Medium Voltage Products
Providing solutions for the wind industry
ABB Medium Voltage Products in wind

Offshore wind

**Modular Systems:**
eHouses, skid-mounted substations, EcoFlex eHouse

**Gas-insulated primary switchgear:**
ZX product family

**Air-insulated primary switchgear:**
UniGear product family, UniGear Digital

**Gas-insulated secondary switchgear:**
SafeRing / SafePlus product family

**Air-insulated secondary switchgear:**
UniSec

**Medium voltage circuit breakers:**
VD4, ADVAC™, AMVAC™

**Outdoor circuit breakers:**
R-MAG® (dead-tank), OVB-VBF (life-tank)

**Recloser:**
GridShield®

**Relays:**
Relion® family, REG615

**Service:**
Smart Asset Management

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**Grid Connection**

**Modular Systems:**
Compact Secondary Substations, Secondary Skid Units, Secondary Enclosed Units, EcoFlex eHouse

**Gas-insulated secondary switchgear:**
SafeRing / SafePlus

**Air-insulated secondary switchgear:**
UniSec

**Recloser:**
GridShield®

**Switch-disconnector:**
NALFWind

**Relays:**
Relion family

**Fuses**

**Service:**
Smart Asset Management
Medium voltage solutions
Power Collection and Grid Connection

**Power Collection**
The Power Collection product portfolio is designed to collect power from the solar strings and transform it to suitable AC medium voltage power.

- Green and eco-efficient
- Compact footprints
- Economic solutions
- Shorter installation times
- Factory tested
- Safety oriented

**Grid Connection**
The Grid Connection product portfolio is designed to collect AC power from multiple Power Collection points and connect them to the grid.

- Minimized engineering time
- Lower site installation time
- Pre-assembled and tested resulting in reduced commissioning time
- Products designed specifically for the local utility applications and standards
- Minimized engineering time
Medium voltage solutions
Power Collection and Grid Connection

Power Collection products and services

- Modular Systems: Compact Secondary Substations, Secondary Skid Units, Secondary Enclosed Units
- Gas-insulated secondary switchgear: SafeRing / SafePlus
- Air-insulated secondary switchgear: UniSec
- Recloser: GridShield
- Switch-disconnector: NALF
- Relays: Relion family
- Fuses
- Service: extensions and upgrades, installation and commissioning, spare parts

Modular Systems
Compact Secondary Substation

Switchgear
SafeRing / SafePlus

Control & Protection Components
Relion protection relays

Service
For reliability and availability
Medium voltage solutions
Power Collection and Grid Connection

Grid Connection products and services

- Modular systems: eHouses, skid-mounted substations
- Gas-insulated primary switchgear: ZX product family
- Air-insulated primary switchgear: UniGear product family, UniGear Digital
- Gas-insulated secondary switchgear: SafeRing / SafePlus product family
- Air-insulated secondary switchgear: UniSec
- Medium voltage circuit breakers: VD4, ADVAC, AMVAC
- Outdoor circuit breakers: R-MAG (dead-tank), OVB-VBF (life-tank)
- Recloser: GridShield
- Relays: Relion family, REG615
- Service: extensions and upgrades, installation and commissioning, spare parts, remote monitoring for predictive maintenance
Gas-insulated switchgear and ring main units
SafeRing / SafePlus

Tailor-made switchgear for wind power: SafeWind

- Compact and extendable modular design with easy access through the tower door
- Extremely slim switchgear, unit width 420mm for 36kV
- Full voltage range from same factory
- Enhanced short-circuit capabilities
- Internal arc classification IAC AFL(R)
- Transformer protection with switch fuse combination or vacuum circuit breaker with relay
- Self-powered or auxiliary-powered configurable protection relays with communication
- Compliance with climatic conditions from -35°C to +55°C
- Arc suppressor as an option
- Corrosion classification C4H (ISO 12944-2) as an option
Secondary Enclosed Unit

Wind Power Collection application
Service

Smart Asset Management – advanced services for wind

The most advanced range of services to optimize costs and performance over the entire lifetime of the medium voltage assets.

Online condition monitoring of your electrification assets

Condition and risk assessment

Data-sharing and backup services for protection relays

Monitoring and diagnostics for circuit breakers and switchgear
Service offering
Smart Asset Management – advanced services for wind

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<td>Detect most important failure modes and causes before they happen</td>
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Data Analys
Summary

Back-up Management for electrical systems (Data Care)
Data-sharing and backup services for protection relays
Key technical data such as configuration files and disturbance recordings
Digital offering for the solar industry
Medium Voltage Products

CSS remote connections
Optimize local and remote data collection to improve operation and maintenance:
- CSS can be remotely monitored, optimizing visits, and increasing safety.
- Digital Integration with local and remote control system support higher flexibility and easy re-configuration

Condition-based operations
ABB’s latest technologies lower cost of operations. These include:
- Predictive maintenance, optimizing maintenance costs and avoiding unscheduled downtime
- Integration of process and maintenance data to improve efficiency

Solar plant availability
Latest digital technologies allow simple implementation of smart grids, with for instance:
- A single optimized network with multi-directional power flows, and
- Real-time grid monitoring, able to operate as an efficient energy market.
Reference cases
Implementing special power protection and isolation in unit substations for onshore wind farms

Providing advanced technology for one of South Africa’s largest wind power projects
Providing power infrastructure for wind farms in Brazil
Substations to facilitate integration of renewable energy and reinforce power transmission grid

Enabling the efficient integration of power from two new wind complexes into the country’s transmission grid
Relion® product family relays to Grassridge Wind Farm project
Port Elizabeth, Eastern Cape, South Africa

Flexible engineering and seamless integration of Relion® protection relays into a demanding IEC 61850-based protection system