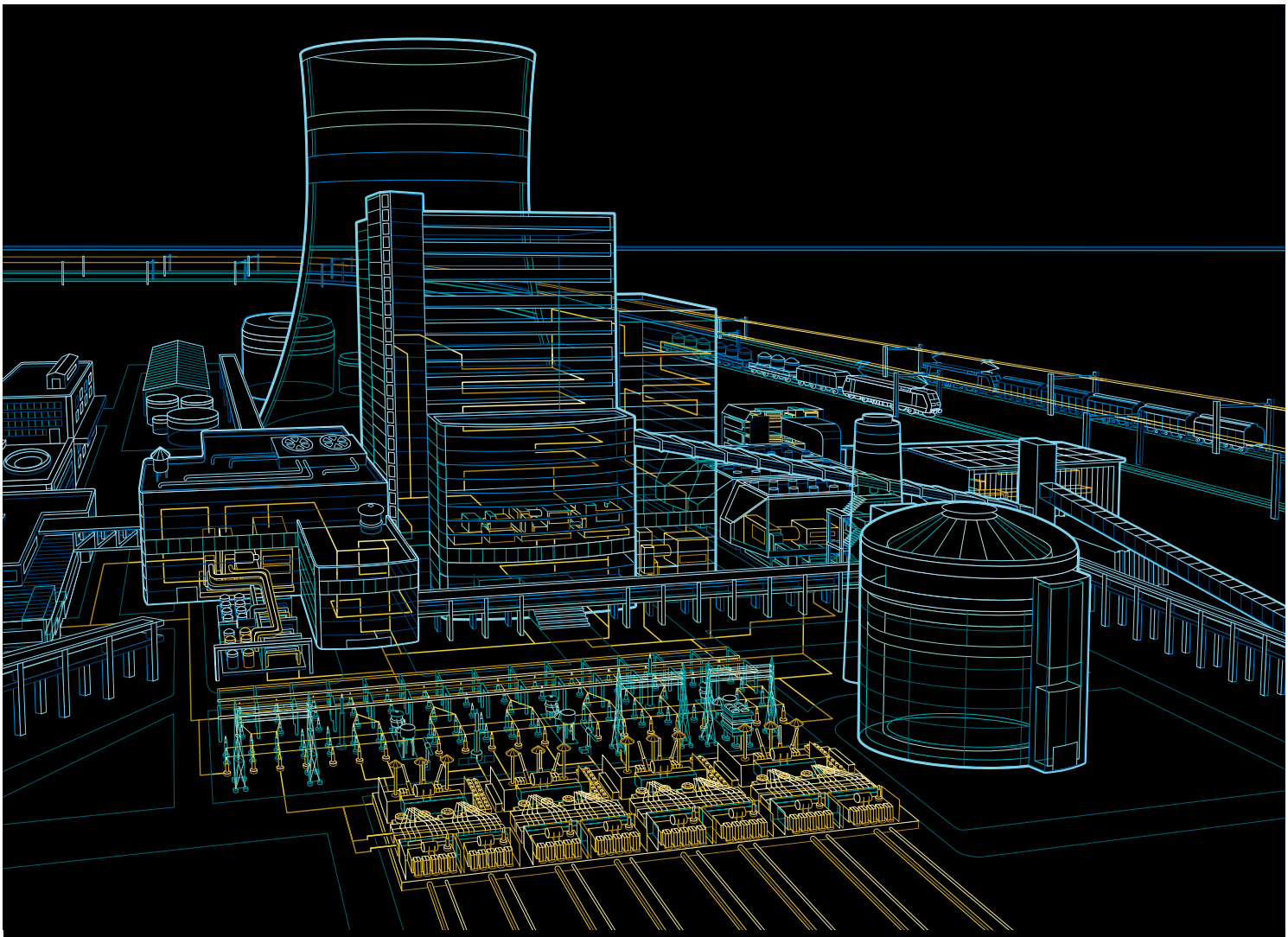
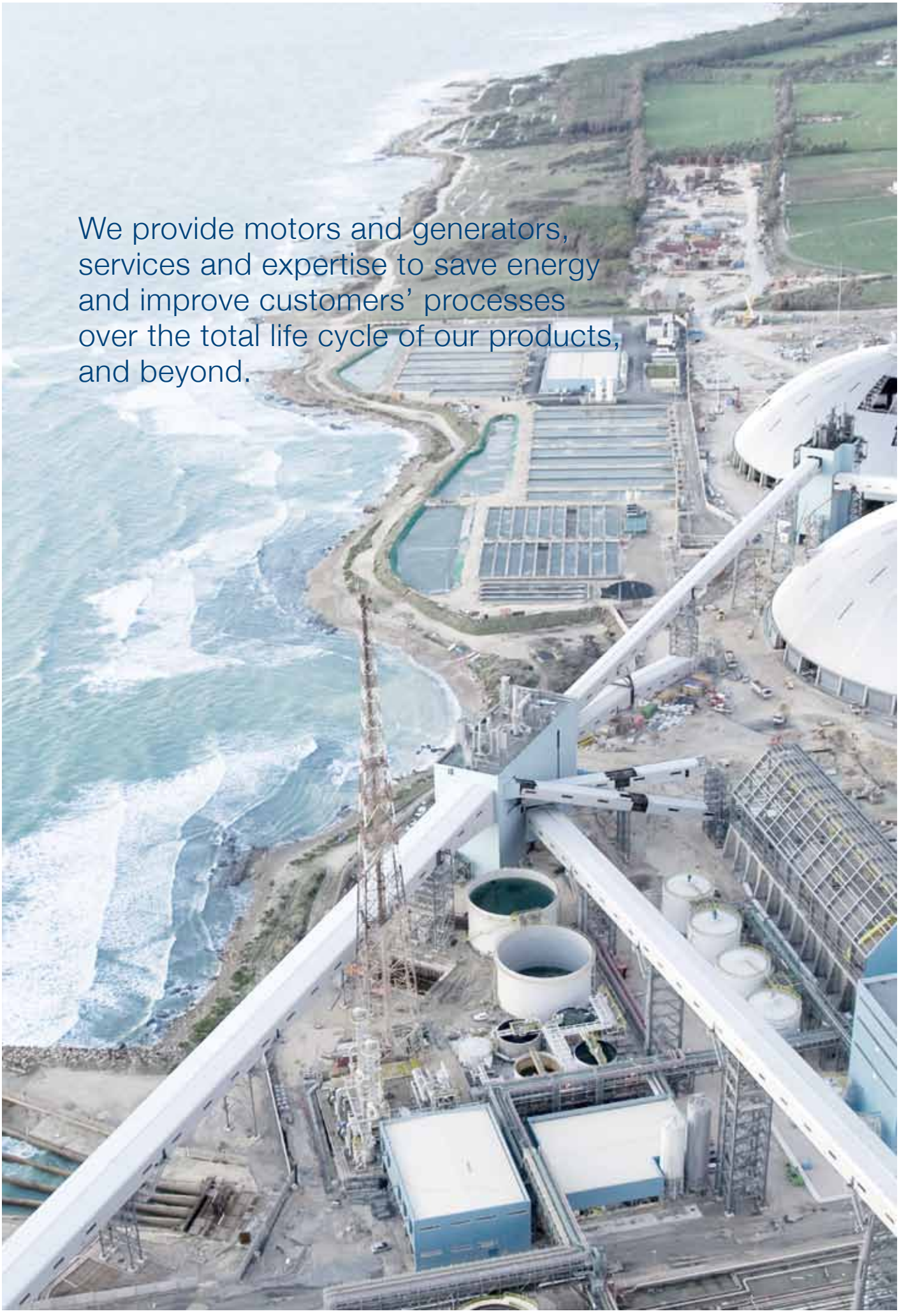


Brochure

High efficiency motors for power generation applications

Power and productivity
for a better world™


We provide motors and generators,
services and expertise to save energy
and improve customers' processes
over the total life cycle of our products,
and beyond.

Meet stricter competition and government requirements with energy efficient motors

Fierce deregulated market competition, increasing fuel costs and stricter government regulation force power producers to find ways to gain more energy out of their fuels. Increasing the heat rate of today's existing plants is therefore a major concern – and efficient control of motor speeds offers the most economically viable solution.

Stricter government regulation

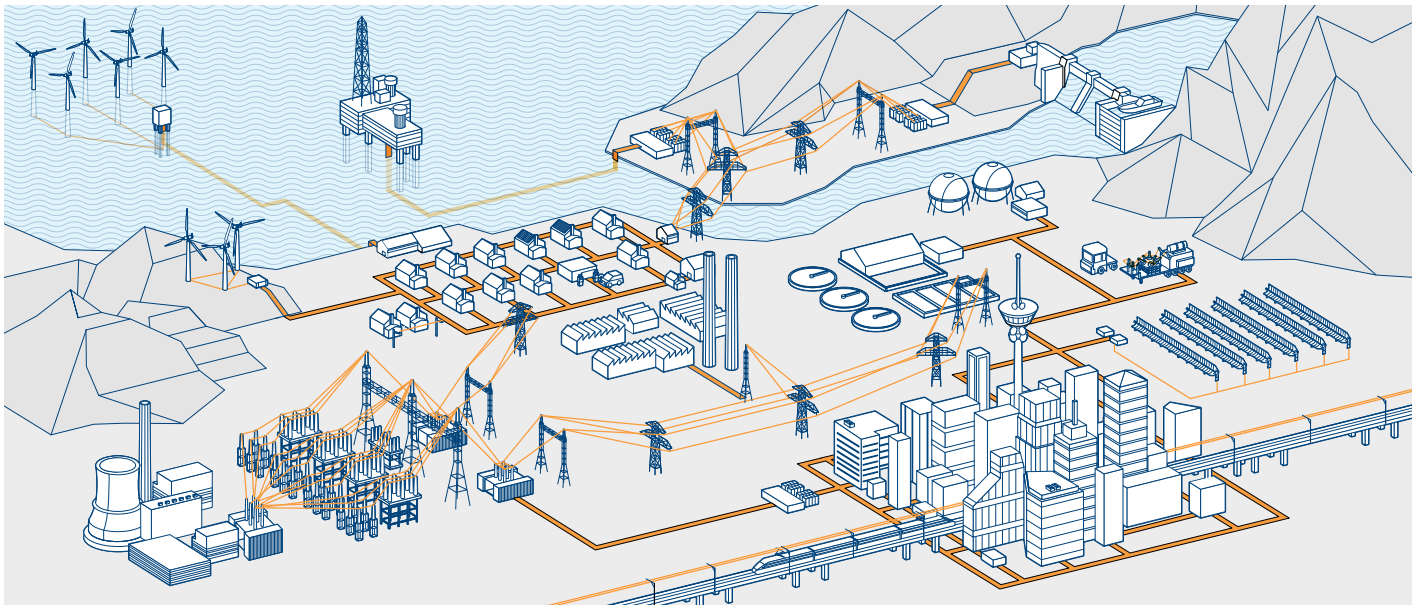
Governments throughout the world are placing stricter demands on power producers to improve the efficiency of their production and to reduce their internal use of energy. The EISA and MEPS schemes are examples of mandatory requirements defining permissible efficiency levels for electric motors.

Market requires increased operational flexibility

Operational flexibility is the key to cost-efficient production during both low and peak demands. As renewable energy sources are being introduced as part of the energy mix in more countries, there is a growing demand for more efficient and flexible power production in thermal, nuclear and other conventional power plants.

Motors – key elements in modern power production

Wind and solar energy provide intermittent supply by nature. Due to their fluctuating production and rapid global expansion, conventional power plants are forced to increase the flexibility of their production, without compromising efficiency. More base-loaded plants are being converted and operated as load-following plants. Motors with drives are key elements in this conversion and are replacing other forms of auxiliary drive power (such as steam for turbine-driven pumps) at an accelerating pace.



Modern motors and drives reduce internal energy consumption

Highly efficient motors, variable speed drives and plant automation systems combine to reduce the internal use of energy in power plants by automatically adjusting their operation to the actual power demand.

High reliability and availability are no longer sufficient

For decades, reliability and availability have been crucial performance criteria for motors in power plants. Motors operate in many missions-critical plant processes, and utilities depend strongly on their continuous operation day in, day out. However, as market requirements change, today's motors must also be highly flexible and efficient.

30–60 percent less energy consumption

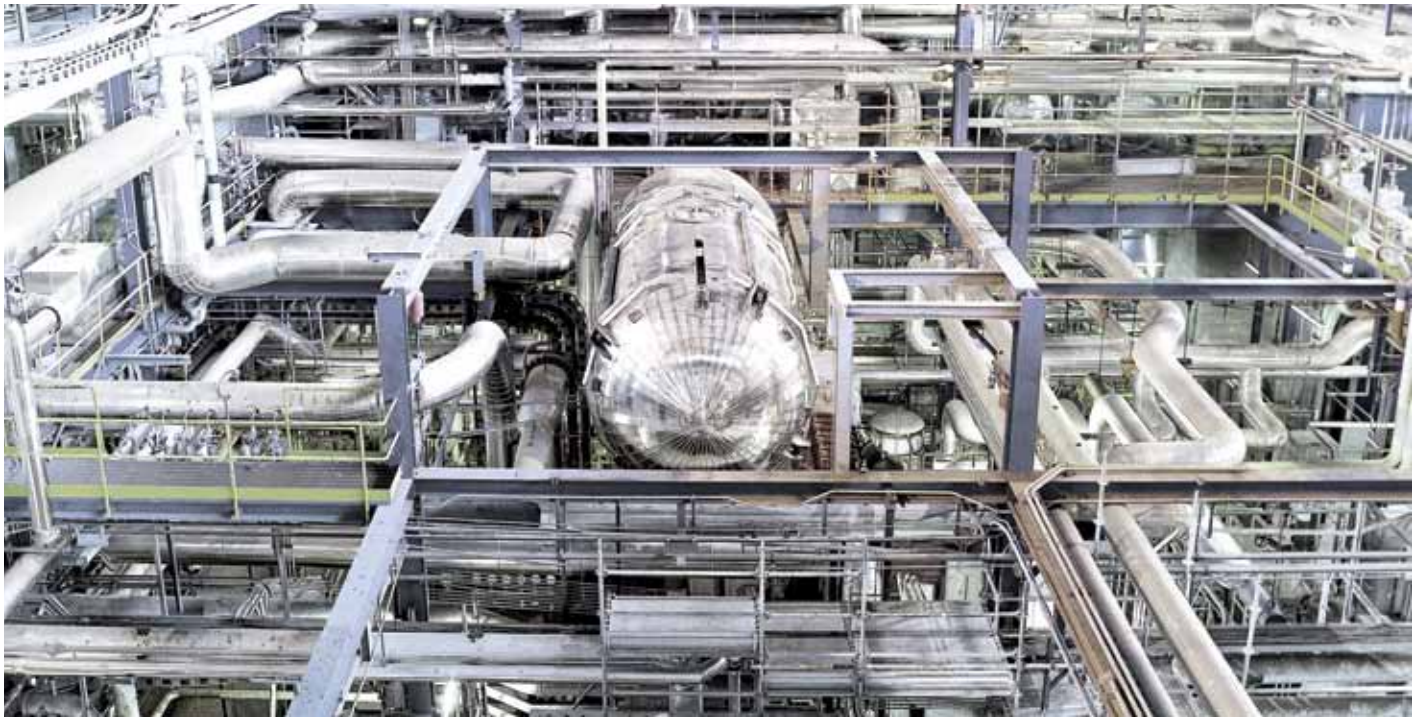
A thermal power plant typically uses 8–15 percent of the electricity it produces. In recent years, this share is growing due to the increasing use of antipollution devices. Using ABB's motors and drives can save 30–60 percent of consumed energy compared to using throttle valves and guide vanes to adjust the flow of air and water – yet they represent only a few percent of the plant's total investment cost. The payback time of an investment in new motors and drives are typically less than two years, in some cases a few months.

Optimized control with plant control systems

Instead of running systems continuously at a power plant's rated maximum capacity, a control system can automatically adapt production to fluctuations in cooling or energy demand. Motors equipped with drives further enable precise process control. This improves operational stability, allowing the plant to be operated closer to its safety margins – and, in best case, increasing its rated output power.

Solutions for increased energy efficiency

ABB offers a wide range of high efficiency motors for both low and high voltage. ABB can deliver complete packages including motor, drive and software – optimized for energy efficient variable speed drive (VSD) operation. As a one stop shop for power producers, ABB is also able to deliver and commission full-scale plant automation solutions for maximum control and efficiency.



Presently operating in numerous power generation applications

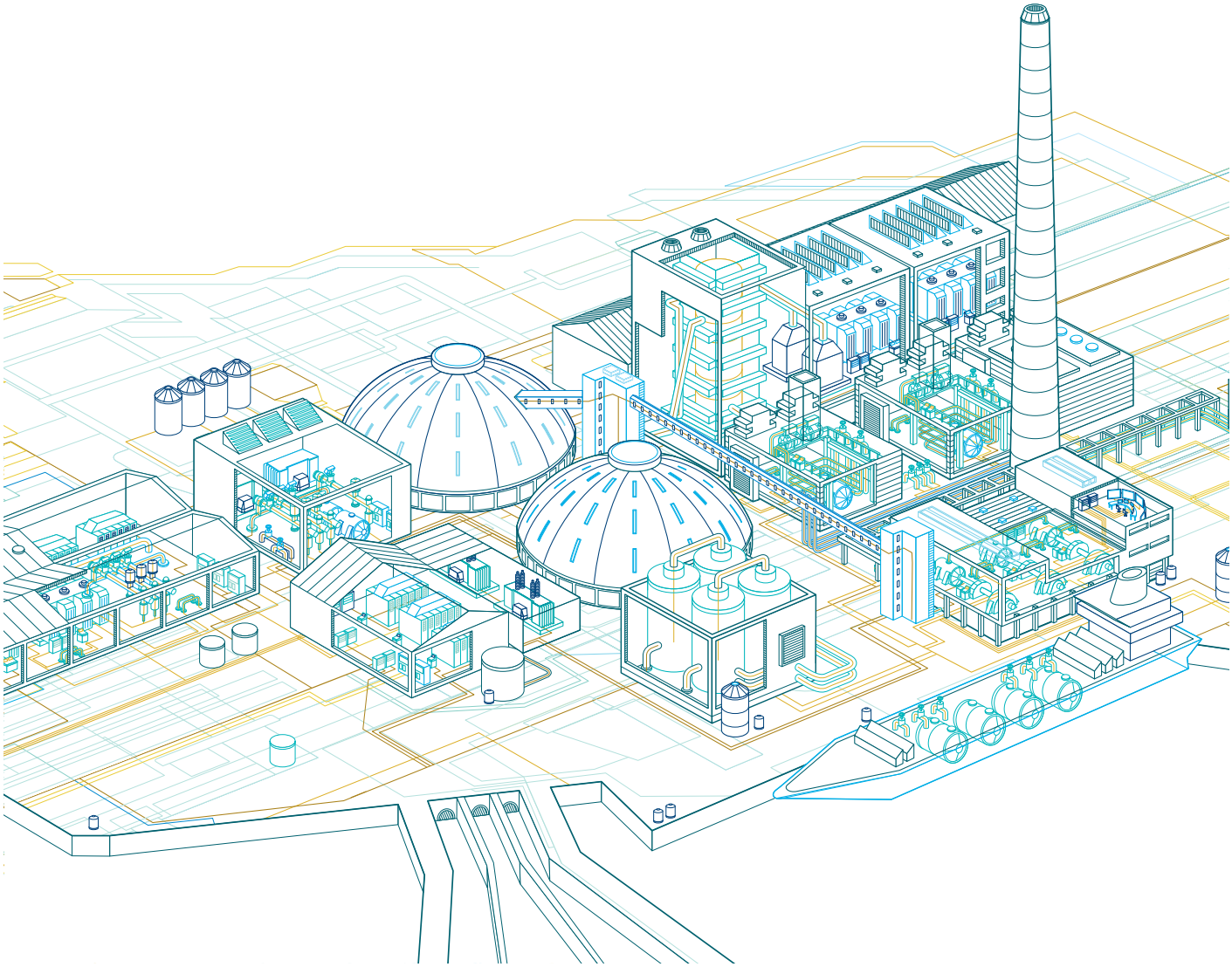


ABB motors are used in a wide range of power plant types and processes.

- Boiler feed-water pumps
- Condensate extraction pumps
- Cooling and circulation water pumps
- Fans (FD, PA, ID, booster)
- Cooling tower fans
- Conveyors
- Coal mills
- Air compressors
- Fuel gas booster compressors

Waste energy

Coal

Renewables

A wide product range for power generation applications

ABB is a world leader providing solutions with motors, generators, drives, conveyors, mechanical power transmission systems and plant automation systems to the power industry.

High efficiency motors

ABB's product range contains high efficiency motors for applications where efficiency matters. Induction motors are usually the first choice in the power range from very small up to 20 MW, due to their reliability and simplicity.

Synchronous motors are typically considered for ratings up to 70 MW, offering high efficiency and performance. ABB also provides motors designed for specific applications, like the cooling tower motor with a combined variable speed drive.

ABB offers a broad line of NEMA frame motors through the Baldor-Dodge brand. The Baldor-Dodge' CST gearbox and motor solution provides an alternative for low speed applications, where motors with 12 poles or more are traditionally used.

Conveyor and mechanical transmission components

ABB offers complete pulley assembly packages for fuel, ash and waste handling, including pulley, lagging, shafting, bearings, couplings and gearing, through the Dodge® and Maska® brands. We can assist in selecting the assembly that works best with your specific application as well as providing complete, tailored mechanical power transmission solutions.

Plant control and automation

ABB's automation systems provide precise control of all plant processes, thus contributing to high efficiency levels. Processes are automatically adjusted to the power demand at all times. Increasing demand for fuel flexibility and full utilization of energy sources is driving the need for more advanced instrumentation. ABB's automation systems provide efficient management through automation.

Variable speed drives (VSD)

ABB offers a full range of variable speed drives from fractional kW to more than 100 MW, suitable for use with induction or synchronous motors in new or retrofit applications. The ACS series includes ABB's award-winning Direct Torque Control (DTC) that provides high torque and speed performance with uniquely low losses.

Generators

ABB's high voltage (2–80 MVA) generators offer high flexibility in design. This allows ABB to optimize the generators' design to meet customer specific requirements and site conditions. Our generators meet the highest standards of efficiency and reliability, thus ensuring low life cycle costs. ABB can deliver complete generator solutions including generator, cooling solutions, maintenance tools, main terminal box with metering, and protective equipment as well as generator control.

Life cycle services and support
From pre-purchase to replacement and recycling

ABB offers a complete portfolio of services to ensure trouble-free operation and prolong the operating life of the motor. The portfolio covers the entire life cycle of the motor, from pre-purchase sales advice to spare parts provisioning and preventive maintenance programs. ABB supports its customers with a global network of ABB service centers and certified partners in more than 100 countries.

Pre-purchase
ABB's front-end sales organization is equipped with uniquely advanced tools to help customers quickly and efficiently select, configure and optimize the right motor for the application. ABB also offers life cycle audits to recommend the most appropriate migration paths and upgrades along with energy efficiency audits to advise how to save energy and calculate the potential savings and the return on investment projections.

Order and delivery
ABB offers genuine factory certified spare parts and related services tailored to customer needs. A wide range of parts can be delivered direct to the site within 24 hours. To minimize costly downtime, ABB's logistics network operates 24 hours a day in many countries, using air freight and express courier services.

Installation and commissioning
All ABB motors are designed with easy installation and commissioning in mind. ABB can provide certified engineers with extensive experience in motor commissioning. Their know how, combined with full support from ABB's engineering department, ensures short commissioning times and trouble-free operation.

Operation and maintenance
ABB offers a complete range of products and tools for technical support and maintenance, including training and e-learning, remote diagnostics and on-site monitoring, maintenance assessments and preventive maintenance, spare parts provisioning and repairs, and a wide variety of service contracts.

Condition monitoring solutions
ABB provides customers with unique condition assessment and monitoring services which are designed to preserve and enhance equipment reliability by replacing worn components before they actually fail.

ABB LEAP assesses the condition of the stator winding insulation in motors and generators.

ABB MACHsense-P offers a comprehensive analysis of electromagnetic and mechanical faults in motors such as rotor winding defects, installation problems and bearing defects.

Engineering and consulting
ABB helps motor owners to make optimal investment decisions in terms of energy efficiency as well as from the viewpoint of maintenance planning, lifetime estimation of critical components, performance validation and condition assessments.

Upgrade and retrofit
Upgrades of both hardware and software are designed to improve the performance and extend the functionality and operating life of the motor. To modernize an aging motor, it is often more economical to reuse selected parts of the original equipment and purchase new parts where necessary. ABB offers advice on upgrade and retrofit feasibility options based on an analysis of your present system.

Replacement and recycling
Whenever there is a need to replace a motor from ABB or any other manufacturer, ABB offers an exact replacement of the old motor and will dispose of all removed parts in accordance with the environmental regulations of the country concerned.

Contact us

www.abb.com/motors&generators

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