Transmission and distribution substations
Customized solutions and modular concepts for utility and industrial applications

Substations are key installations in the power grid that facilitate 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. ABB is a global leader in substation technologies providing optimized turnkey solutions and engineered equipment packages.

We successfully implement projects in all kinds of environments, from deserts and mountains to offshore rigs and crowded city centers. IEC 61850 standard based substation automation allows real-time monitoring and control, enhancing availability, safety and reliability and enabling smart enterprise. Our worldwide presence ensures customer support throughout the lifecycle of the substation.

ABB’s substation offering covers a range of voltage levels up to 1,200 kV and includes:
- Turnkey gas-insulated switchgear (GIS), air-insulated switchgear (AIS) and hybrid substations
- Engineered substation packages
- Extension, upgrade and retrofit projects
- Mobile, prefabricated 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
- TOSA e-bus and flash-charging solutions
- E-mobility solutions

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

www.abb.com/substations
Grid integration of the largest solar park in the Middle East and North Africa

Turnkey 400/132 kV grid substation integrating the 200 megawatts (MW) of power generated by Mohammed bin Rashid Al Maktoum (MBR) Solar Park into the transmission and distribution grid. The MBR grid substation will be the first such 400 kilovolt (kV) facility in the United Arab Emirates to connect a renewable power source.

ABB solution for MBR Solar Park
- Construction of 400/132 kV grid substation including project management, design, supply, installation and commissioning as well as civil works.
- One-stop solution for complete grid substation including 11 bays of 400 kV and 21 bays of 132 kV gas insulated switchgear (GIS), interconnecting transformers, IEC 61850 based substation automation, control and protection systems, civil works and Mechanical, Electrical & Plumbing (MEP) works.
- Enhanced performance, availability and reliability of high-quality power supply.
- State-of-the-art and proven technologies enabling future extensions with ease.

Project highlights
- ABB proposed and built a very compact substation, optimizing plot utilization and building layout.
- The scope of the project was extended by 40% six months after the project started with one month of time extension for completion.
- All major equipment i.e. 400 kV GIS, 132 kV GIS and ICT’s was delivered to schedule, despite the extra scope.
- ABB held several technical workshops with the end customer Dubai Electricity & Water Authority in order to speed up and reduce the design time for major equipment.
- ABB mobilized additional qualified staff and contractors to complete the 40% extra scope within the required time.

Good to know
- The substation is the first major infrastructure to be developed as part of the MBR solar project. Further expansions are planned and the MBR solar park, when completed by 2030, will be spread across a 70 square kilometer area, making it the largest single-site solar project in the world with a capacity of 5,000 MW - enough to serve 800,000 homes and help mitigate the impact of around 6.5 million tons of carbon dioxide per year.
- The substation is located close to Dubai, deep in the desert with temperatures soaring to 57 degrees celsius in summer.
- Proficient project management ensured highest safety and quality standards.
- Fast-track implementation of the project supports Dubai’s goal to work towards a green economy.