Substations are key installations in the power grid that facilitate the efficient transmission and distribution of electricity. They control power flows, connect power stations to the grid and link transmission and distribution networks as well as end consumers. As a global leader in substation technologies, ABB takes turnkey responsibility from design to commissioning of the project and offers full life-cycle support.

As the world’s leading supplier of air-, gas-insulated and hybrid substations, ABB successfully implements projects in all kinds of environments, from deserts and mountains to offshore rigs and crowded city centers. IEC 61850 substation automation allows real-time monitoring and control, enhancing availability, safety and reliability and enabling smart enterprise-wide data integration for efficient power system management. Our competent global and local engineering centers as well as ABB offices in around 100 countries are within easy reach and provide access to ABB’s comprehensive domain knowledge and experience.

ABB’s substation offering covers a range of voltage levels, up to 1,100 kV and includes:

- Turnkey GIS, AIS and hybrid substations
- Engineered substation packages
- Extension, upgrade and retrofit projects
- Mobile, pre-fabricated and containerized solutions
- Battery energy storage systems (BESS)
- Harmonic filters, shunt reactors and capacitor banks
- Power supply solutions for railways and urban transportation including braking energy recuperation
- Grid access solutions for renewables and distributed power generation
- Indoor and underground substations
- Power supply solutions for smart grids and urban operators
- Shore-to-ship power solutions
- Datacenter solutions
- E-mobility solutions

Life-cycle services for substations

- System studies, consulting and diagnostics services
- Project management, engineering
- Installation and commissioning
- Preventive, scheduled and corrective maintenance, troubleshooting
- Remote operation and maintenance
- Advanced and conventional upgrade and retrofit solutions
- Asset management, service contracts
- Training and support
- Spare parts, consumables

ABB’s vast global experience is available to customers around the world, supporting them in efficient implementation and throughout the project life cycle.
Technology highlights

AIS substations: cost-efficient and reliable solutions offering high scalability. ABB has a track record of more than 100 years in building AIS substations.

GIS substations: offering compactness, reliability, safety and low maintenance. ABB pioneered GIS and commissioned the first gas-insulated substation in 1967.

Hybrid substations: combining the advantages of AIS and GIS technologies. ABB supplies hybrid solutions since the late 1990ies.

Disconnector circuit breaker (DCB) substations: integrating the disconnection function into the circuit breaker to reduce footprint and maintenance. ABB supplies DCBs since the year 2000.

Project highlights

7x traction substations, braking energy recuperation
Warsaw Metro Line 2, Poland

Urban 138/12.5 kV GIS indoor substation
Leblon, Brazil

Shore-to-ship power solution with 50/60 Hz conversion
Port of Ystad, Sweden

2x 170/24 kV GIS and AIS S/S
Facebook Pinnacle data center
Luleå, Sweden

400/110/10 kV AIS substation
Rehabilitation and maintenance
Constanta North, Romania

Reactive var compensation
120 Mvar MSCDN system
Hambach, Germany

Six 400 kV GIS substations
Gulf grid interconnection

3x 400 kV and 1x 230 kV AIS substations, upgrading
Ethiopia

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