

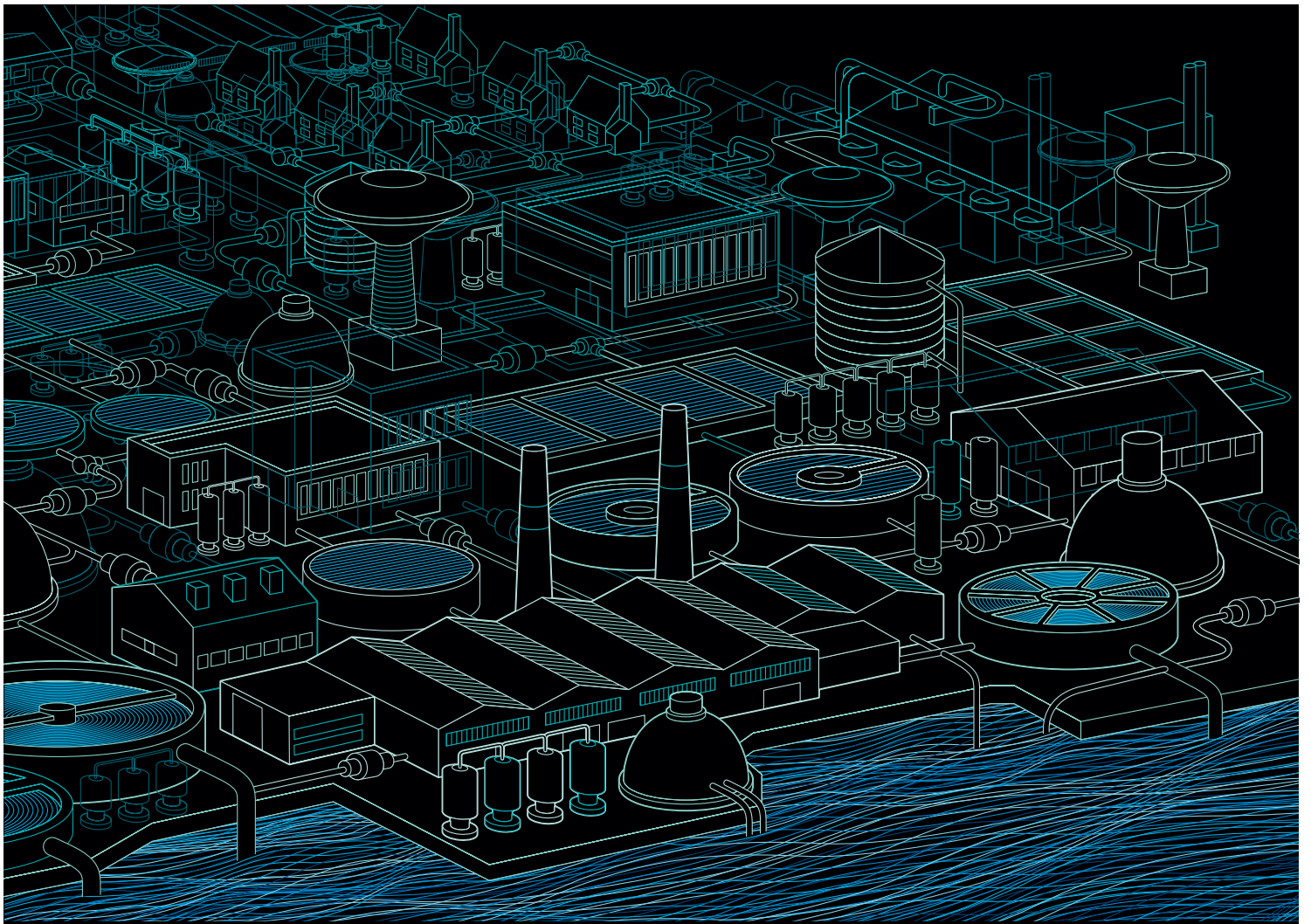


ABB products for the complete water cycle
Enhanced plant performance,
efficiency and reliability.

Profile

Water – a critical resource

Water is a limited resource. Frequent water shortages, reduced water quality, and increasing supply and processing costs are the most evident impacts of this. To achieve an effective reversal of this trend, water resources need to be protected and activities related to water intake, treatment, transmission and distribution need to be optimized.

Various measures are needed, including programs to raise the awareness of users about the importance of water conservation, as well as upgrading facilities for the supply, processing and distribution of primary waters according to specific energy saving and industrial resource-management criteria. Upgrades can also benefit wastewater processing such as purification and disposal, including its treatment for industrial and farming uses.

How to improve facility efficiency and cost-effectiveness

To reduce energy consumption and costs, ABB offers one of the most advanced ranges of high-efficiency motors and variable speed drives (VSDs).

ABB manufactures EFF 1 and EFF 2 motors; class EFF 1 motors – the most efficient category of motors – can provide energy savings up to 20 percent.

VSDs are used to control the pumps’ speed, thereby efficiently regulating flow and pressure levels according to the water consumption demand. This can lead to energy savings of 30 to 60 percent.

Additionally, maintenance costs are lower as motor speed control through VSDs reduces mechanical and electric stress that impacts the pump set components. Even pumps that operate at constant flow can benefit from the soft-start and soft-stop functionality of a VSD, thereby placing less stress on the motor and pump.

ABB’s instrumentation portfolio includes the world’s first flow-meter calibration verification tool that has helped municipalities detect leaks in aging infrastructures. In addition ABB’s analyzers help reduce chemical usage reducing environmental impact and cost.

A complete range of products for the water industry

For nearly 50 years, ABB has been equipping thousands of water treatment facilities with electric systems and automation for any type of water application.

In addition to motors, VSDs, soft starters and instrumentation

ABB provides:

Industrial control, protection and automation, including:

- Overload relays
- Contactors
- Control and signaling units
- Programmable logic control systems
- Limit switches and sensors
- Fieldbus interfaces

Power supply systems and installations can also be built from the most suitable solutions from among ABB’s wide-ranging offering:

- Medium-voltage systems and equipment
- Low-voltage distribution, including:
 - panels or insulating material
 - control, protection, monitoring and measurement devices
 - wiring and connection components
 - cable ducts, equipment holders and gangways

ABB products are compliant with international standards and are designed and built in accordance with the most advanced environmental compatibility standards.

One stop, one shop: The benefit of partnering with ABB

The more complex the facility, the more beneficial it is to rely upon a single supplier.

A supplier that is able to provide top-quality products and systems to equip the entire process, from on-site instruments to remote control and monitoring stations.

A supplier that ensures component operation is fully integrated without any risk of incompatibility. A supplier that, when needed, provides technical support across all of the equipment and functionalities which make up the systems.

This is why ABB is the ideal partner for companies operating in the water treatment, transmission and distribution sector. With a presence in over 100 countries worldwide, ABB’s expertise and full-range offering can help to solve all issues, from the design stage to the startup, and throughout the systems’ entire life cycle.



Demand for water is rising at three times the rate of population growth. ABB's motors and drives reduce energy consumption in treatment plants and ABB's instruments help to detect leaks and minimize chemical usage, reducing waste and improving quality at every step of the process.

Products for the complete water cycle

Waste | sewage pumping

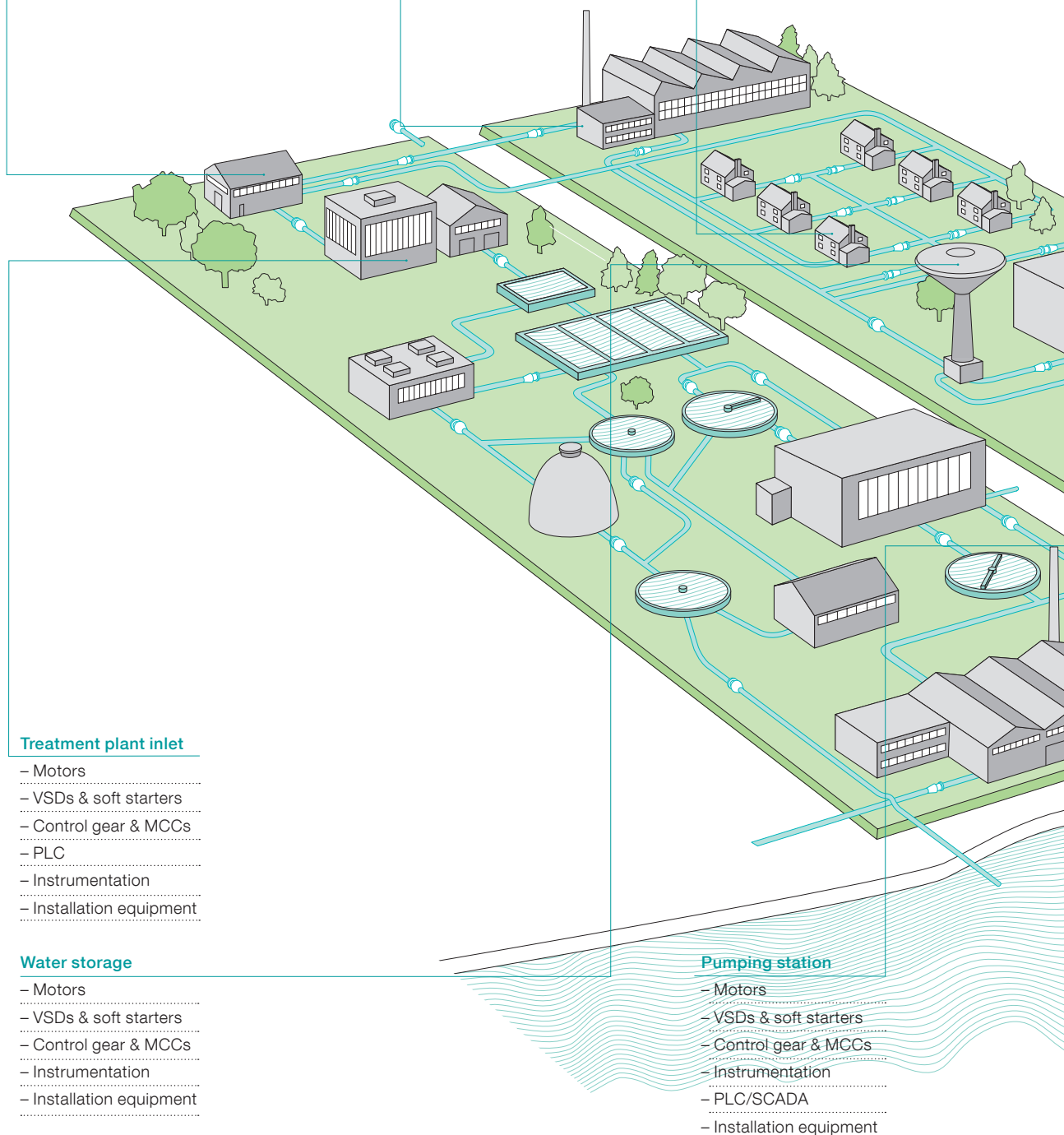
- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- PLC / SCADA
- Installation equipment

Industrial use

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- PLC
- Installation equipment

Residential

- Motors
- Instrumentation
- Installation equipment



Treatment plant inlet

- Motors
- VSDs & soft starters
- Control gear & MCCs
- PLC
- Instrumentation
- Installation equipment

Water storage

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- Installation equipment

Pumping station

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- PLC/SCADA
- Installation equipment

Water treatment plants

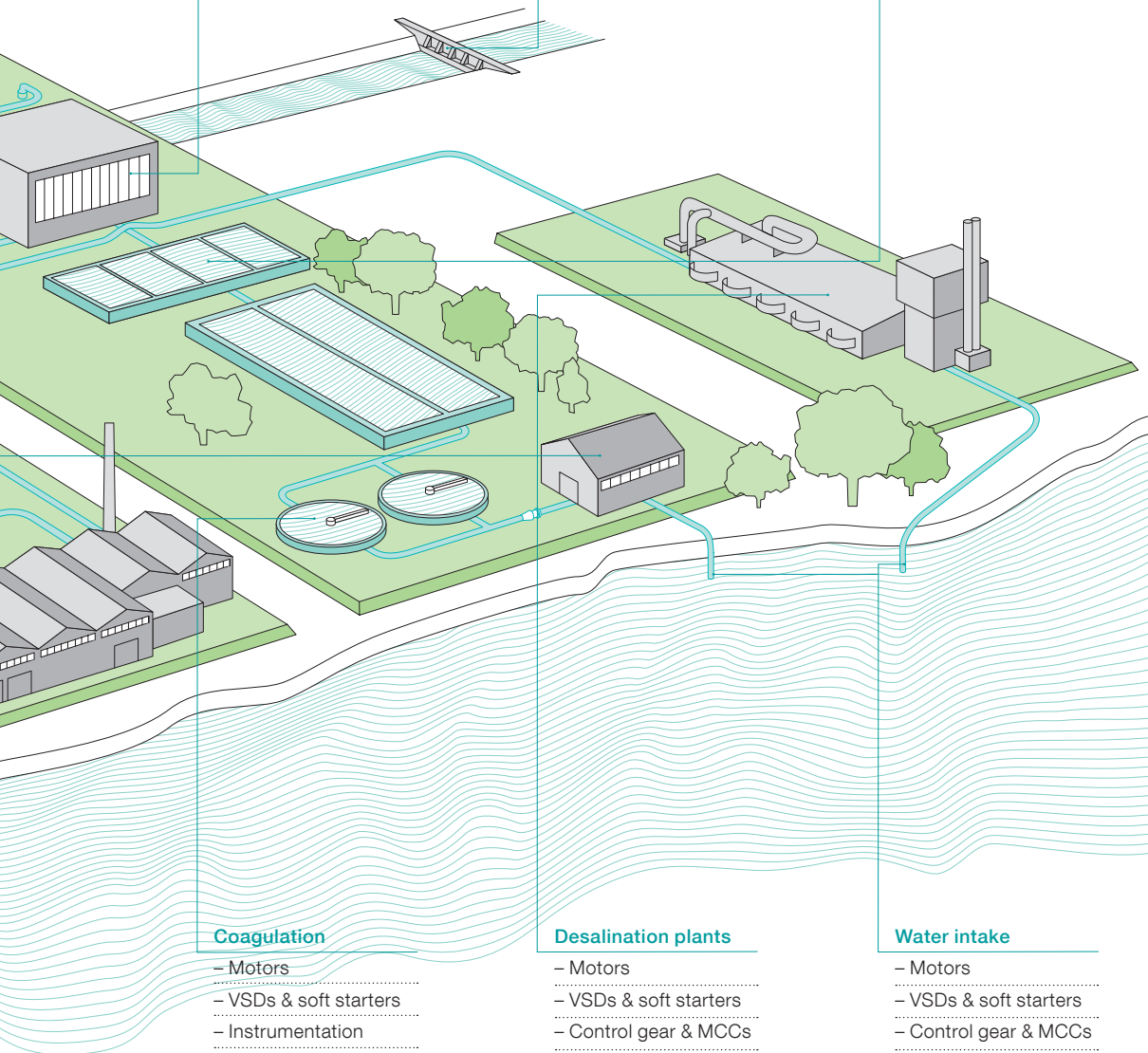
- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- PLC / SCADA
- Installation equipment

Irrigation and water transfer

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- PLC
- Installation equipment

Sedimentation

- Instrumentation
- Installation equipment



Coagulation

- Motors
- VSDs & soft starters
- Instrumentation
- Installation equipment

Desalination plants

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- PLC
- Installation equipment

Water intake

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- Installation equipment

Products

Variable speed drives

Low voltage AC and DC drives



ABB machinery drives (0.18 to 160 kW)

ABB standard drives (0.37 to 355 kW)

ABB industrial drives (0.55 to 5,600 kW) including drive modules for water and waste water applications, low harmonic drives and multidrives

Mains voltages: 208 to 690 V

Medium voltage AC drives



Power range from 315 kW to more than 100 MW; voltages 2.1 to 10 kV.

For induction, synchronous and permanent magnet motors.

ABB medium voltage drives are suitable for new or existing motors and meet the most stringent requirements for current and voltage harmonic distortions as defined by international standards.

Motors

Low voltage motors



Process performance motors with highest efficiency values for demanding applications, cast iron frame, 0.25 kW to 1 MW.

Industrial performance motors with high efficiency values for standard applications, aluminum, steel and cast iron frames, 0.75 to 630 kW.

General performance motors for basic pump and fan applications, aluminum and cast iron frames, 60 W to 250 kW.

Hazardous area, high speed, water cooled and permanent magnet motors for special applications.

High voltage motors



Modular induction motors ranging up to 15 kV and 18 MW, 50 and 60 Hz.

Modular synchronous motors ranging up to 15 kV and 60 MW, 50 and 60 Hz.

High voltage cast iron motors ranging up to 2,250 kW.

Instrumentation



Flowmeters

- Electromagnetic flowmeters featuring fieldbus communications, CalMaster calibration verification and battery-powered models with GSM modules
- Coriolis and thermal mass flow-meters
- Vortex and ABB's unique Swirl flowmeter
- Differential pressure and variable area flowmeters

Pressure transmitters

Complete range of intelligent electronic transmitters for measuring absolute pressure, gauge pressure, differential and level pressure

Level measurements

Piezoresistive and variable capacitance level measurement

Temperature measurements

Wide range of thermocouple and RTD sensors, thermowells and smart transmitters

Analytical instruments



- Sensors and transmitters for conductivity, dissolved oxygen, pH/redox, chlorine
- Turbidity analyzers
- Ion-sensitive and colorimetric analyzers, including:
 - chlorides, fluorides, nitrates, phosphates, aluminum, iron and manganese
- UV monitors: nitrates

Recorders and controllers



Recorders

Videographic recorders and circular or strip chart recorders

Analogue and digital indicators

Single loop controllers

Metering devices



Electricity meters

Single-phase and three-phase meters

Measurement instruments

Digital and analog instruments

Low voltage systems



MNS switchgear platform for low voltage (400 and 690 V)

Power center with high performances (6,300 A - 100 kA) and compact dimensions.

Intelligent Motor Control Center (MCC) designed to be easily connected with ECS and DCS systems with possibility of supervision software for proactive maintenance.

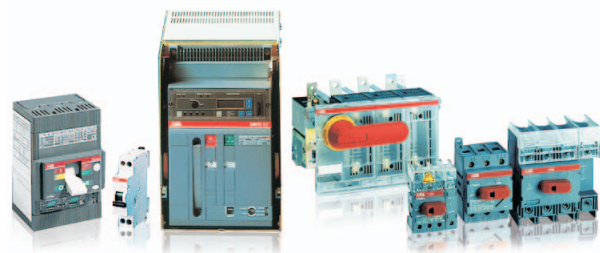
High flexibility: fixed, removable and withdrawable modules; arc proof and anti-seismic versions.

Modular DIN rail products



A wide product range offering functionalities like protection and switching, checking and monitoring, control and programming.

Circuit-breakers and switches



Automatic

MCBs: I_n up to 100 A; I_{cu} up to 25 kA

MCCBs: I_u up to 630 A; I_{cu} (380/415 V AC) up to 200 kA

Moulded-case: I_u up to 630 A; I_{cu} (400 V AC) up to 50 kA

Isolators

Switch disconnectors: from 16 to 3,150 A

Switch fuses: from 16 to 160 A

Enclosed safety switches

Motor protection and control



Motor protection

Manual motor starters: nominal current from 0.1 to 100 A

Universal motor controller (UMC)

Soft starters

From 3 to 1,810 A

Contactors and miniature size contactors

For up to 400 kW

Thermal overload and protection relays

Bimetal or electronic

Command and signaling units

(Modular and compact versions) Push buttons, switches, warning lights, luminous floor boxes

Electronic products and relays



Power supply

Relays (conventional and electronic)

Signal converters

Timers

Programmable logic controllers and operator panels



Flexible scalable PLC

AC500 – Modular platform concept, various communication and fieldbus couplers for networking, simple and continuous expandability, configurable I/O, seamless integration of control and field devices, economical and IEC61131-3 compliant

Displays and operator panels

CP400 – Quick and easy project creation and management, user friendly secured data and operations, simplified adaptability and connectivity, choices from simple text display to touch sensitive color screens, RoHS compliant

Enclosures

Sheet-steel boards



Boxes, multipurpose enclosures

Height from 300 to 1,200 mm; Width from 200 to 800 mm;

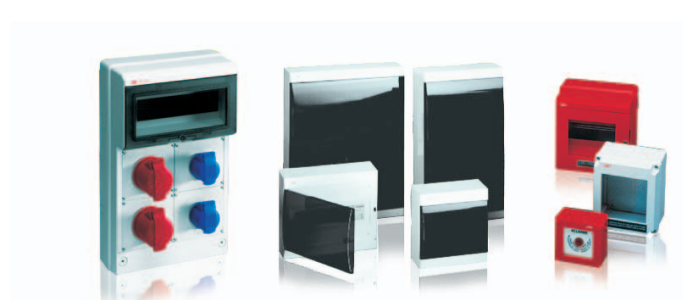
Depth from 150 to 300 mm

Switchboards and cabinets

Height from 1,800 to 2,200 mm; Width from 400 to 1,200 mm;

Depth from 300 to 1,000 mm

Plastic enclosures



Consumer units and special enclosures

Emergency enclosures

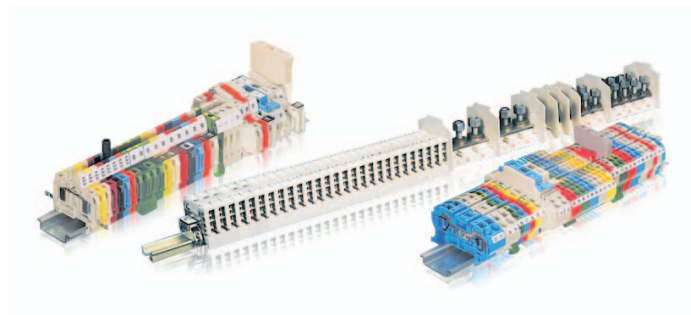
Modular enclosures for IEC 309-1 sockets

Metal distribution boards



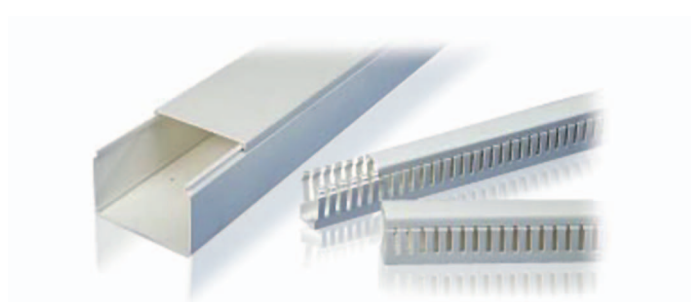
Switchboards, installation boards, distribution boards, monoblock and kit up to 4,000 A

Terminal blocks



Terminals for remote controls
Self stripping connections in A.D.O. technology
Screw and spring terminals
Faston terminals

Trunking systems



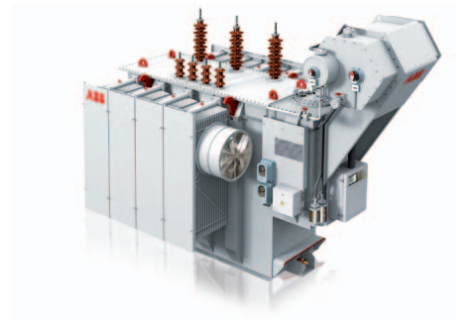
Feeder and cable trunkings
Industrial trunkings and cable trays

SCADA / DCS



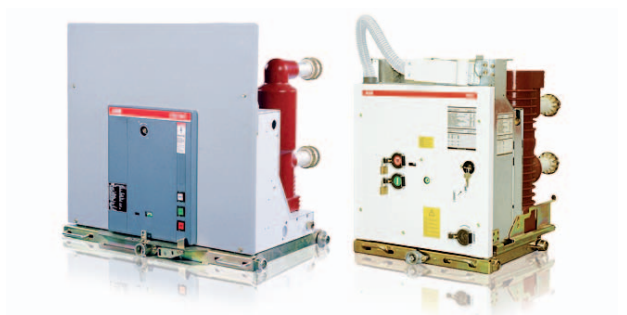
SCADA and automation integration solutions for plant control and optimization.

Transformers



Distribution, power and industrial transformers for all power and voltage ratings.

Medium voltage switchgear



Medium voltage switchgear, cable connectors, apparatus, modular systems (up to 52 kV) and distribution automation (up to 110 kV) for industrial, commercial and utility applications.

Surge arresters



ABB offers silicone and porcelain-housed arresters up to 800 kV

Power factor correction and harmonic compensation



ABB capacitor banks and active harmonic filters can be obtained in a wide voltage and power range resulting in compliance with regulations and troublefree, efficient plant operation.

References

ABB has nearly half a century experience in equipping thousands of water treatment facilities. It supplies products and systems for any type of application in the water cycle. Below are some examples.

Urban water distribution

ABB supplied motors, drives, control switchgear and instrumentation to MWA (Metropolitan Waterworks Authority) in Bangkok, which provides tap water to 11 million people. MWA owns and operates one of the world's biggest water treatment plants and more than 30 pumping stations. Electricity costs amounted to almost 50 percent of MWA's production cost. The equipment supplied by ABB helps MWA to achieve energy savings of more than \$ 10,000/month for a pumping station.

Industrial water

ABB supplied drives, motors, transformers and control panels for the Ras Laffan Common Cooling Water Project, which supplies vital cooling water to Ras Laffan Industrial City, one of the world's fastest-growing industrial export locations. The cooling water system pumps 833 000 cubic meters of cooling water an hour to the power plant, LNG trains and petrochemical facilities.

Sewage

ABB supplied instrumentation, motors and drives for Singapore's Changi Water Reclamation Plant project, which is designed to meet Singapore's wastewater treatment needs through the 21st century. The new water reclamation plant will treat 528 million gallons of used water per day.

Water treatment

ABB supplied motors, drives and instrumentation to Scottish Water, the fourth-largest water utility in the U.K. Scottish Water operates about 47,000 kilometers of water mains, 48,000 kilometers of sewers, 370 water-treatment works and 1,800 wastewater treatment works.

Desalination

ABB supplied AC500 PLC systems to the Hadera desalination plant in Israel. The reverse osmosis (RO) plant produces approximately 100 million cubic meters of fresh water a year.



Services

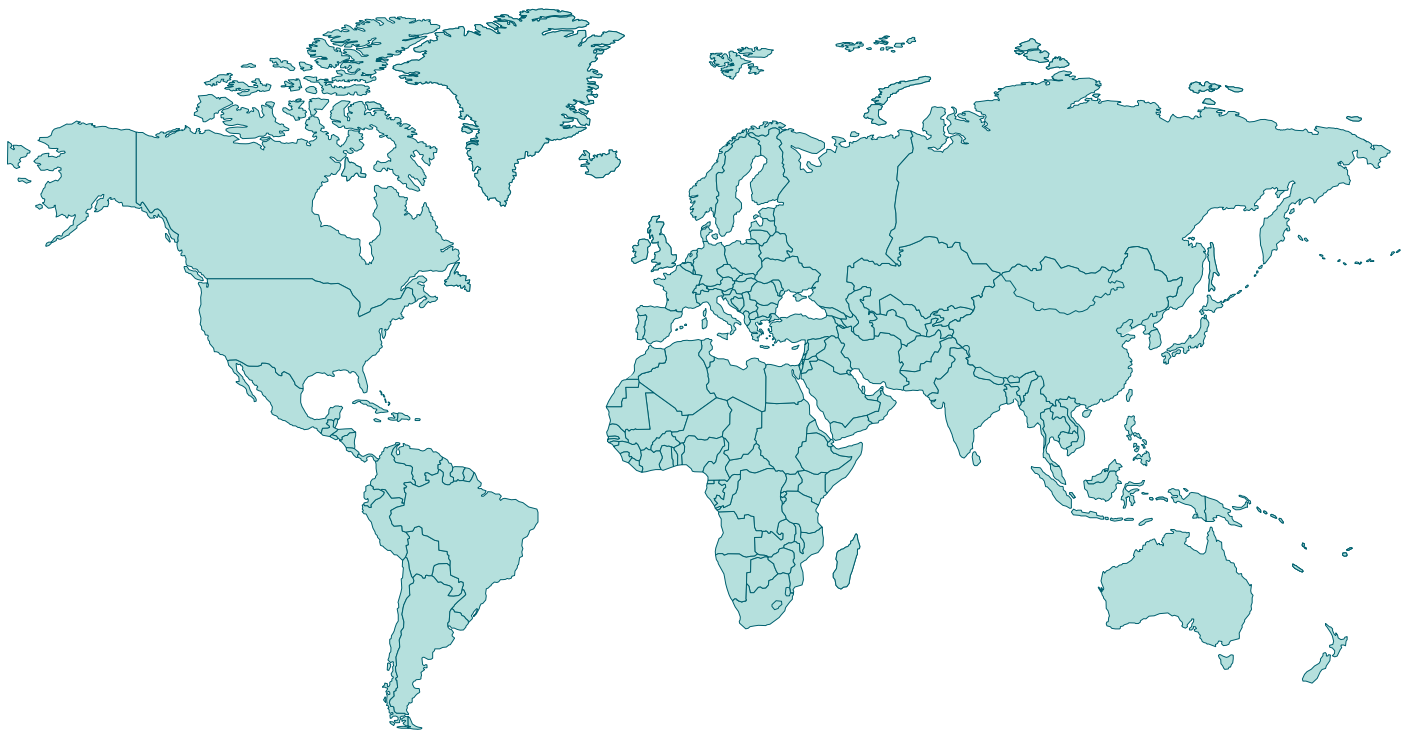


ABB is a leading supplier of automation products and services. It operates in more than 100 countries and has one of the largest service organizations with field service engineers located all over the world. Wherever you are, ABB is there for you.

The following services are part of ABB's comprehensive service portfolio:

- Diagnosis/Verification
 - Engineering and consulting
 - Environmental services
 - Extension
 - Installation and commissioning
 - Maintenance and field services
 - Migration and upgrades
 - Repair and refurbishment
 - Retrofit
 - Spare parts
 - Support and remote services
 - Training
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