How to power this place?

Answers for energy.
Welcome to the world of integrated energy solutions.

Today’s world is characterized by substantial change. Large-scale demographic change, economic change, and the need for comprehensive environment protection. All these developments are resulting in an increased demand for solutions that meet the challenges of the changing energy landscape.

A reliable, economical, and environmentally compatible power supply is the key to sustainable development. The world is heading into a new energy age, in which energy will become more important, more complex, and more demanding; an era that holds both tricky challenges and outstanding opportunities.

As an integrated technology company, Siemens supplies innovative solutions for the utmost efficiency and productivity along the entire energy conversion chain. From oil and gas production through power generation to transmission and distribution, the Siemens Energy Sector delivers intelligent, trendsetting answers to the increasingly complex challenges the energy business faces.

The solution to the energy challenge lies in the close and smooth interaction of all fields of technology and expertise that are involved. And Siemens is the world’s only company spanning the entire energy conversion chain and working across all business and technology interfaces with an integrated line of its own products, solutions, and services.

Whatever we do, our three key values form the basis of our activities: Responsibility, excellence, and innovation. That’s our key to making the complex energy system more efficient, more productive, and more energy-saving along the entire energy conversion chain.

Welcome to the new energy age with Siemens.

Wolfgang Dehen,
CEO Energy Sector and Member of the Managing Board of Siemens AG
How do we make no difference?
Environmental responsibility means much more than producing less CO₂. We need to quickly and significantly cut all emissions produced during the increasingly complex processes along the entire energy conversion chain. That’s why we are focused on developing and advancing reliable and sustainable technologies that help make the most of all available resources while leaving our environment unharmed by the world’s growing hunger for energy.
Environment

Making it last.

Meeting the world’s soaring energy demand and providing ways to supply energy in a sustainable and environmentally compatible manner at competitive cost – that’s anything but easy. At Siemens, however, we observe the challenge in its entirety and face it head-on.
One thing is for sure: sustainable economic success and sustainable environmental practices are converging. And one has to assume that they are mutually dependent. Preparing for that inevitability today will result in a strong competitive advantage in the future. In every business, future prosperity and growth imply the proper management of all environmental risks and the continuous improvement of environmental performance.

Against the background of expanding populations and lifestyle changes in vast parts of the world, which have seen the average person’s energy use skyrocket over the past two decades, the need for environmental responsibility, especially in the field of energy, has never been greater. But the real challenge is to turn it into opportunity.

Siemens, committed to a sustainable future, both in environmental and energy-saving standards, does exactly that. Siemens provides comprehensive ways to be more energy-efficient and to help make the reduction of their environmental impact pay off.

We understand that maximizing efficiency along the entire energy conversion chain has an enormous potential for improved environmental care and also offers competitive advantages. That’s why we have developed some of the world’s most efficient energy technologies. And we provide the services to maintain that efficiency at peak levels. We also spare no effort to improve the availability, reliability, and efficiency of renewable energy sources.

The result: The recovery, transportation, and processing of oil and gas, as well as power generation from fossil fuels, are cleaner and more efficient than ever before. More and more of the world can plug into renewable energy sources. And efficient transmission and distribution solutions mean that we can deliver more power with lower loss. That’s how we blaze the trail into the new energy age.
How can we get by with less when the world keeps asking for more?
A soaring demand for energy on the one hand, dwindling resources on the other – solving this contradiction is one of the biggest challenges of the 21st century. Our answer is clear: paving the way for wiser and more efficient use of all resources.
Efficiency

Going beyond.

Efficiency is the key to excellent availability, the utmost reliability, and, of course, environmental responsibility in the world of energy. Basically, it’s all about making best use of resources and generated power. Siemens applies this principle across the entire energy conversion chain to take efficiency to totally new levels.
The straightforward way to save resources and energy is to make sure that the least possible amount gets wasted in the processes. That’s why the challenges in the areas of energy and the environment can only be met by continuing to develop more efficient technologies. Improvements in the efficiency of energy systems will play a major role in providing reliable and affordable energy supplies for the future.

But what looks simple at first sight is a real challenge. Every single percentage point by which a technology makes more efficient use of resources and energy requires enormous technical expertise and considerable investment. However, every tenth of a percent is well worth it in view of forecasts that see the global need for electric power rising steadily.

Siemens is a leading supplier of cutting-edge products, solutions, and services geared to increasing energy efficiency along the entire energy conversion chain. Siemens experts make a sizable effort toward ever higher efficiency levels in the recovery, transportation, and processing of oil and gas, in power generation from fossil as well as from renewable energy sources, and in the transmission and distribution of electrical energy. Today, Siemens is one of the world’s most innovative companies in its field and supplies the most advanced technology available.

And efficient energy technology is always technology that offers triple value: boosting efficiency can translate into the effective prevention of emissions, the conservation of energy resources, and the considerable reduction of operating costs.
What if ‘better than ever before’ is only the beginning?
The more you know about bringing energy to people, the more ideas you have to improve it. Our knowledge and expertise across the entire energy conversion chain gives us a unique perspective on how to move to totally new levels and to transform ingenuity into powerful, game-changing technology.
Today is good. Tomorrow will be better.

Coming up with inventions is a human constant. But turning ideas into tangible innovations that really make a difference is a different story. At Siemens, we know the key lies in comprehensive visions and clear images of the future – and, of course, the iron will to supply solutions that make the best use of all resources as economically as possible.
Innovation has been at the core of the Siemens culture since the company was founded in 1847. From its modest beginnings in a small workshop in a back building in Berlin to its position today as a major global enterprise, Siemens has always been an innovation leader. Driven by Siemens innovations, power engineering began to advance at a breathtaking pace in the second half of the 19th century.

Many technical cornerstones in energy technology are Siemens innovations, and we will continue to lead the field because we understand that innovation is never an end in itself. It is rather the driving force that makes us come up with technologies to help our customers increase their commercial success. That’s why research and development for products, solutions, and services that are trendsetting in terms of efficiency, cost-effectiveness, sustainability, and environmental compatibility are a core element of our philosophy. And in view of future energy challenges, the necessity for innovation has never been greater than it is today.

Innovative products and solutions from Siemens set benchmarks along the entire energy conversion chain: “All-electric oil and gas” increases the efficiency in oil and gas processes. The world’s largest gas turbine makes a new combined-cycle power plant deliver a record-breaking efficiency of more than 60 percent. The NetConverter® power conversion system provides the basis for a more constant power output from wind turbines. The new 800 kV transformer makes possible the efficient transmission of electric energy in the gigawatt range over distances of 1,000 kilometers and more. Innovative control equipment from Siemens is a catalyst for more fault-tolerant, self-monitoring, and ‘self-healing’ Smart Grids.

All of this is innovation. And all of this has been going on for years at Siemens. But we can confidently say that this is only the beginning.
Heading into a new energy age.

It is clearly foreseeable that energy markets, energy technology, and energy infrastructure will undergo profound changes in coming years. But only those who can see the big picture will be able to come up with spot-on solutions to tackle the challenges that lie ahead.
Without a doubt, the world of energy is about to become more important, more complex, and more demanding. More than ever before, electric energy will be the driving force for economic, social, and cultural development – as well as the basis for economic success and wealth. But with further technical development, more and new players in the market and an increasing number of stakeholders, understanding and solving essential questions in the energy field will become an increasingly difficult task. That’s the main challenge the upcoming new energy age will pose.

Innovation, efficiency, and environmental responsibility will be the key drivers toward success in this new energy age, and all three factors are interdependent.

This applies to all aspects of the energy conversion chain, from fuel recovery through energy production all the way to power transmission and distribution. That’s why island solutions developed without a proper view of the big picture simply won’t do any longer. Solutions for a sustainable, reliable, and affordable future energy supply need to take into account every factor that could affect the way energy is produced, distributed, and used.

As the world’s only integrated energy company covering the entire energy conversion chain from fuel production to power distribution, Siemens can provide future-oriented, innovative, and efficient products and solutions, that help ensure preparedness for future demands and help get a grip on all the highly complex aspects of the new energy age.

The Siemens Energy Sector bundles Siemens’s thorough expertise and vast experience in the field of energy. This makes possible unique synergies resulting in products, solutions, and services, which not only meet the specific demands of the various players in the energy business but also help them stay one step ahead. In other words, Siemens is actively shaping the new energy age.
Tapping hidden resources.

**Service**

Putting the energy infrastructure in place is one thing. Maintaining it at optimum efficiency and achieving maximum performance over the entire life cycle of the assets is another thing entirely.

Service from Siemens Energy is focused on one thing and one thing only: optimizing the benefits of our cutting-edge technology over the maximum period of time, and, in the process, both protecting the environment and increasing energy efficiency whenever possible.

Whether turbines, generators, compressors, transformers, switchgear, energy automation systems, environmental systems, or industrial applications: Siemens's planning, consulting, and service expertise keeps energy systems up and running at optimum levels year-in, year-out. From turnkey construction solutions through the operation of complete power plants to modernization, lifetime extension, and maintenance, Siemens supplies a range of services that translate into optimum output throughout the entire life cycle of the assets, increase return, and keep cost of ownership at bay.

In the energy technology field, there are many ways to increase performance and protect investments by making possible longer operation thanks to the latest technology. The Siemens repowering scheme, for example, can make existing direct-fired plants as efficient as modern combined-cycle power plants, the most efficient power generation facilities today.
Extracting benefits.

Oil & Gas

Global trends in the demand and supply of petrochemicals require constant technical improvements. And Siemens supplies the technology to ensure maximum efficiency in the environmentally compatible recovery, transportation, and processing of oil and gas. Siemens technology introduces high efficiency and environmental responsibility in the use of oil and gas at the initial stage of the energy conversion chain.

Siemens Energy has the worldwide resources to respond quickly to the all-new requirements that emerge with oil and gas recovery spreading into more and more austere regions. Siemens provides for all upstream, midstream, and downstream processes with compression, power generation, power distribution, water management, IT, automation and control solutions, systems, and products.

In view of the scarcity of resources, Siemens Energy has developed a highly efficient method for oil and gas processes: all-electric oil and gas. Instead of distributed gas turbines as mechanical drives for compressors, a central combined-cycle power plant produces electricity for all electric compressor drives. This approach has the potential to increase efficiency from approximately 20 to nearly 50 percent.
More from less.

Fossil Power Generation

Oil, gas, and coal contribute the vast majority of the world’s power generation, and they will remain the backbone of our energy systems for the foreseeable future. Siemens focuses on the efficiency of power plants and supplies innovative technologies for substantial savings on fuels and emissions.

From power supply solutions for energy-intensive industries to simple-cycle power plants and from combined-cycle power plants to steam power plants, Siemens aims to deliver the highest levels of efficiency currently possible. And our experts are constantly developing further improvements and new technologies to push the limits of power generation efficiency as well as power plant instrumentation and control.

Carbon capture, for example, will make coal-fired power plants cleaner, thus allowing for power generation at drastically reduced emission levels.

Through consistent refinement of gas turbine technology and comprehensive solutions to control and improve the combustion process, Siemens experts have reached unprecedented efficiency levels in fossil power generation. And the process continues: the trendsetting combined heat and power (CHP) technology has made efficiency rates up to 95 percent a reality. The result: higher return on investment for the plant owners, considerably less emission for the environment.
The never-ending story.

Renewables

Renewable sources of energy like wind, the sun, water, or biomass have the potential to make a major contribution to the world’s energy needs. And they have the advantage that they will never run down, will never run out, and never need replenishing. However, to be fully tapped, these resources also require specific technologies.

Thanks to its long-term commitment to bringing environmental options to the energy market, Siemens has established itself as a world technology leader in renewable energy. This commitment goes beyond environmental friendliness. And it makes a big difference in the way the world can use power.

The technology behind this straightforward approach is anything but simple. To take advantage of the best wind conditions available, for example, offshore wind farms need to be installed. The enormous turbines and blades must withstand the harsh ocean environment with minimum service, because maintenance is an expensive, difficult task when there are hazardous waves to contend with. All of this calls for technical excellence.

That’s why Siemens wind turbines are the preferred solution of leading utilities and developers for large, demanding on- and offshore projects. Siemens turbines are solid, reliable, and highly productive thanks to Siemens’s unique solutions. The IntegralBlade® process, a patented Siemens technology, for example, allows for the production of sturdy, seamless rotor blades capable of withstanding even gale-force winds.
Getting what is wanted to where it’s needed.

Power Transmission

A secure and efficient power supply is about much more than just generating energy. One of the greatest challenges is getting the power to where it’s needed, no matter how difficult the location, how extreme the conditions, or how unlikely the possibility. Today’s innovative power transmission solutions from Siemens can have important economic as well as environmental benefits.

Siemens supplies a comprehensive line of switching and non-switching devices, from transformers for every possible purpose to high-voltage direct current (HVDC) transmission solutions, from air- and gas-insulated switchgear to turnkey substations, from technology for reactive power compensation to innovative gas-insulated transmission lines.

Better energy transmission can make more environmentally efficient power generation methods more readily available, too. Siemens HVDC transmission solutions, for example, can transmit power over vast distances with very little loss: from renewable sources in remote areas right into the centers of consumption.

And reactive power compensation permits more energy to be transmitted within existing AC power systems. Solutions like these benefit both the environment and the power producers and system operators who need to deal with a steadily increasing energy demand all over the world.
Power Distribution

Utilities, the industries, and the infrastructure sector demand customized distribution networks providing the highest efficiency and the utmost reliability. A stable, solid, yet concurrently flexible grid, reliable switchgear, and energy automation technology are essential components of power distribution networks capable of meeting a steadily growing demand.

As the world market leader in power control technology, Siemens also supplies integrated solutions for protection, power quality, substation automation, and communication as well as energy management systems. An all-embracing scope of instrumentation and control systems help maximize the benefits of cutting-edge energy technology.

Trendsetting innovations, in the fields of smart metering and software solutions, for example, will help rise to the energy challenges of the future.

Recent Siemens innovations in the area of power distribution include a medium-voltage DC link, which makes it possible to connect two or more AC networks of different voltages, phase angles, and frequencies, while maintaining a reliable power supply. Another innovative development from Siemens is a shoreside power supply for the connection of berthed ships to the local utility’s medium-voltage grid. The ships’ on-board generating sets are shut down during the lay days, and electric power is drawn from the shoreside grid. This reduces emissions by more than 50 percent.
How much passion does it take to energize the world?

Our trendsetting technologies and solutions would be nothing without our people. People with a can-do attitude who translate our global presence into strong local presence. Our highly charged, motivated people who care are our most important asset.
People

Playing on strengths.

It takes a rare combination of in-depth knowledge, out-of-the-box thinking, and a commitment to client satisfaction to turn visions into reality and make a difference. That’s what characterizes the people at Siemens – across cultures, around the globe.
The energy business depends, above all, on people: people who devise the new products, come up with the new solutions, and provide all the services required to get a grip on the many challenges the energy business has to face. Experts who find solutions where there were none before. Specialists who develop methods for doing things more efficiently, more economically, and more environmentally compatible than before. Professionals who speak the language of their business partners and understand their demands, their motives and their intentions.

Across the world, in every country where Siemens Energy operates, these are the people on our staff: ready to meet local business needs and concurrently address global requirements in the energy market. Siemens’s close-knit global network of experts and factories ensures comprehensive customer care, immediate availability, flexibility, and excellent solutions that help meet all today’s and tomorrow’s requirements.

Our people come from various backgrounds and operate across cultures, across time zones, across geographical and national boundaries and borders. But they all have one thing in common: they share our philosophy, our culture of excellence, and our view of the big picture. But they never lose sight of the details. That’s why they understand the importance of every single issue they deal with.

Wherever you are, our people make Siemens Energy a trustworthy partner able to provide reliable answers. Answers that have been properly developed and calculated, tested, and proven over and over again. So, what can our people do for you?