Gas-insulated switchgear

Pioneer and technology leader, driving gas-insulated switchgear (GIS) innovations

More than 50 years of GIS innovation

ABB is a leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact. ABB operates in more than 100 countries with about 147,000 employees.

ABB pioneered high-voltage gas-insulated switchgear (GIS) more than 50 years ago and is a global leader offering a full-range product portfolio with voltage levels from 72.5 kV to 1200 kV matching current and future requirements for modern switchgears.

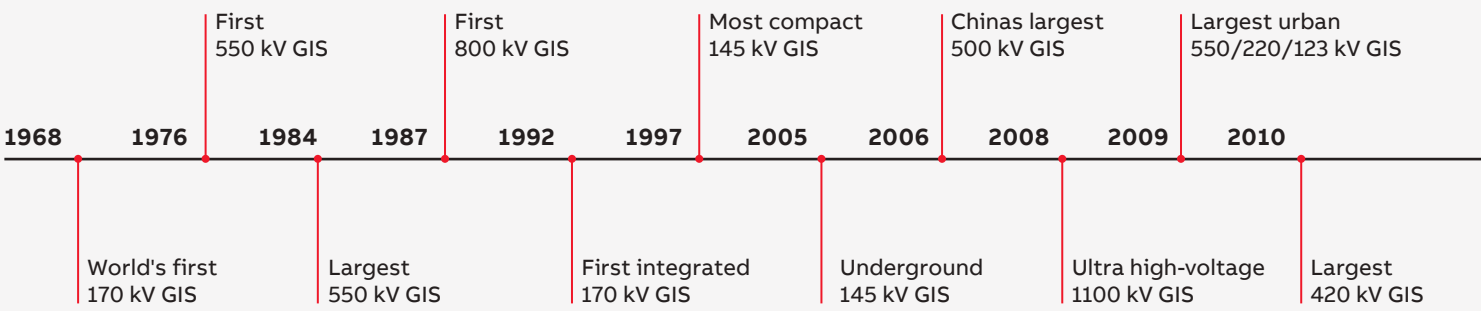
As a market leader in high-voltage GIS technology, ABB has a global installed base of more than 35,000 bays.

In a power system, switchgear controls, protects and isolates electrical equipment to boost the reliability of power supply. GIS is a compact metal encapsulated switchgear consisting of high-voltage components such as circuit-breakers and disconnectors.

With GIS technology, key components including breakers, switches, contacts and conductors are protected with insulating gas.

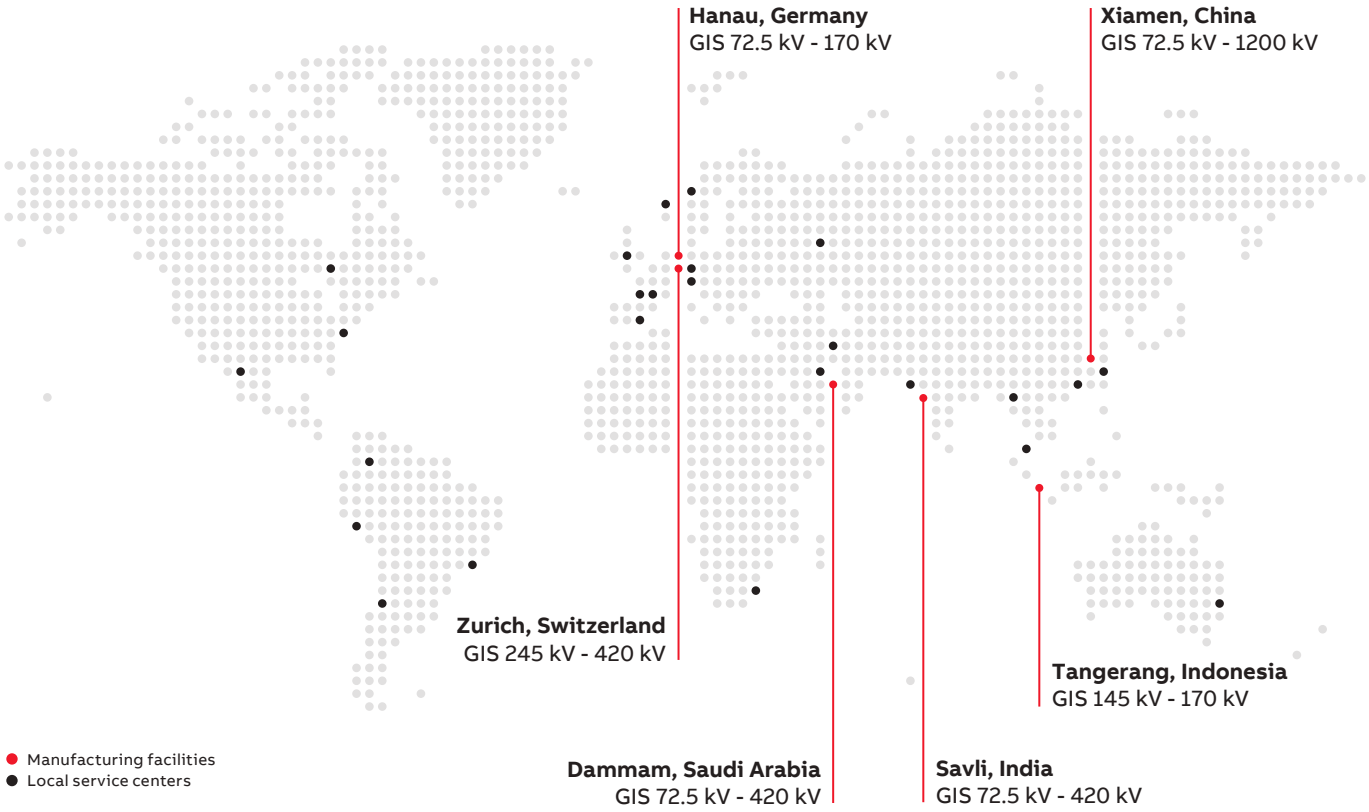
ABB has always been and continues to drive innovation in GIS technology in ratings, operations, switching technology, digital control and supervision, and compactness.

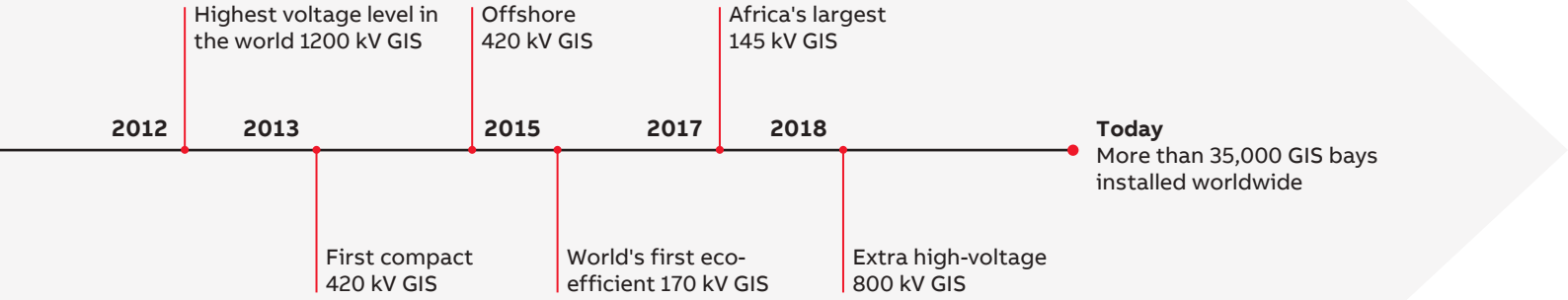
Many first's from ABB in GIS



Global manufacturing network

Our global network of state-of-the-art manufacturing facilities are located close to our customers.





For all types of applications

GIS can be safely operated in confined spaces and is used where space is limited, such as extensions, in city buildings, on roofs, on offshore platforms, industrial plants and hydro power plants.

Applications

1. Power transmission and distribution
2. Integration of renewable power generation units to the grid
3. Offshore and onshore wind power connections
4. Very large power plants
5. Industry applications
6. Long range power transmission

Benefits

- Advanced features for digital substation
- Low environmental impact and life-cycle costs
- Reduced installation and commissioning time
- High quality standards and safety

New generation GIS

ELK-04 C, 145 kV

3150 A, 40 kA

Reliable and compact solution for 145 kV. Its design yields eco-efficient performance, simplifies planning and installation while improving serviceability.

ELK-14 C, 245 kV

3150 A, 50 kA

245 kV eco-efficient and compact solution designed to reduce complexity, life-cycle costs and environmental impact. The compact design fits any installation environment and offers convenient operation and serviceability.

ELK-3 C, 420 kV

5000 A, 63 kA

High performance ratings in a compact design. A single interrupter circuit-breaker enables manufacturing, testing and shipment of entire bays, which reduces installation and commissioning time.

Proven technology

ELK-04 up to 170 kV

4000 A, 63 kA

The modular solution, based on a few building blocks with standardized dimensions offers a space saving design, a small footprint and high performance ratings.

ELK-14 up to 362 kV

4000 A, 63 kA

The modular design offers an outstanding level of flexibility for optimizing substation layouts, both in arrangement and technical features.

ELK-3 up to 550 kV

6300 A, 63 kA / 80 kA

Requires less space than comparable GIS systems. Its modular architecture permits flexibility and adaptation to changing needs while providing short delivery and installation time.

ELK-4 up to 800 kV

6300 A, 63 kA

The extra high-voltage (EHV) GIS offers maximum flexibility and customization in layout configuration. Optimized, compact and easily accessible layouts for the common one-and-a-half-breaker and two-breaker circuit schemes.

ELK-6 up to 1200 kV

9000 A, 63 kA

Ultra high-voltage (UHV) above 800 kV is the highest voltage level in use for bulk alternating current (AC) power transmission across long distances.

More than just products

Integrated GIS solutions up to 420 kV
ABB's integrated GIS is a pre-designed, standardized and fully integrated switchgear for fast deployment and high reliability, based on our well proven GIS technology.

Its the ideal solution for customers in need of substations that can be quickly energized for grid expansions, backup or emergency power needs, and for short installation time requirements.

The integrated GIS package comes with all primary and secondary equipment including control, protection, monitoring and communication completely installed in the prefabricated housing. Due to its prefabricated design and short deployment time, it is ideal for applications in the oil, gas and mining industries where it can be easily transported to the sites.

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420 kV integrated GIS
Statnett, Norway

AirPlus™ enhancing eco-efficiency
ABB is committed to developing eco-efficient products and achieved a technology breakthrough in eco-efficient GIS as an alternative to sulfur hexafluoride (SF_6). It substantially lowers environmental impact with a global warming potential (GWP) of less than 1.

AirPlus™ is ABB's family of eco-efficient gas mixtures as an alternative to SF_6 for high-voltage (HV) and medium-voltage (MV) products. ABB's family of eco-efficient gases consists of components of air (O_2, N_2, CO_2) plus C5-Fluoroketones.

The world's first GIS installation with a new eco-efficient gas mixture as an alternative to SF_6 was commissioned for ewz, a power utility in Switzerland.

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170 kV eco-efficient GIS
ewz, Switzerland

Providing value to our customers

Enabling digital substations
ABB's GIS can be equipped with monitoring, measurement, control, protection and communication features for smooth integration into substation automation systems.

Benefits
- Integration into substation automation systems using IEC 61850 bus
- Non-conventional instrument transformers (NCIT) via IEC 61850-9-2LE process bus
- Local control cubicle (LCC) with Relion® series control and protection IED
- REB500 bay control IED
- Switchsync™ PWC600 for point-on-wave controlled switching
- Modular switchgear monitoring (MSM) to supervise SF_6-gas density
- Station wide interlocking and double-operation interlocking

Service for GIS
ABB's service portfolio offers comprehensive solutions that extend the operating asset life while reducing maintenance costs.

With technology development at the forefront of everything we do, upgrade and retrofitting are just two of our many offerings which can help you modernize and extend the life of your existing equipment.

Benefits
- 24/7 hotline ensures quick reaction time
- Diverse training courses for your personnel
- Customized maintenance and retrofit solutions
- Capability of bay extensions for any GIS, including non-ABB switchgears
- Options to adapt your GIS to future requirements including rating upgrades and layout modifications
- Service agreements including: Risk assessments, warranty extensions, diagnostics, consulting and much more

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Station level
Substation automation solutions with IEC 61850 station bus

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Bay level
Relion® 670 series control and protection IED as well as REB500 busbar protection system, with IEC 61850 and PWC600 for station and process bus

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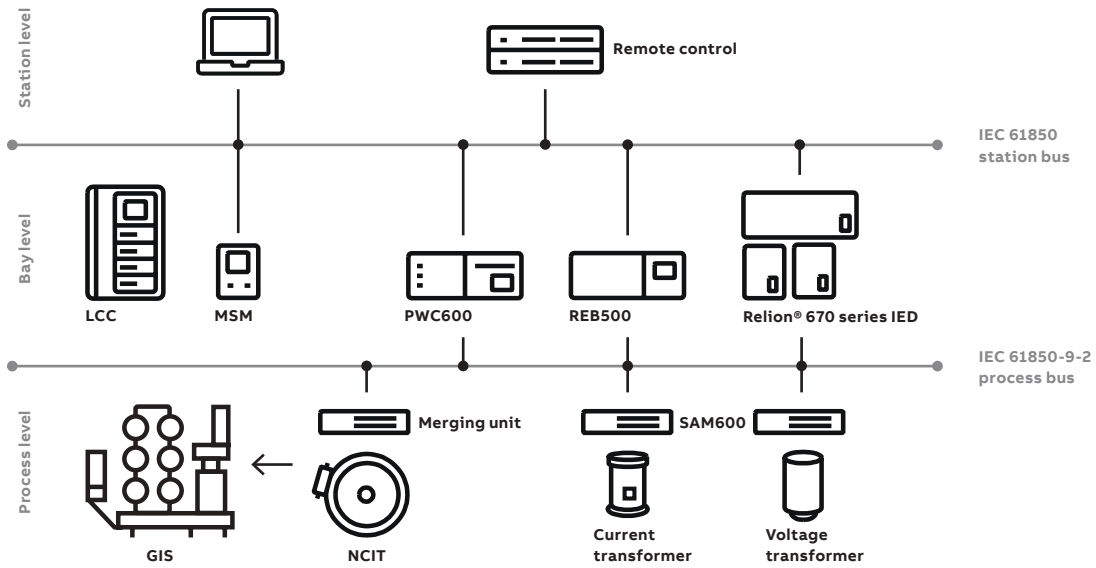
Process level
NCIT transmits the signal to the merging unit in the LCC and is connected to the IEC 61850-9-2 process bus for sampled analog values for protection and metering



Comprehensive portfolio

Product name		ELK-04 C	ELK-14 C	ELK-3 C
Enclosure		Three-phase	Three, single-phase	Single-phase
Rated voltage	kV	145	245/253	420
Rated power-frequency withstand voltage	kV	275	460	650
Rated lightning impulse withstand voltage	kV	650	1050	1425
Rated normal current	A	3150	3150	5000
Rated short-circuit breaking current, 3s	kA	40	50	63

Product name		ELK-04	ELK-14	ELK-3	ELK-4	ELK-6
Enclosure		Three-phase	Single-phase	Single-phase	Single-phase	Single-phase
Rated voltage	kV	145/170	300/362	420/550	800	1100/1200
Rated power-frequency withstand voltage	kV	275/325	460	650/740	960	1200
Rated lightning impulse withstand voltage	kV	650/750	1050	1425/1675	2100	2400
Rated normal current	A	3150/4000	4000	5000/6300	5000/6300	6300/9000
Rated short-circuit breaking current, 3s	kA	40/63	63	63/80	63	63

ABB’s commitment

Quality assurance
We are committed to providing the best products and services. Our products comply with or exceed the latest international standards. In addition to type tests in independent laboratories, our certified design and manufacturing process guarantee the highest quality.

Our products are type tested according to international standards:
- IEC
- ANSI/IEEE
- GOST

Our products are certified by third-party organizations:
- PEHLA
- LAPEM

Sustainability
For ABB, sustainability is about balancing economic success, environmental stewardship and social progress to benefit all our stakeholders.

Sustainability considerations cover how we design and manufacture products, what we offer customers, how we engage suppliers, how we assess risks and opportunities, and how we behave in the communities where we operate and towards one another, while striving to ensure the health, safety and security of our employees, contractors and others affected by our activities. In line with our business practices, we publish environmental product declarations for each product we manufacture.

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Additional information
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1HC0108518 E01 / AH19