

Make your company more competitive with higher profit margins

The power you consume directly affects your profitability.

By using Siemens power distribution solutions to evaluate how this power affects your company's operations, you can boost productivity, increase returns, and achieve payback in just a few months. To see how to calculate your payback, read on.

Reduced downtime

Reveal the cause of expensive assembly disruptions and damaged equipment with continuous power monitoring that captures data on transients, voltage sags and swells, harmonics, outages, and more.

Demand control

Avoid demand surcharges using demand prediction and time-of-use data.

Efficient energy management

Strengthen business processes by accurately assessing the energy related cost of every product and activity. Increase productivity with automated information processing.

Power factor correction

Improve power factor by installing capacitor banks and controlling their operation with Siemens digital meters.



Low Voltage Power Distribution Solutions - return on investment

www.usa.siemens.com/pds

SIEMENS

Reduced downtime

Power quality problems cost you time and money. Voltage sags, transients and harmonics can shut down your assembly line, damage electronics, and cause equipment to malfunction. You may have to scrap improperly cooled plastic or erroneously sprayed paint. You'll probably lose computer files and have to replace damaged controller cards. If your facility has just-in-time inventories, you can also lose profits during periods of downtime. This is because all processes downstream of the disruptions are also interrupted, or "starved." Products cannot be manufactured, which delays shipping and completion of sales. Employees are left idle, resulting in losses in productivity. You may have inventory buffers (WIP, or Work in Progress) between processes to prevent disruptions from cascading downstream. However, power disturbances often force companies to keep WIP inventories at unnecessarily high levels.*

By performing long term, continuous power quality monitoring using Siemens meters and software, you can capture unexpected disturbances, analyze harmonics in real time, and track load characteristics. This data reveals the source of problems, helping you precisely specify the protection devices and UPSs that will prevent further disruptions.

Cost of carrying excess inventory = (capital in WIP) (average cost of capital)

Demand control

As part of your utility contract, you have to pay surcharges if your instantaneous demand for power exceeds a certain value.

Each utility has a different policy for calculating demand penalties. Many utilities add surcharges for a year after a demand peak has been exceeded. They charge this "demand ratchet" to offset the cost of maintaining this generation capacity all year long, which they must do, even though the highest demand from a large industrial customer can occur during only one month of the year.

The utility contract's ratchet clause may stipulate that the minimum billed demand is at least 40% to 90% of the maximum demand recorded in the previous 11 months.

With Siemens power distribution solutions, you can identify the cause of demand peaks and avoid surcharges using demand prediction, time-of-use data, and load control.

This scheme allows you to automatically shed non-essential loads or bring generators online as soon as your demand exceeds a certain value. You may choose to cycle your air handlers, water pumps, lighting, or wastewater treatment units, any one of which may be shut down for five to 15 minute periods without undue hardship. You can also set different predicted demand limits and responses for weekdays and weekends.

Efficient energy management

To develop successful strategies for facility expansion, power distribution, and buy versus build decisions, your company must gather and correlate the right information.

People may manually read meters and perform lengthy calculations specific to the needs of engineering, accounting, or production.

Decisions about equipment installations and retrofitting may be delayed because historic data is difficult to access and time-consuming to profile.

You may suspect that one machine in the plant is drawing a large percentage of energy to produce one minor component. You can probably reduce costs by procuring the component from an external vendor, and removing the machine from the plant, but you need hard evidence to support this move.

A Siemens system solves all these energy issues through activity-based costing and automatic information processing.

Activity-based costing, or cost allocation, is used to determine the expenses incurred by individual company departments and specific devices. It is also used to accurately assess the cost of every product by identifying all activities that lead to final output, including sales, service, and energy expenses.



SENTRON PAC4200



Power Distribution Solutions Energy Management Software

Siemens power distribution solutions can automate the meter readings, information distribution, and data processing, so people across the company can get historic and real-time energy data and event logs at their desktops. They can instantly generate customized reports and implement complex cost formulas.

A clear picture of facility operations can accelerate decision making. Armed with load trends, you can confidently load circuits at higher levels, increasing the capacity of your power system and saving on capital expenditures. You can effortlessly access breaker trip logs to streamline maintenance, and find numerous other ways to improve efficiencies.

Power factor correction

The utility could be charging you penalties because your plant has poor power factor. Power factor represents the portion of supplied power that performs useful work, unlike the portion that just sustains electromagnetic fields for inductive loads. An increase in power factor from 0.60 to 0.95 could reduce demand by 37% without any changes to manufacturing processes.

To meet total demand for power, the utility must build sufficient capacity with lines, transformers, and substations. Higher demand means the utility spends more on capacity. By charging penalties related to low power factor, power suppliers can decrease their basic prices and provide incentives for their customers to become more energy efficient.

You may want to set up power factor correction at each load. But where a large number of motors, fluorescent ballasts, and transformers are in use, it is usually more affordable to centralize correction. This can be done by installing synchronous rotary equipment or capacitor banks and controlling their operation with a Siemens system.

Example

Let's assume the following company manufactures equipment, with \$100 million in annual revenues and 500 employees working five 8 hour days per week.

Reduced downtime

Recovered profits: 2 hours less downtime	
= 0.1% annual hours x \$100 million annual revenue	
= \$100,000 x 20% profit	\$20,000
Increased productivity = 250 people x \$25 per hour x 2 hours	\$12,500
Reduction in scrapped materials and manufacturing line start-up costs	\$50,000
Reduction in equipment replacement	\$20,000
Computer data recovery	\$10,000

Annual Savings and Profits \$112,500.00

Demand control

Reduced charges by avoiding new demand peaks, assuming 20 MW peak load	\$45,000
Annual Savings	\$45,000

Efficient energy management

Reduced costs by going to external parts supplier and removing one machine from plant	\$47,000
Increased productivity:	
Automatic meter reading	
= 3 people x 50 hours per year x \$25 per hour	\$3,750
Faster system planning	
= 2 people x 100 hours per year x \$25 per hour	\$5,000
Fewer maintenance inspections	
= 2 people x 12 hours per year x \$25 per hour	\$600
Annual Savings	\$56,350

Power factor correction

Decreased power factor penalties	\$25,000
Annual Savings	\$25,000

Total annual savings and recovered profits \$238,850

Siemens system and installation

2 x 9510	\$8,000
10 x PAC3200	\$15,000
WinPM.Net software	\$6,000
Computers	\$3,000
Commissioning, transformers, wiring, training	\$30,000
	(\$62,000)

Return on investment \$176,850

Payback periods \$62,000 / \$238,850 3 months

Note: This is the payback period for a Siemens system. To determine the payback period for your particular situation, you may have to add in the costs of protection devices and capacitor banks.

We now invite you to identify the cost savings potential of your own operations.

Reduced downtime

Annual savings and recovered profits:

Recovered profits (or decrease in buffer inventories)	\$ _____
Increased productivity	\$ _____
Reduction in scrapped materials and manufacturing line start-up costs	\$ _____
Reduction in equipment replacements	\$ _____
Computer data recovery	\$ _____

\$ _____

Efficient energy management

Annual savings:

Reduced costs by choosing external parts supplier	\$ _____
Increased productivity	\$ _____
Automatic metering reading	\$ _____
Faster system planning	\$ _____
Fewer maintenance inspections	\$ _____

\$ _____

Demand control and power factor

Annual savings

Reduced charges by avoiding new demand peaks, assuming 20 MW peak load	\$ _____
Decreased power factor penalties	\$ _____

\$ _____

Total savings and recovered profits

Siemens system and installation

Meters	\$ _____
Software	\$ _____
Computers	\$ _____
Commissioning, transformers, wiring, training	\$ _____

\$(_____)

Return on investment

\$ _____

Payback period

_____ Months

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