolio spans industry automation and drives products and services, building, lighting, and mobility solutions and services, and system integration and solutions for plant businesses. The industry sector comprises six business divisions: industry automation, drive technologies, building technologies, OSRAM, industry solutions, and mobility.

The industry automation division offers automation systems such as programmable logic controllers and process control systems; and low-voltage switchgear such as circuit protection and distribution products. It also offers sensors such as process instrumentation and analytics and industrial software such as product lifecycle management and manufacturing execution systems software. The division's portfolio ranges from standard products and systems for the manufacturing, process, and construction industries to solutions for whole industrial vertical markets that encompass the automation of entire automobile production facilities and chemical plants.

The drive technologies division offers integrated technologies that cover a wide range of drive applications with electrical components such as standard motors and drives for conveyor belts, and pumps and compressors. It also includes heavy duty motors and drives for rolling steel mills, compressors for oil and gas pipelines, and mechanical components such as gears for wind turbines and cement mills. Drive technologies offers products such as automation systems and services for production machinery and machine tools and complete surface mount technology placement systems that mount components onto printed circuit boards. The division's portfolio includes standard products as well as industry-specific control and drive solutions for wind power, metal forming, printing and electronic manufacturing, as well as solutions for manufacturers of

glass, wood, plastic, ceramic, textile, and packaging equipment and crane systems. In FY2009, the division's surface mount technology placement systems (electronics assembly systems) business was transferred to other operations.

The building technologies division offers products, services, and solutions for commercial, industrial, public and residential buildings, including building automation, comfort, building safety, and security and building operations. In addition, the division provides energy solutions and services. The division's range of offerings includes heating and ventilation controls, security systems and devices such as intruder detection, video surveillance, and building access control. It also includes fire safety solutions such as fire detection, protection alarm systems, and non-water based fire extinguishing and electrical installation equipment for buildings such as low-voltage switchgear, sockets, and circuit breakers. At the beginning of FY2010, the industry automation division's low-voltage switchgear business was transferred to the building technologies division.

OSRAM supplies lighting solutions. It has an extensive product portfolio of lamps such as incandescent, halogen, compact fluorescent, fluorescent, high-intensity discharge, and xenon lamps. It also offers optoelectronic semiconductor light sources such as light emitting diodes (LEDs), organic LEDs, high power laser diodes, LED systems, and LED luminaries. Its products also include relevant electronic equipment such as electronic ballasts and lighting control and management systems as well as precision material and components. These products are used in applications in households, in industrial and commercial applications, and in public spaces and infrastructure.

The industry solutions division is the systems and solutions integrator for industrial plant business, and covers planning, construction, operation, and maintenance over a plant's entire life-cycle. The division has the process know-how for increasing the productivity and competitiveness of enterprises in various industries, and meets the need for environmentally compatible solutions with its water processing and raw material processing systems. Its systems and processes are applied for iron and steel production and in pulp and paper, cement, marine, and mining industries. The division also offers treatment equipment for the treatment of potable water and wastewater such as membranes and lab water/high purity water systems, treatment and outsourcing solutions for industrial wastewater, electrical and automation solutions for municipal wastewater, and water transport as well as water treatment services.

The mobility division of the industry sector is engaged in networking distinct transportation systems with one another in order to move people and goods efficiently. The division combines Siemens' products, solutions, and services in operating systems for rail transportation such as central control systems, interlocks, and automated train controls. It also combines Siemens' products, solutions, and services in operating systems for road traffic including traffic detection, information and guidance, and for airport logistics including cargo tracking and baggage handling. It further combines Siemens' products, solutions, and services in operating systems for postal automation including letter parcel sorting, and for rail electrification, as well as rail vehicles for mass transit, regional, long-distance transportation, and locomotives. At the beginning of FY2010, the division closed the sale of its airfield lighting business.

The energy sector of Siemens offers a spectrum of products, services and solutions for the generation, transmission, and distribution of power; and for the extraction, conversion, and transport of oil and gas. It primarily addresses the needs of energy providers, and serves industrial companies, particularly in the oil and gas industry. The energy sector comprises six business divisions: fossil power generation, renewable energy, oil and gas, energy service, power transmission, and power distribution.

The fossil power generation division offers products and solutions for fossil-based power generation. It ranges from gas and steam turbines and generators, to complete turnkey power plants. The division concentrates on turbo generators, and gas and steam turbines in the larger power range, with an emphasis on combined-cycle gas and steam power plants. The division also develops process instrumentation and control systems for all types of power plants and for the use in power generation. This includes information technology solutions providing management applications from the plant to the enterprise level and working on the development and production of systems based on emerging technologies such as integrated gasification and carbon capture and storage. The fossil power generation division has stakes in other companies such as its minority stakes in Areva NP in the nuclear power sector and the Russian power plant supplier Power Machines. The division is also represented in a number of joint ventures in China, including an increasing share in Shanghai Electric Power Generation Equipment. In January 2009, Siemens decided to terminate the shareholders agreement of the joint venture Areva NP, and sell its 34% interest in Areva NP to the majority shareholder Areva S.A. under the terms of a put agreement.

The renewable energy division provides solutions for the production of electricity out of renewable energy sources, including wind and photovoltaic. The division builds wind turbines from 2.3 megawatts (MW) to 3.6 MW. It provides services to offshore and onshore wind farms. In coordination with other divisions within the energy sector, the division ensures the linking of wind farms to power grids. In addition to wind power and solar power, Siemens holds a minority stake in a joint venture in hydropower generation, Voith Hydro Power Generation. In FY2010, Siemens acquired Solel Solar Systems, a solar thermal power company.

The oil and gas division of the energy sector supplies products and solutions for the production, transport, and processing of oil, gas, and water, which are used in the oil and gas industries as well as other industries. The portfolio includes steam and gas turbines in the small and medium range as well as process turbo compressors, generators, power generation and distribution solutions, process and automation technology, and integrated IT solutions. The division's activities encompass design, engineering, and supply.

The energy service division offers comprehensive services for complete power plants and for rotating machines such as gas and steam turbines, generators, and compressors. The division is also responsible for power plant maintenance and operations and the provision of emissions control services and systems.

The power transmission division of the energy sector covers high-voltage transmission solutions, power transformers, high-voltage switching products and systems, and alternating and direct current transmission systems. The 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.

The power distribution division combines medium-voltage components, systems and solutions, power automation solutions, and products as well as services for power equipment and transmission and distribution networks. The division supplies energy utilities and large industrial power users with equipment, systems, and services used to process and distribute power through a distribution grid to the low voltage grid and the end-user, respectively.

Power transmission together with power distribution provides customers with turnkey transmission systems and distribution substations; discrete products and equipment for integration by its customers into larger systems. It also offers customers with information technology systems and consulting services relating to the design and construction of power transmission and distribution networks. These include power systems control equipment and information technology systems, transformers, and high voltage products and power

equipment for both alternating and direct current transmission systems. It also includes protection and substation control systems; and medium voltage equipment, including circuit breakers and distribution switchgear systems and components.

In addition to equipment and systems, the power transmission and power distribution divisions offer a range of services and integrated solutions for various stages in the power transmission and distribution process. The power transmission and power distribution divisions provide analytical and consulting services, as well as equipment and systems, in the power quality field.

The healthcare sector of Siemens develops, manufactures, and markets diagnostic and therapeutic systems, devices and consumables, as well as information technology systems for clinical and administrative purposes. The healthcare sector of Siemens comprises three business divisions: imaging and IT, workflow and solutions, and diagnostics.

The imaging and IT division of the healthcare sector comprises Siemens' medical imaging systems, including x-ray, computed tomography, magnetic resonance, molecular imaging, and ultrasound, as well as computer-based workstations and software. The division also offers hospital information systems, which are used to digitally store, retrieve, and transmit medical images and other clinical and administrative information. The division is also active in computer based decisions support systems and knowledge-based technologies for assisting doctors with the diagnoses of diseases.

The workflow and solutions division provides integrated solutions for disease areas such as cardiology, oncology, women's health, urology, surgery, and audiology. The portfolio includes oncology care systems, including linear accelerator and particle therapy technologies used in cancer treatments. It also includes x-ray imaging systems for mammography and surgery applications as well as urology systems, and audiology products (hearing aids) and their related products and supplies. The division is also responsible for product related services for the sector's imaging and therapeutic equipment and consulting services.

The diagnostics division comprises Siemens' in-vitro diagnostics businesses. The division's portfolio represents a range of diagnostic testing systems and consumables, including clinical chemistry and immunodiagnostics, molecular diagnostics, hematology, hemostasis, microbiology, point-of-care testing, and clinical laboratory automation solutions.

The healthcare sector has research and development and original equipment manufacturer (OEM) cooperation agreements with various companies, including Bruker in the field of magnetic resonance imaging, and Toshiba in the field of ultrasound and magnetic resonance imaging. The research and development and OEM cooperation agreements of the healthcare sector of Siemens is also held with Matsushita for low and mid-range ultrasound systems, with Jeol in the field of in-vitro diagnostics, and with Partners Health Systems in the emerging field of personalized medicine. The healthcare sector of Siemens also provides electromedical systems through its joint venture with Drager in Lubeck, Germany, in which Siemens holds a 25% stake.

Siemens IT solutions and services designs, builds, and operates both discrete and large scale information and communications systems. Siemens IT solutions and services offers comprehensive information technology and communications solutions from a single source. Siemens IT solutions and services offers its solutions and services to customers in industry-energy-healthcare area, which includes the automotive, discrete manufacturing, mobility, and process industries as well as the energy and healthcare markets. It also offers its solutions and services to the public sector, which includes defense and intelligence, public

security, employment services, and public administration; and service industries, which includes customers in telecommunications and internet services, media, and in financial services and consulting services.

The types of services Siemens IT solutions and services segment offer include project-oriented consulting, design and implementation services, such as selecting, adapting and introducing new solutions to support business processes, as well as the integration of systems and enterprise applications. It also includes outsourcing services (full-scale IT operations spanning hosting, call center, network, and desktop services) as well as the operation of selected business processes (for example, financial services back-office operations). Further, it includes software development such as the design and implementation of software solutions for the three Siemens sectors, industry, energy, and healthcare, as well as for external customers. In FY2009, Siemens reorganized its software engineering business and transferred Siemens IT solutions and services' software programming capabilities for the three sectors industry, energy, and healthcare to corporate technology, creating a central software house.

Siemens financial services (SFS) provides a variety of financial services and products both to third parties and to other Siemens entities and their customers. It is comprised of five business units, which can be classified as capital businesses, consisting of commercial finance Europe/APAC (COFEA), commercial finance US (COFUS), and the equity component of the business unit, equity and project finance. It can also be classified as fee businesses, consisting of the treasury and investment management business unit, the insurance business unit, and the project and export finance component of the business unit, equity and project finance.

The capital businesses support Siemens' sales with leasing and lending programs and offer a range of financial solutions, including direct financing, to vendors and their business customers. The finance products include finance leases, operating leases, hire purchases, and rental contracts, as well as structured loans. The capital businesses also make equity investments, mainly in infrastructure projects where Siemens acts as the principal supplier.

The fee businesses support and advise Siemens in matters concerning financial risk and investment management and provide an important contribution to Siemens by arranging financing for Siemens projects.

The equity investments segment of Siemens is comprised of Siemens' investments, accounted for by the equity method, at cost, or as current available-for-sale financial assets, which are not allocated to a sector, a cross-sector business, SRE, pensions or corporate treasury for strategic reasons. The main investments within equity investments are Nokia Siemens Networks (NSN), and Bosch und Siemens Hausgerate (BSH).

NSN includes the carrier-related operations of Siemens and the networks business group of Nokia. NSN is a leading supplier in the telecommunications infrastructure industry.

BSH is a leading manufacturer of household appliances, offering an extensive range of innovative products tailored to customer needs and global megatrends alike.

Further main investments within the equity investments segment of Siemens include a 49% stake in Enterprise Networks Holding, a 49% stake in Krauss-Maffei Wegmann, 50% stake in ELIN, and a 19.8% stake in ARQUES Value Development.

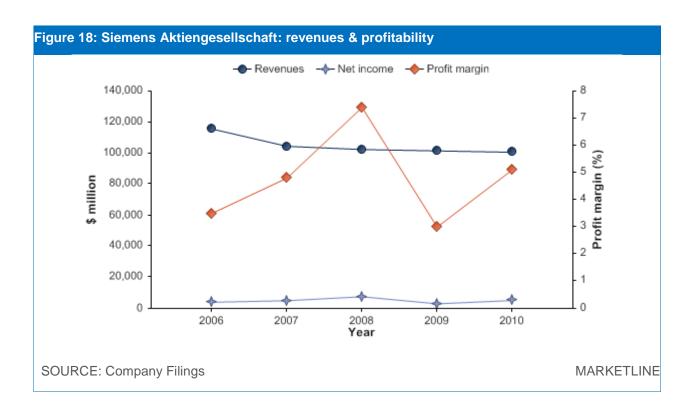
## **Key Metrics**

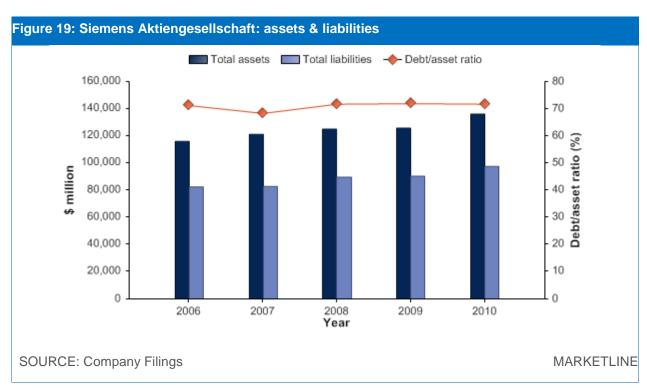
The company recorded revenues of \$100,649 million in the fiscal year ending September 2010, a decrease of .9% compared to fiscal 2009. Its net income was \$5,165 million in fiscal 2010, compared to a net income of \$3,036 million in the preceding year.

\$ million	2006	2007	2008	2009	2010
Revenues	115,680.6	104,506.7	102,436.1	101,540.6	100,649.1
Net income (loss)	4,031.1	5,041.9	7,584.0	3,036.2	5,165.1
Total assets	115,949.6	121,284.2	125,136.4	125,749.8	136,216.4
Total liabilities	82,576.0	82,872.8	89,668.6	90,451.5	97,672.5
Employees	368,500	386,200	428,000	402,000	405,000

€ million	2006	2007	2008	2009	2010
Revenues	87,325.0	78,890.0	77,327.0	76,651.0	75,978.0
Net income (loss)	3,043.0	3,806.0	5,725.0	2,292.0	3,899.0
Total assets	87,528.0	91,555.0	94,463.0	94,926.0	102,827.0
Total liabilities	62,335.0	62,559.0	67,689.0	68,280.0	73,731.0

ble 20: Siemens Aktienges	sellschaft: key	financial ratio	s		
Ratio	2006	2007	2008	2009	2010
Profit margin	3.50%	4.80%	7.40%	3.00%	5.10%
Revenue growth	15.70%	-9.70%	-2.00%	-0.90%	-0.90%
Asset growth	7.30%	4.60%	3.20%	0.50%	8.30%
Liabilities growth	7.90%	0.40%	8.20%	0.90%	8.00%
Debt/asset ratio	71.20%	68.30%	71.70%	71.90%	71.70%
Return on assets	3.60%	4.30%	6.20%	2.40%	3.90%
Revenue per employee	\$313,923	\$270,603	\$239,337	\$252,589	\$248,516
Profit per employee	\$10,939	\$13,055	\$17,720	\$7,553	\$12,753
OURCE: Company Filings				N	MARKETLIN





# **APPENDIX**

# Methodology

MarketLine Industry Profiles draw on extensive primary and secondary research, all aggregated, analyzed, cross-checked and presented in a consistent and accessible style.

**Review of in-house databases** – Created using 250,000+ industry interviews and consumer surveys and supported by analysis from industry experts using highly complex modeling & forecasting tools, MarketLine's in-house databases provide the foundation for all related industry profiles

**Preparatory research** – We also maintain extensive in-house databases of news, analyst commentary, company profiles and macroeconomic & demographic information, which enable our researchers to build an accurate market overview

**Definitions** – Market definitions are standardized to allow comparison from country to country. The parameters of each definition are carefully reviewed at the start of the research process to ensure they match the requirements of both the market and our clients

**Extensive secondary research** activities ensure we are always fully up-to-date with the latest industry events and trends

MarketLine aggregates and analyzes a number of secondary information sources, including:

- National/Governmental statistics
- International data (official international sources)
- National and International trade associations
- Broker and analyst reports
- Company Annual Reports
- Business information libraries and databases

**Modeling & forecasting tools** – MarketLine has developed powerful tools that allow quantitative and qualitative data to be combined with related macroeconomic and demographic drivers to create market models and forecasts, which can then be refined according to specific competitive, regulatory and demand-related factors

Continuous quality control ensures that our processes and profiles remain focused, accurate and up-todate

# **Industry associations**

#### **Electrical Generating Systems Association**

1650 S Dixie Hwy, Ste 500, Boca Raton, FL 33432, US

Tel.: 1 561 750 5575

Fax: 1 561 395 8557

www.egsa.org

## Related MarketLine research

#### **Industry Profiles**

Global Electrical Components & Equipment

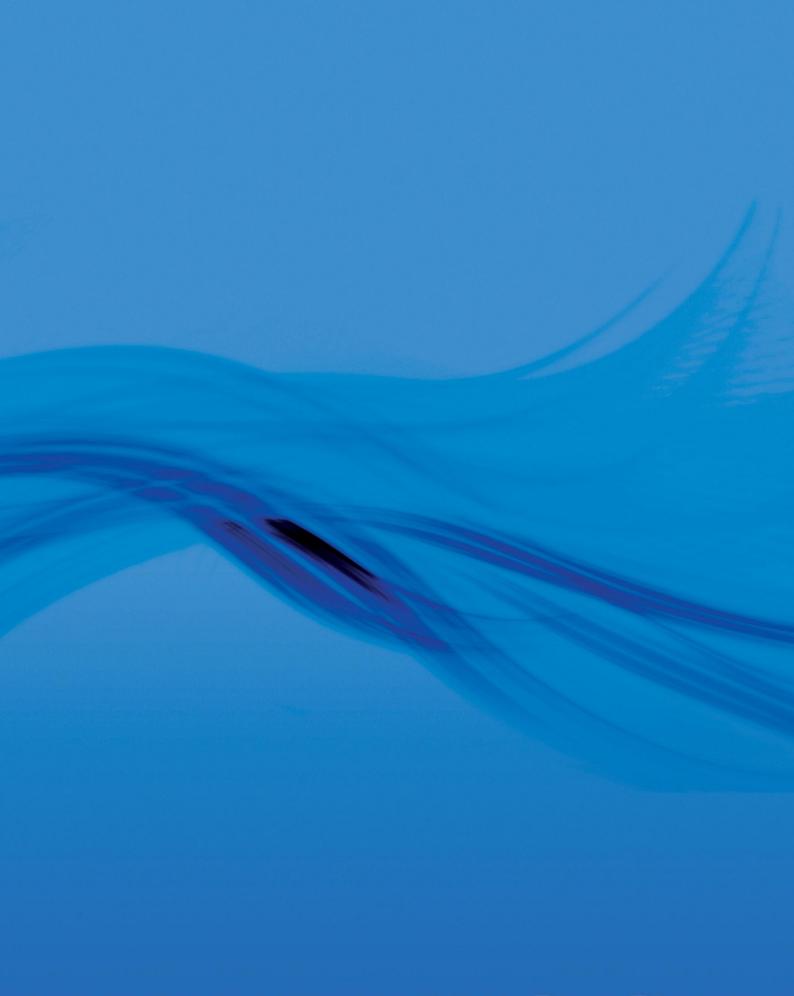
Global Electrical Equipment

Global Construction & Farm Machinery & Heavy Trucks

Global Robots

Global Industrial Machinery

Global Capital Goods



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