Services to Support Your Power Plant Performance and Profit

Answers for energy.

SIEMENS
Working day and night for a business that never stops

Day by day our focus is on the reliable, efficient, environmentally compatible generation of energy for power plant owners and operators. New insights, which can add value and ease for our customers, are translated into unique services. We can offer you three key commitments to the energy business:

- In-market availability
- Preventative maintenance performed to your schedule
- Increased operating flexibility through modernization and upgrades.

In what other industries are there so many service opportunities? For us, it’s just a matter of knowing and understanding your business to better serve you.

Energy pioneers paved the way for Siemens Energy since 1867:

**Werner von Siemens**
On January 17, 1867, Werner von Siemens published his discovery of the dynamo-electric principle which was a significant step toward the worldwide use of electrical power.

**George Westinghouse**
George Westinghouse recognized the importance of three-phase current in the transmission of electrical energy. He founded the Westinghouse Electric Company in Pittsburgh, Pennsylvania.

**Sir Charles A. Parsons**
The first steam turbine for power generation was invented by Sir Charles A. Parsons. He founded Parsons & Company in Newcastle-on-Tyne, England.
While you are reading this headline, we are

**Siemens Energy –**
**Services dedicated to your power plant.**

Maintenance expertise for your plant reliability. Know-how to maximize your plant performance. Partnerships to meet your demands. Working day and night to make your energy business as profitable and secure as possible.

*Simulator training. In our training centers we prepare staff thoroughly for everyday plant operation.*

**Consulting**
We can analyze the site conditions for new buildings and the technical prerequisites for modernizing existing power plants. We can advise our customers on how to build, economically operate and optimize a power plant. Our advice covers the entire life cycle of a power plant – and considers possibilities of extending it.

**Training**
We offer a range of training opportunities to support the full life cycle of your plant. On the job, in the class room, and, since nothing is as real as reality, we can train your power plant staff on our simulators, in real time and under real conditions.
planning, operating, repairing, maintaining and

Implementing

Project management is our specialty. Whatever we do during the implementation phase of a power plant – from supplying the initial equipment and powering up new stations through implementing new control technology, providing new generators and turbines all the way to modernization of the entire power plant, our experience gained in hundreds of other projects enables us to plan each step exactly. And we never leave the customer until everything is up and running properly.

Operating

You can either run your power plant yourself – or let us run it for you. We can offer operation and maintenance services to match your strategic business needs. It's up to you to define the level of everyday support. We can even provide the power plant staff and fully operate the plant. We run many power plants around the world. And we speak the language of our customers everywhere.

We operate more than 30 power plants worldwide on behalf of our customers. We have the ideal model for you, too.
modernizing power plants and supporting their maintenance

Maintenance
Power plants are like cars: they need regular inspections. Regular maintenance, based on our detailed outage planning process, can help prevent surprises and reduce costs. Using standard or Siemens specialty services, such as non-destructive examination techniques, our engineers and field service specialists can help recognize conditions which may require maintenance or repairs. In many cases we don’t need to dismantle turbines or generators in your power plant to look inside. We have equipment and technology designed to tell quickly what maintenance may need to be performed now and what does not. This type of intelligent decision making can help you cut your costs significantly.

Repairing
Changing and repairing components is a routine job in any power plant. Although most repairs can be planned well in advance, some come suddenly. One thing is certain: Our goal is to help you stop operating issues from becoming outages. We are helped by excellent diagnostic systems – and our experience.

We can also keep a stock of your spare parts – and deliver and install them if you like. All our efforts focus on keeping your power plant online or putting it back on the grid as quickly as possible.

We repair at our customers’ sites as well as in our service centers around the world.

Our goal is to identify and address faults before they become failures.
If you are planning a new power station, considering an inspection, overhaul, environmental upgrade or wondering whether modernization would be beneficial – now is the ideal time to talk with us. We have a flexible portfolio that is designed to meet your needs. With Siemens you can build a new plant designed around coal, gas and oil technology and support it with an extensive range of service options customized to your requirements.

Modernizing
There are various ways of maximizing your power plant. You can increase the output without using more fuel. You can cut energy consumption without sacrificing output. And you can turn an older-type power plant into a modern one. Satisfied customers all over the world can confirm the effectiveness of our plant modernization solutions. In terms of business success – and environmental impact.

Modernization at a glance.

Extending Lifetime

Lifetime extension
When power plants reach or exceed their designed lives, safety and availability decrease. The life of highly stressed plant components is limited by time dependent material degradation. We can analyze elastoplastic deformations, preexisting abnormalities, crack formation and material creep before they cause unforeseen events. Metallurgical tests, especially tailored non-destructive test techniques for rotating components, integrity analysis of turbine components and fracture mechanics analysis reveal the real state of the plant. Adequate assessment of the remaining life of power plant components is one of our key issues in life management.

For example, higher automation levels lead to a more reliable and repeatable start-up behavior. This makes energy businesses more flexible. Lifetime extension is your important asset especially in the deregulated electricity market.

We are there for your full support.
Planners, engineers, technicians, visionaries today continue the quest for more reliable energy.

In times of energy price fluctuations, market instability and a highly competitive environment, Siemens Energy remains a constant, reliable partner. We continue to develop and implement new technologies to face future energy needs head on.

People who work at Siemens Energy are passionate about power plants. This explains the excellent performance of the power plants planned, built, serviced, operated and modernized by Siemens Energy. With its ongoing development of pioneering energy technologies, Siemens Energy is an innovative force in today’s power generation – to meet tomorrow’s needs.
Our goal is to identify faults before they become failures.

You want your power plant to achieve a reliable, high output. Day in, day out. We can help you cut downtimes to a minimum. We do repairs at our customers’ sites and in our factories and supply spare parts. Whether our technicians replace a failed valve or inspect turbines as part of a planned maintenance outage, they always work according to the same principle: make optimal preparations and get the plant back on the grid as quickly as possible.

Meeting your needs, we also offer specialty services including advanced non-destructive examination methods. Diagnostic tools that can detect some of the tiniest imperfections. Then, our experienced technical experts analyze findings and recommend follow-up action.
Our goal: to identify faults before they turn into failures.

We know how to analyze and plan the repair procedure.

Repair at the proper time.

Our goal: to identify faults before they turn into failures.

Always at your service.

More than 3,500 highly qualified Siemens power plant engineers, technicians and service specialists are at work all over the world. We speak your language, provide inspections, maintenance, repairs and spare parts for turbines, generators and boilers, and are positioned to respond to your needs at a moment’s notice.
Low-pressure turbines with proven Siemens advanced disk-design rotors can help cut maintenance costs and increase output.

The latest blade mounting technologies for turbines are developed by Siemens experts.

Generator modernizations by our highly qualified service personnel.

What are the full capabilities of your power plant?

Finely tuned to the individual plant, modernizations can help improve assets and environmental compatibility, and lead to higher reliability and overall performance. Discover the hidden potential in your power plant. Our customers are impressed by the performance enhancements resulting from our modernizations.
We prepare your power plant for tomorrow and beyond. There are many possibilities, including raising the combustion temperature, changing the fuel, converting the system (e.g. combined cycle), redesigning turbines, generators, boilers and control technology, and reducing emissions. We inspect your power station and give you the options.

The main advantages include higher reliability and therefore availability – the essentials of good energy business.
When you're planning for decades, every step matters.

If you want to plan well ahead, a service program can best support your long term goals. Siemens helps you to proactively protect your plant's performance through various service options:

- custom service programs that can include scheduled inspections, preventive maintenance, replacement parts programs, incentives and more
- onsite Siemens operation and maintenance of your plant.

If you choose us to operate and maintain your power plant on a round-the-clock basis, you can be confident that the knowledge and resources of Siemens are helping you protect your investment, your plant's performance and profitability.
Everything is possible.

We service, repair and modernize power plants. Parts programs that don't tie up your capital or warehouse space. We can train your personnel, operate your power plant with our own team, and agree to performance incentives within the framework of a service program. Tell us what you need, and we are there to help you.
You can generate cleaner power from fossil fuels.

We help to make your energy business fit for the future. With the growing global demand for emissions control, service products that promote plant efficiency and environmental compliance are increasingly important. Whether the answer to your plant's air quality control requirements is a single technology or an integrated system for multi-pollutant control, we can deliver. Our air pollution control systems, boiler and HRSG services, and low NOx burner technologies are cost-effective solutions to the rising demand for environmentally responsible power production.

We can also provide ways to lower the fuel consumption of your power plant. For example, waste heat can be utilized with a waste heat steam generator. That's good for both the environment and your balance sheet.
Together with our customers we analyze the current situation and conditions and plan modernization possibilities.

Our boiler technology services team can help maximize the performance of your plant's fossil-fired boilers and heat recovery steam generators.

Compared to early generation low NOx burners, our burner can help reduce NOx by more than 40%.

Saving the environment, preparing for the future.

Make the right decisions for environmentally compatible power generation today, and you're on the right road to the future.
Training & Consulting

Essential knowledge for your benefit.

Training in the field: New unit installation, on site, on the job, fleet and unit specific, technical field assistance – Siemens provides training and tools to help you operate and maintain your power plant more reliably.

Training in the simulator: In intensive simulator training we teach your staff to better understand the expected and react effectively to the unexpected.

Training in the control room: Less and less staff controlling more and more megawatts – We train your staff in the control room plus give advice on efficient ways of designing control rooms.

Service training: Essential knowledge of operation and maintenance, equipment and systems – We can show your staff what to watch out for in the power plant.
Assessments and Expert Knowledge Network: Teams of technical experts using specialty tools, techniques and processes help identify, assess, and diagnose abnormal operating conditions and recommend follow-up actions. The aim of our consulting and training programs is to put you and your power plant in a competitive position long term.

Operational flexibility: Cross divisional teams create customer specific upgrade packages for plant design and turbines to improve the operational flexibility and in-market availability of your power plant. This is an essential prerequisite to help ensure economic success in liberalized markets.
Your Power Plant Partners

Every single maintenance job is an opportunity for us to get closer to our customers. Every detail in a power plant is important. Every idea we are developing may mean a new step forward in your energy business. We invite you to get in contact with us.

We understand the importance of your plant and help you to keep it running for constant in-market availability.

Whatever your needs, you can rely on our expertise from the first day on.

Your plant is working and working — so we are.
With Siemens Energy, you benefit from:

- Intelligent design based on 140 years of experience
- Innovations driven by the requirements of the future
- Dedicated service centers around the globe for quick response
- People that care about the success of your business.