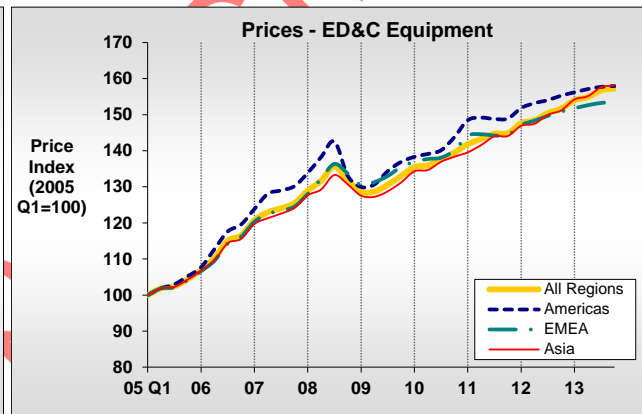
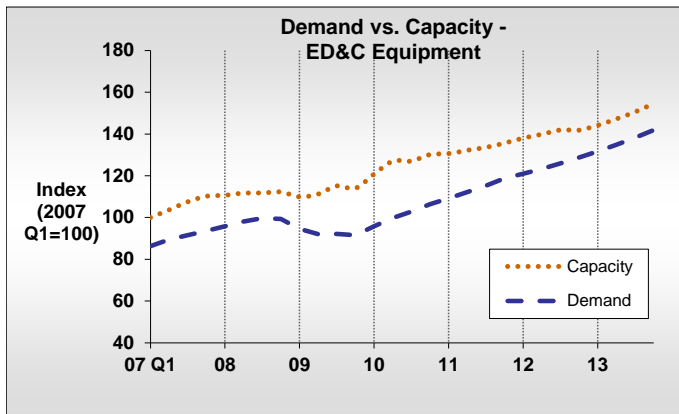


1 Electrical Distribution & Control Equipment (ED&C)

Sales grew 2.5% in Q3 on demand from utility and energy companies. Grid expansions will drive sales up 3% in Q4, while strong Asian demand will boost sales 2% in Q1, and 9% annually through 2013. **Capacity additions will be outpaced by demand growth, raising utilization rates 1.5% to 87.5% in Q4 before reaching 92% by 2013 Q4.** This will raise lead times by two weeks in Q4 to 36 weeks and further rise to 37 weeks by 2012 Q4 and remain constant in 2013. Prices will not rise in Q4 due to a 17% fall in the cost of copper, but will rise 4.5% annually through 2013 on higher wages in Asia and increasing nickel costs.

Figure 1: Key Indicators for ED&C Equipment

Key Indicators	Q4 2011 - Q1 2012	Q4 2011 - Q4 2013
Demand	▲ 1.9%	▲ 19.5%
Order Lead Time	▲ 0.8%	▲ 4.4%
Prices	▲ 2.0%	▲ 8.6%
Capacity Utilization	▲ 0.1%	▲ 4.2%
Supplier Concentration	▶ 0.2%	▶ 2.0%



Siemens acquired eMeter to expand its smart grid portfolio. ABB is buying Powercorp to supplement its renewable energy business. Mitsubishi is partnering with manufacturers in Russia and China. **ABB set up the world's first SF₆ recycling plant in Australia based on a new technology providing 99.99% purity, offering buyers up to 30% cost saving potential.**

Figure 2: Top ED&C Equipment Suppliers

	Name	Home Country	3-Year Annual Growth Rate	Electrical as a % of Sales	2010 ED&C Revenues (\$M US)	R&D % of Sales 2010	Stock Price Change Last 90 Days	Q4 News
1	Siemens	Germany	-2.3%	31%	\$24,265	5.1%	5%	Bought eMeter to expand smart grid data management
2	ABB	Swiss	-4.9%	67%	\$20,801	3.4%	-7%	Bought Powercorp to strengthen renewables business
3	Schneider	France	1.6%	60%	\$13,397	2.6%	-8%	1% price increase to compensate for higher labor costs
4	Mitsubishi E.	Japan	N/A	29%	\$10,762	3.6%	23%	Began tests of 'strong' smart grid technologies
5	Eaton	USA	-5.6%	49%	\$6,188	3.1%	8%	Bought E.A. Pedersen for medium-voltage switchgear
6	Rockwell	USA	-7.7%	100%	\$4,857	4.1%	23%	Doubled capacity in Brazil for faster local delivery times
7	GE	USA	-8.9%	4%	\$4,510	3.3%	15%	Developed controller platform with 6% energy savings
8	Fuji Electric	Japan	-13.4%	42%	\$3,721	4.7%	-8%	Q3 sales fell 7% sequentially on low Chinese demand
9	Alstom	France	-0.4%	11%	\$2,825	3.4%	-22%	JV to develop HVDC technology for the Russian market
10	Tyco	USA	-8.2%	16%	\$2,672	0.8%	16%	Energy segment sales up 24% YOY on utility demand

1.1 Sourcing Recommendations – ED&C Equipment:

1. Outsource SF₆ recycling activities to ABB to save up to 30% on total lifecycle costs. Its new plant in Australia will recycle gas to 99.99% purity allowing for almost perpetual reuse of the gas, thus avoiding complicated in-house recycling or substantial disposal costs. ABB will also handle recovery from switchgear, transportation, and delivery of purified product.
2. Unbundle electrical steel prices from transformers prices from Siemens and ABB. Electrical steel prices have risen, but these suppliers have established price and volume agreements with multiple electrical steel suppliers to keep costs down.
3. Include ABB in bids for micro-grids along with leading suppliers such as Schneider, Alstom, and Eaton. ABB recently acquired Powercorp along with its proprietary technology which allows up to a 90% share of wind power in the energy mix, thus minimizing diesel generator use. This is coupled with its fast reacting flywheel energy storage system design with response time of 5ms for smoothing power supply.

1.2 Sales rose 2.5% in Q3 on demand from electric utilities. Power grid expansions will drive sales up 3% in Q4. Rising power consumption in Asia will increase sales 2% in 2012 Q1 and 9% annually through 2013.

Sales grew 2.5% in Q3 primarily on growing demand from the utility and energy sectors.

- Reliance Power, India, awarded a 220 kV substation contract worth around \$85m for India's 350 MW Doorsar Solar Power Plant, the largest plant of its kind in the country.
- Petrobras ordered power supply infrastructure, systems, and equipment for two new FPSOs. The scope of supply for each unit includes a containerized E-House (electrical house), which includes an electrical room to house the complete 100 MW power system along with its related equipment. The order also includes energy management systems and power supply protection equipment.

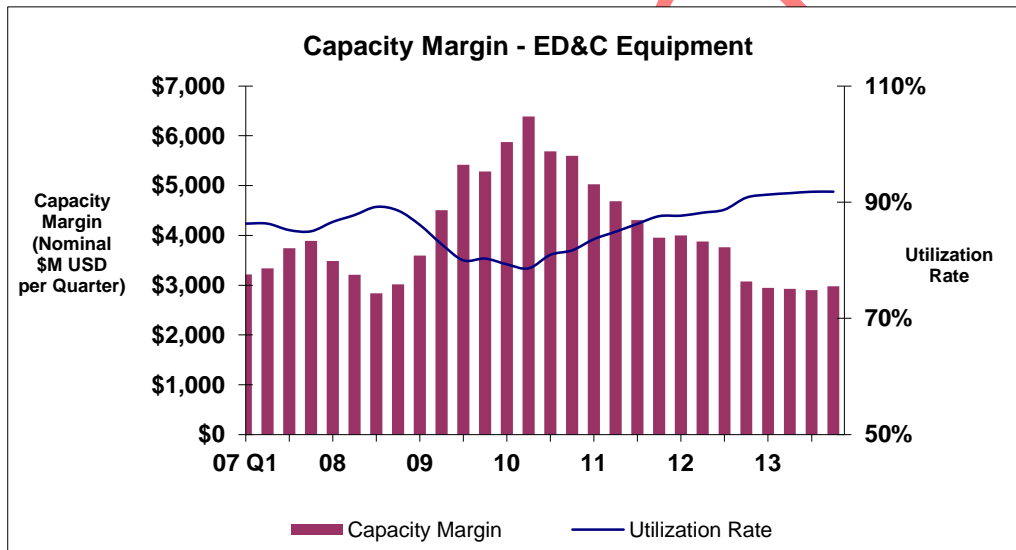
Sales will grow 3% in Q4, lifted by major grid expansions taking place in Asia, Africa, and South America. Asian sales will rise fastest at 3%, while sales in EMEA and the Americas will rise 2.5% and 1.5%, respectively.

- Power Grid Corporation of India (PGCIL) signed a memorandum of understanding for development, design, and manufacture of a 1,200 kV single-phase ultra-high voltage (UHV) AC power transformer, to be deployed at PGCIL's national test station currently under construction at Bina, Madhya Pradesh.
- Ketraco, Kenya's state-owned electricity transmission and distribution company, started construction of the 400kV, 400km Mombasa-Nairobi power line worth \$122m. With transmission capacity of 1,500 MW it exceeds Kenya's total current installed power generation capacity.
- Itaipu Binational, Paraguay, is expanding the Right Bank Substation by placing an order for an autotransformer and regulator set with a power rating of 470 MVA and 500 kV/220 kV transmission along with the associated equipment, installations, and interconnections.

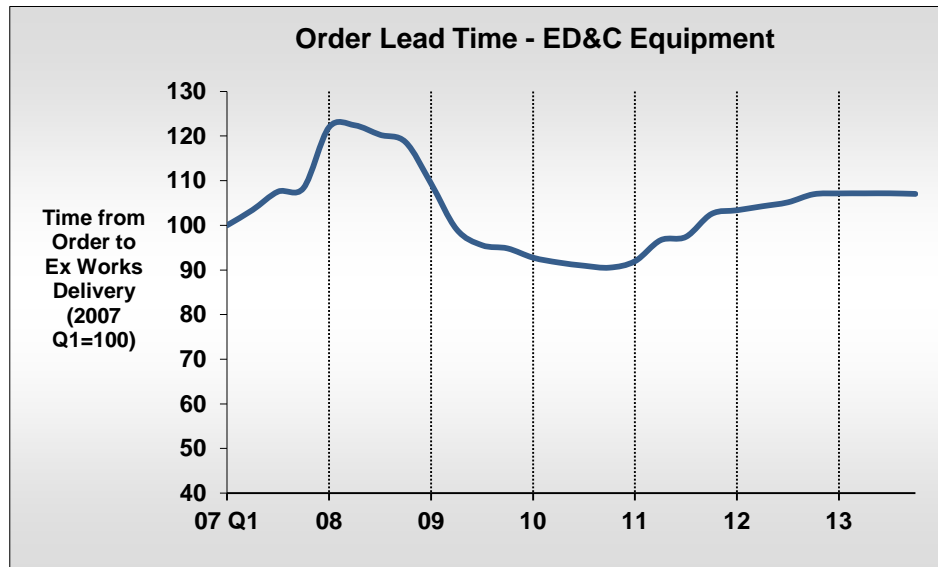
will increase annually by 16% in Asia, 9.5% in Latin America, and 9% in Eastern Europe, whereas capital expenditure by the oil & gas industry will grow 14% annually in Asia, 7% in Latin America, and 9.5% in Eastern Europe.

ABB, Rockwell, Siemens and Mitsubishi will expand capacity in 2012 and 2013:

- ABB will continue its \$200m investment plan to increase headcount by 1k employees in the coming two years.
- Rockwell Automation’s new manufacturing plant in the city of Jundiai, Brazil, will double the company’s manufacturing capacity in Brazil. It will start operations in 2012 Q2.
- Siemens is planning an investment of \$160m in local Russian manufacturing facilities for transformers, high-voltage products, and gas-insolated switchgear in the city of Voronezh.
- Mitsubishi will open a \$35m plant in Chiangshu, China, for switchgear, transformer, and controller manufacturing. The plant will reach full capacity by 2016 when all three phases are completed, enabling it to manufacture products worth about \$350m annually.



Industry backlog will rise to \$1.2b by 2012 Q4 – about four times the current level – as 6% demand growth in 2012, will only be met by 4.5% capacity increases by hesitant suppliers. This will extend lead times by one week to 37 weeks. Backlogs will increase further to \$1.3b by 2013 Q4, as suppliers gain confidence to add 9% to capacity, which will limit backlog accumulation and stabilize lead times at 37 weeks.



1.5 Prices rose 1% in Q3 due to higher wages for engineers, but will hold steady in Q4 due to falling copper prices. Rising metal and Asian labor costs will drive prices up 4.5% annually through 2013.

Prices increased 1% in Q3, with prices in Asia rising fastest at 2% due to faster rising labor costs. Asian manufacturers’ expenses for professional labor such as engineers increased 4% in Q3 due to benefit reforms and seasonal bonus payments. As an example Schneider Electric’s pay increases in such markets need to exceed inflation to enable the company to attract talent, and it will have to compensate for these costs via continuous price increases. Suppliers in EMEA and the Americas, however, decided not to raise prices due to weak demand growth in those regions.

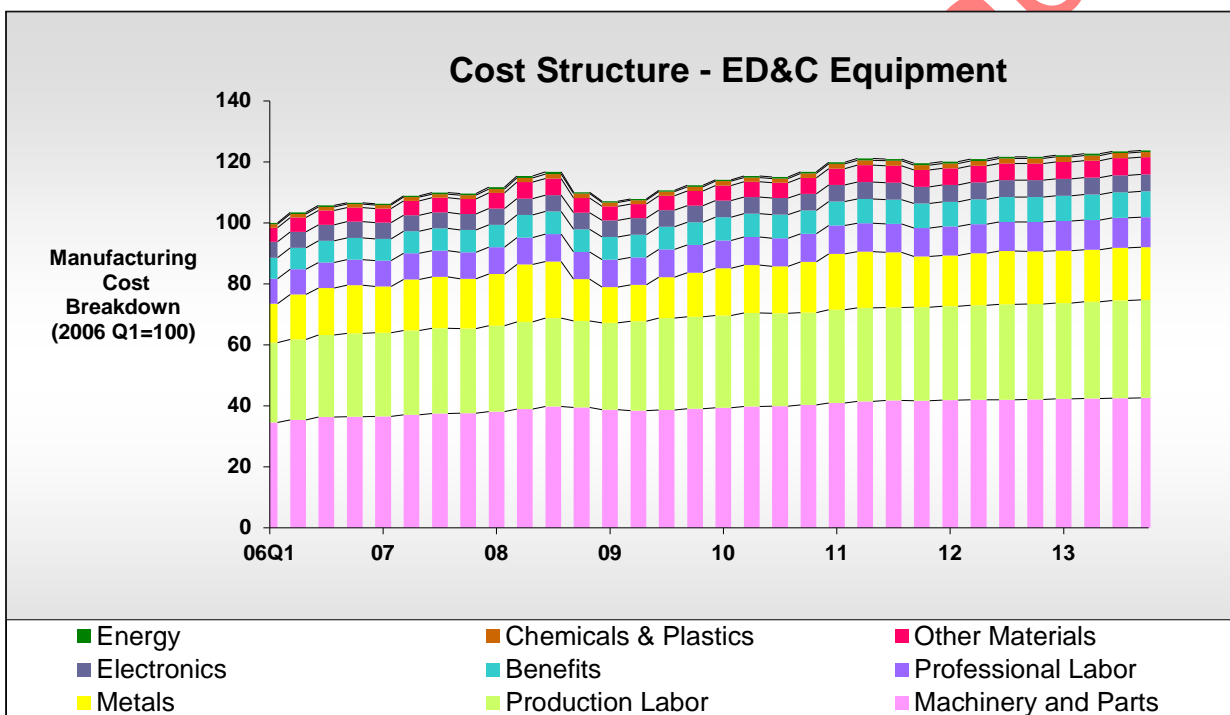
Prices will not rise in Q4 as falling metal costs allow suppliers to expand profit margins automatically. Profit margins will increase 2%, 1%, and 0.5% in the Americas, EMEA, Asia, respectively, as overall input costs decline at the same rates in each of the respective regions. The cost of copper, which is used extensively in transformer windings, will fall 17% in Q4, a cumulative fall of 24% since peaking in 2011 Q1.

Suppliers will raise prices by 2% in 2012 Q1 while input costs increase only 1%. This will help suppliers make up for the rising cost of electrical steel, also known as lamination steel, used in the transformer core, and a 3% increase in Asian labor costs.

- Taiyuan Iron & Steel Group, the largest stainless steel producer in China, announced a hike of both domestic and export prices of stainless steel products in Q1. It will increase its price of stainless steel for export by \$60 per metric tonne.

- ABB plans to raise prices in Q1 to cover rising electrical steel costs.
- Siemens also experienced rising costs of electrical steel, but this will affect its pricing less, as Siemens has previously built stock piles and signed supply agreements with electrical steel manufacturers.

Prices will rise 4.5% annually through 2013 driven by increasing metal prices in the Americas and EMEA, and rising wages in Asia. Prices of ferrous alloys such as electrical steel will rise gradually as the cost of nickel, which is used in electrical steel, will undergo a cumulative increase of 16% in 2012-2013. Wages for production floor workers such as machinists and technicians will rise 8.5% annually in Asia, led by a 13% annual increase in Chinese minimum wages, as mandated by the current 12th five-year plan expiring in 2015.



Note: Most prices and costs are represented on an ex-works basis. Shipping is only shown if it represents more than 15% of cost or time.

1.6 ABB, Siemens, Schneider, and Eaton acquired companies to strengthen their existing offerings. Mitsubishi began testing smart grid technologies in Japan.

ABB acquired Australian Powercorp after posting 20% YOY sales growth in Q3 based on positive performance of its renewables business. ABB's revenue growth was aided by a \$1b HVDC (high-voltage direct current) connection contract for an offshore wind farm. It is further looking to strengthen its offerings in the renewable energy sector by acquiring Powercorp, an Australian renewable power automation company. The acquisition will strengthen ABB's portfolio of control technologies used to manage the integration of renewable energy sources into the grid.