High Voltage Products
Business snapshot

Giandomenico Rivetti, Managing Director, BU High Voltage Products
Key Facts

High Voltage Products

- Leading global supplier with legacy of 100 years
- Applications from 66 kV to 1200 kV, AC and DC
- Manufacturing facilities across 35 locations worldwide
- About 8000 employees
- Sales support in over 100 countries
- Installations across the world including in extreme and harsh environments—temperature range from -60 ° to +55 °C
- Product certifications as per a wide range of international standards like IEC, ANSI/IEEE, GB or GOST
Well positioned across the value chain

Enhancing power reliability, efficiency and quality

Range of offerings

1. Gas- insulated switchgear
2. Air-insulated switchgear
3. Hybrid switchgear
4. Multifunction modules
5. Generator circuit breakers
6. Instrument transformers
7.Disconnectors
8. Surge arresters
9. Capacitors and filters
10. Power quality solutions
11. Water cooling systems
12. Cable accessories
13. Components e.g. operating mechanisms, insulators
14. Service across value chain
Areas of application

Enhancing power reliability, efficiency and quality

Range of applications

1. Switching and protection of power transmission and distribution grids
2. Switching and protection in power generation plants
3. Integrating renewable sources of energy
4. Enhancing energy efficiency in industries and power grids
5. Improving power quality in industries and power grids
Complete service support
High Voltage Products

Range of services

- Engineering and consulting
- Repairs
- Customer Service Agreements
- Maintenance
- Training
- Extensions, upgrades and retrofits
- Replacements
- Installation and commissioning
- End of life services
- Spares and consumables
- Advanced services
High Voltage Products Service Centers
Footprint - 28 service centers, 1200 service experts

* Hover the mouse over map for location name

Moorebank, Australia
Guarulhos, Brazil
Montreal, Canada
Santiago, Chile
Beijing, China
Bogota, Colombia
Paris, France
Mannheim, Germany (GIS<=170KB)
Vadodara, India (AIS,IN)
Lodi, Italy (Hybrid Switchgear)
Kuala Lumpur, Malaysia
San Luis Potosi, Mexico
Bergen, Norway
Iraq
Czech Republic, Europe

Lima, Peru
Cheboksary, Russia
Al-Khobar, Saudi Arabia
Longmeadow, South Africa
Madrid, Spain
Ludvika, Sweden (AIS,SE)
Zurich, Switzerland (GIS > 170KB, GCB)
Kaohsiung, Taiwan
Bangkok, Thailand
Istanbul, Turkey
Abu Dhabi, UAE
Stone, UK
Mount Pleasant, USA (DTB)

Product Service Centers (PSC) *In blue
Local Service Centers (LSC) *In black
At the forefront of technology leadership

High Voltage Products

World Firsts

- Gas-insulated switchgear - 1967
- Disconnecting circuit-breaker (DCB) in 2000; DCB with Fiber-optic-current-sensor - 2013
- Generator circuit breakers with highest short circuit breaking capacity of 300 kA - 2012
- Cryogenic SF₆ gas recycling technology SF₆ gas purified up to 99.9% - 2012
- Enhancing eco-efficiency with alternatives to SF₆ gas, developed in-
  - High-voltage circuit breaker on CO₂ platform - 2012
  - GIS with new eco-efficient gas mixture pilot - 2014
Innovation
High Voltage Products

Technology leadership in

- Ultra-high-voltage AC and DC
- Technology for digital substations and grids
- Eco-efficiency
- Power quality
- Space and cost optimization

Innovating the future grid

1100 kV GIS
For UHV grids

DCB with FOCS
For digital substations

LTA CO₂ breaker
For eco-efficient grids

MFM
For space and cost optimization
Gas-insulated switchgear (GIS)

Enhancing reliability, intelligence and eco-efficiency

50 years of GIS innovation

- Full range of portfolio from 72.5 kV to 1,200 kV, with global installed base of more than 25,000 bays
- Small footprint
  - Space savings
  - Location flexibility – indoor, underground, rooftops
- Reduced environmental impact
  - More eco-efficient with less SF6-gas, alternative to SF6 pilot, fewer materials and lower losses
- Enhanced robustness for greater reliability
  - Smarter switchgear
  - Advanced grid automation
Generator circuit-breaker (GCB)

Enhancing power plant availability

60 years of protecting power plants

- Widest and most modern portfolio of GCB in SF₆ and vacuum technology covering rated continuous current from 3,150 A to 57,000 A and short circuit-current up to 300 kA
- More than 8,000 GCBs installed in all types of power plants from 70 to 2000 MW worldwide
- GCB protect generators and transformers in power plants and provides:
  - Safer and simplified operational procedures
  - Improved protection
  - Higher power plant reliability and availability
AIS - Air insulated switchgear

High-voltage primary equipment to fit your need

Flexible and reliable

- Versatile concept for all types of applications and environments

- ABB high-voltage AIS primary equipment has a huge installed base world-wide

- ABB technology competence on all types of AIS applications globally. By continuous improvement we offer efficient and cutting edge technology to fit your need

Live Tank Circuit Breakers 36 -1200 kV

Dead Tank Circuit Breakers 72 - 800 kV

Instrument Transformers 36 -800 kV

Disconnectors 72 – 800 kV
# Hybrid Switchgear

Pre-assembled, pre-tested, transportable, no HV-test on site

## PASS – 72-420 kV

- Each PASS module is equivalent to a complete switchgear bay
- High customizability yet short delivery time, due to the modular design
- Ideal solution for fast-track projects
- Fast erection and commissioning, due to fully-assembled modules delivered from factory.
- Lower life cycle cost compared to traditional technologies

## MFM – Compact modularity 72-420 kV

- An excellent solution for permanent or temporary electricity distribution or generation installations.
- Considerable reduction in installation times and requires minimal civil works.
- The compact dimensions allows for transportation with normal semi-trailers.
For Enhanced Power Quality

Wide range of products for enhanced energy efficiency and network availability

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<th>Capacitor units for MV and HV</th>
<th>MV/HV shunt banks- open type</th>
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<th>Capacitor solutions in HVDC and FACTS</th>
<th>Capacitor units and banks for LV</th>
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**Energy storage solutions**