ABB is a leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact.

The ABB Group of companies operates in around 100 countries and employs about 145,000 people.

ABB offers a wide range of high-voltage products up to 1,200 kilovolts that help enhance the reliability, efficiency and quality of power in transmission and distribution grids, power plants and industries while minimizing environmental impact. The wide product range is complemented by a comprehensive service offering.

ABB is the global leader in high-voltage gas-insulated switchgear (GIS) and hybrid switchgear technology with more than 27,000 bays installed around the world.

ABB pioneered GIS technology in the mid-1960s and today offers high-voltage GIS from 72.5 kilovolts to 1,200 kilovolts. ABB’s innovative high-voltage hybrid switchgear modules PASS (Plug and Switch System) offer flexible solutions and are operating in varied conditions around the world since 1999.

The factory spread over 7600 square meters is conceptualized on the principles of ‘Lean Production’ techniques and the entire unit is managed by means of an integrated ERP system. The Quality Systems conform to ISO 9001 standards, Environmental Management System to ISO 14001 standards and the Health and Safety Management System to OHSAS 18001 standards.

The unit is unique as both GIS and PASS (hybrid switchgear) are manufactured within the same factory.
GIS (Gas-insulated switchgear)

ABB’s latest generation gas-insulated switchgear (GIS) come with fast single-interrupter dual motion circuit breaker in a compact and modular design, facilitating large reductions in product volume and weight.

The units are factory assembled, tested and shipped as complete bay instead of multiple assembly units, saving site installation and commissioning time and enhancing product quality.

Frontal access to drives, position indicators and service platforms enable easier operation, inspection and maintenance. Enhanced resource efficiency by reducing weight, the amount of SF₆ gas and thermal losses, lower transportation costs and optimized investment in infrastructure ensure high eco-efficiency and an unmatched price-value offer.

PASS (Plug and switch system)

PASS is a family of compact, prefabricated high voltage hybrid switchgear modules for substations.

PASS provides the flexibility to incorporate the functions of circuit breaker, disconnector, earthing switch and current/voltage transformers in a single module.

The PASS bay is characterized by fast erection and commissioning, due to pre-assembled and pre-tested modules delivered from factory which makes it an ideal solution for fast-track projects. The modular design PASS offers high customizability yet short delivery time. A range of PASS applications are fully compatible with pre-existing AIS equipment.

1 ELK-3 C GIS 420 kV, 63 kA  |  2 ELK-14 C GIS 245 kV, 50 kA  |  3 ELK-04 C GIS 145 kV, 40 kA  |  4 PASS M00 72.5kV, 31.5 kA  |  5 PASS M0 145 kV, 40 kA  |  6 PASS M0S 245 kV, 50 kA
Production facility highlights

Common flow production line with one piece flow and pull concept
The total assembly line including testing and packing is divided into a number of assembly stations (i.e. Takt).

The products move with a fix takt time from station to station. The work steps are standardized and optimized to reach highest quality standards, efficiency, work ergonomics and safety. Modern process techniques such as lean manufacturing, lean administration, just-in-time, one-piece flow, kaizen and theory of constraints are applied. Use of these new techniques in the factory helps in achieving highest industry standards such as:
- Shortest delivery times
- Reliable on-time delivery
- Highest quality level
- Rapid response to customer requirements
- Highest cost efficiency
- Best performance

Rail System integrated in floor
Rails are fitted across the shop floor for safe and quick movement of products with set of universal fixtures to adapt various mechanical variants of PASS and GIS.

Lean and Continuous Improvement Process (CIP) culture
Shop floor management is done with visual display of various parameters by deploying lean management tools like GEMBA, PDCA, 4QC, penetrating to the last level of operation and thus living the actual “Lean” and “Continuous Improvement Process (CIP)” Culture. This helps in achieving:
- Highest quality
- Highest efficiency
- Highest safety

Kardex System for automated storage and retrieval of parts:
The efficient management of “C” Class items in any factory is an integral requirement of assembly lines in a fast and lean manufacturing set up. To achieve this two Kardex machines are installed for automated storage and retrieval of parts so that the right quantity is supplied by logistics at right work station at the right time.
- This reduces the non-value added activities in logistics thereby reducing the operational cost.
- Storage of maximum parts with minimum floor space requirement.
Testing lab facilities
Two independent testing facilities are available to ensure high productivity. The testing facilities comprise of the following:

High voltage test system and gas insulated line
The 650 kV high voltage and partial discharge test system consists of SF₆ gas insulated testing transformers, especially designed for testing metal-clad switchgear (GIS).

- The SF₆ testing transformer have less background noise (<2pC) resulting in the ability to detect very low values of discharges in equipment.
- Automated test system where in the HV ramp can be pre-defined to suit various voltage levels.
- Partial Discharge measurements can be carried out simultaneously along with high voltage test. This reduces the overall testing time.

Centralized gas handling system (DILO make)
Capable of handling SF₆ gas volume of 2800 kg the system can perform various activities like SF₆ gas filling and recovery, air evacuation and SF₆ evacuation.

It is equipped with leakage monitoring system and mass flow measurement system throughout the factory to monitor for smallest of leakages within the gas line. Continuous gas quality check for dew point and percent of SF₆ is available.
ACTAS test system
The Automated Test and Analysis System for Switchgear is a highly advanced test system to perform mechanical testing of GIS and PASS hybrid switchgear.

- The system not only tests but can also perform sequential testing of drives when programmed.
- Up to eight drive units can be tested sequentially. This saves time and improves productivity.

Faraday cage for partial discharge testing
Faraday cage is one of the most important structural aspects in this testing facility.

The structure:
- Blocks the radiated noise from the atmosphere and helps to keep the background noise to less than 2pC.
- Restricts the overall ground resistance to less than 0.2 Ω.
- The special electrostatic dissipater flooring dissipates all the static charges.

Acoustic-free mechanical test lab
This is a special lab made out of pre-engineered boards. It reduces the sound levels caused by circuit breaker testing operation by 80 dB.
Centralized display system in customer lounge and remote viewing facilities
A centralized display system located in the customer lounge enables customer to view the outputs from various testing equipment simultaneously by means of CCTV cameras located at several different locations in the lab.

- From the lounge the customer can interact with the testing engineers performing various tests in the lab.
- Glass windows have also been provided in the lounge for having an aerial view of the entire test lab (both mechanical test rooms and dielectric test rooms) and the assembly area.

With the help of CCTV cameras and internet, customers who are not able to travel to the factory for witnessing the acceptance tests can also view the tests taking place on their laptops or desktops located remotely.

Service Capabilities and Network
The facility provides services of certified service engineers, many of whom have more than 5 years of onsite installation and testing experience.

ABB provides a full after sales service for its customers’ needs including:
- Services for onsite installation, testing and commissioning
- Analysis and modification of existing installations
- Diagnosis of module conditions, solutions for reducing life cycle cost, retrofitting and revamping interventions
- Training and updating of maintenance personnel, as well as emergency interventions
- Availability of complete installation tool kits, pre commissioning test kits and HV and PD measurement kits.

Customer services

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