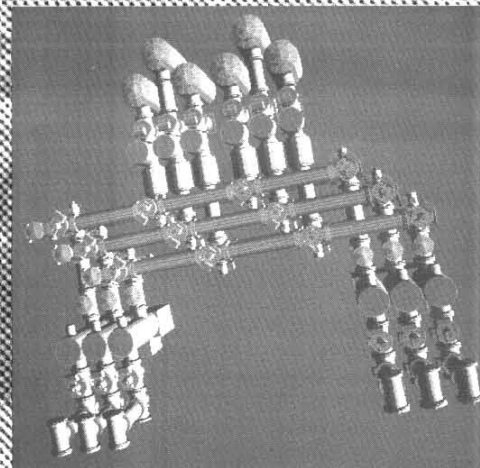


high voltage transmission  
**SF6 gas-insulated  
switchgear**  
**72.5 to 550 kv**  
**Hexabloc range**



 **MERLIN GERIN**  
*mastering electrical power*  
GRUPPE SCHNEIDER

# Hexabloc GIS safety, reliability and operational ease

## *when performance becomes a necessity*

*The demand by electrical utilities for reliable compact substations offering maximum operating availability has resulted in the increasing use of gas insulated switchgear (GIS) on HV networks worldwide.*

## modern HV substations

Designed for public and private high voltage transmission networks up to 550 kV, the Hexabloc GIS range is especially suited to applications with severe design and operating constraints related to :

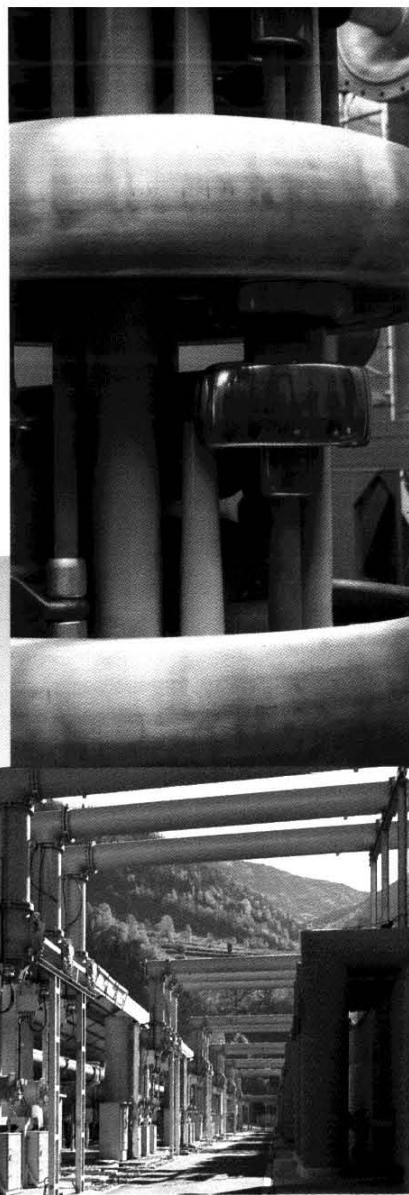
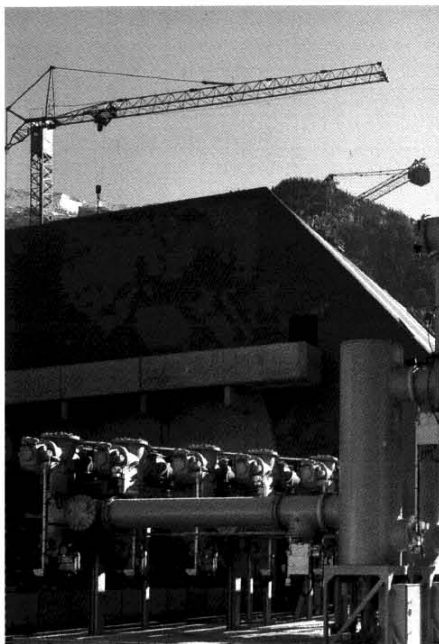
- site compatibility,
- difficult environments,
- limited space,
- strict zoning laws,
- severe safety regulations,
- etc.

Hexabloc GIS technology offers the user :

- **small overall dimensions,**
- **flexibility,** allowing a wide range of switching configurations,
- **high reliability,**
- **continuously improved safety.**

The result is a system that fulfills the two main priorities of users :

- **maximum operational availability,**
- **maximum personnel safety.**



## advanced technology from a major manufacturer

A pioneer in SF6 technology, the Merlin Gerin Group has designed unparalleled features into Hexabloc GIS :

- **modular structure,** using factory assembled and tested transport units;
- **easily removable sections** at selected points for reduced down-time in the unlikely event of replacement work;
- **flexibility,** allowing a wide range of substation configurations :
  - **three-phase encapsulation** for voltages from 72.5 to 170 kV, with suitable dimensions for shipment of fully-assembled switchbays,
  - **single-phase encapsulation** for larger units, the most economical for voltages from 245 to 550 kV;

- **enclosures made of aluminum alloy,** offering a number of advantages :
  - **lightweight** for easy handling and reduced foundation costs;
  - **excellent gas tightness** across seal surfaces;
  - **negligible resistive and eddy current losses;**
  - **high corrosion resistance;**
- **insulators** made of cast epoxy with alumina filler, insensitive to ageing;
- **highly active adsorption filters,** provided in each compartment to remove any residual moisture in the SF6 gas;
- **carefully selected and tested components,** subject to strict procurement specifications.





### main characteristics (IEC)

Hexabloc	TH7				H9S		SBE		H10
rated voltage (kV)	72.5	123	145	170	245	300	362	420	525
rated insulation level									
kV rms 50/60 Hz - 1min	140	230	275	325	460	460	460	520	620
kV 1.2/50 $\mu$ s impulse	325	550	650	750	1050	1050	1175	1425	1550
rated frequency (Hz)	50-60	50-60	50-60	50-60	50-60	50-60	50-60	50-60	50-60
rated current (A)									
busbars 2500	■	■	■	■	■	■	■	■	■
3000	■	■	■	■	■	■	■	■	■
3150	■	■	■	■	■	■	■	■	■
4000					■	■	■	■	■
6300									■
feeders 2500	■	■	■	■	■	■	■	■	■
3000	■	■	■	■	■	■	■	■	■
3150	■	■	■	■	■	■	■	■	■
4000									■
max. short time withstand current (kA rms-1s)	40	40	40	40	50	50	50	50	63



### the flexibility of a ready-to-install solution

Extensive preassembly and testing of large transport units in the factory makes for fast and easy on-site installation.

### compatible with any environment

Hexabloc GIS offers all the increasingly important environmental compatibility characteristics :

■ **small overall size**, meaning reduced cost in zones where space is at a premium :

- ☐ urban zones (possibility of installation in basements, even in residential buildings);
- ☐ hydropower plants and pumping stations;
- ☐ mountainous areas where level space is limited;

■ **small ground area**, resulting in major savings on :

- ☐ site preparation;
- ☐ foundations;
- ☐ slabs, trenches, conduits, etc.;

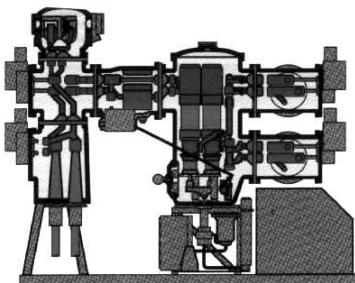
■ **«low profile» design**, for installation inside small buildings, offering further advantages :

- ☐ installation, operation and maintenance regardless of weather conditions;
- ☐ out of sight;
- ☐ protection against intrusion and intentional damage;
- ☐ sheltered from corrosive atmospheres;

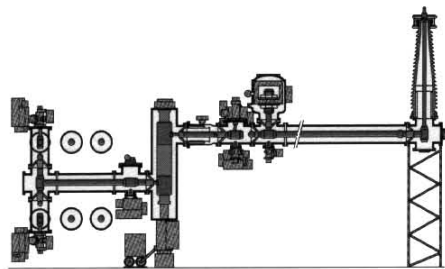
■ **disturbance-free**: no corona effect, radio-frequency interference, noise, etc.



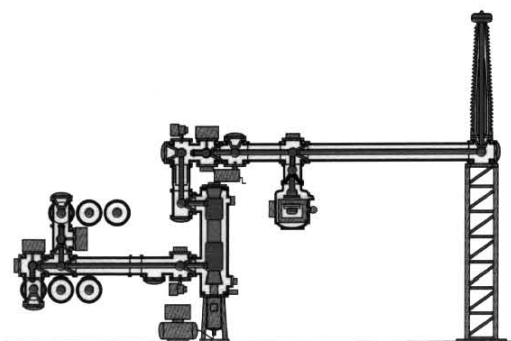
## TH7 switchbay



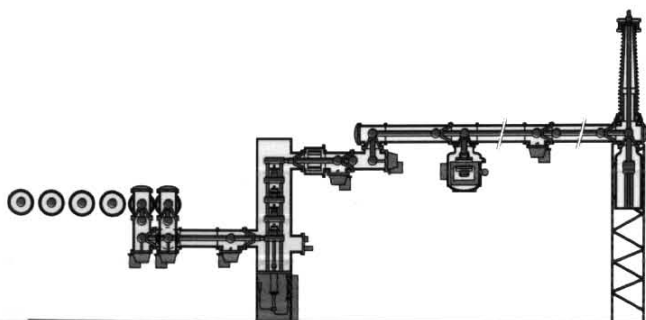
## H9S switchbay



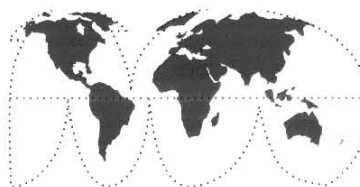
## SBE switchbay



## H10 switchbay



## some references



### Hexabloc GIS:

#### 72.5 kV substations

**Egypt**  
Egyptian Electricity Authority  
Talkha  
**France**  
Electricité de France  
Saint Egrève  
**Brazil**  
Companhia Petroquímica do Nordeste S.A.

#### 121/123 kV substations

**Colombia**  
Electribol Cartagena  
Zaragocilla  
**Mexico**  
Comision Federal de Electricidad  
Condesa  
**Venezuela**  
Pequiven  
El Tablazo

#### 145 kV substations

**Malaysia**  
Lembaga Letrik Negara  
Kuala Lumpur (East)  
**Saudi Arabia**  
Saudi Consolidated Electric Company  
Central Region : twenty-two s/ss

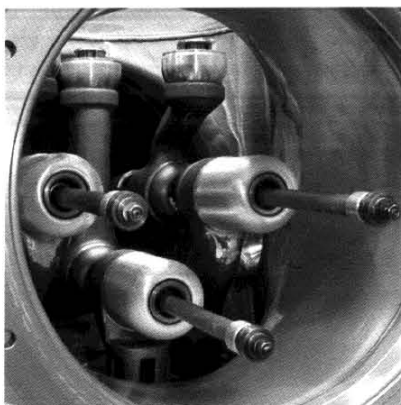
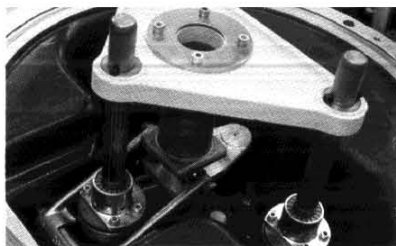
#### 242/245/300 kV substations

**Canada**  
Edmonton Power  
Bellamy 242 kV s/s  
**USA**  
Arizona Public Service  
Meadow Brook 242 kV s/s  
**Colombia**  
Empresas Publicas de Medellin  
Occidente and Tasajera 245 kV s/ss  
**Egypt**  
Egyptian Electricity Authority  
Talkha 245 kV s/s  
**France**  
Electricité de France  
Belle de Mai 245 kV s/s  
**New Zealand**  
New Zealand Electricity Department  
Rangipo 245 kV s/s  
**Spain**  
Union Fenosa  
Prosperidad 245 kV s/s  
**Thailand**  
Electricity Generating Authority of Thailand  
On Nuch 245 kV s/s  
**Republic of South Africa**  
Electricity Supply Commission  
Invubu 300 kV s/s

#### 420/525/550 kV substations

**France**  
Electricité de France  
Coulange 420 kV s/s  
**Italy**  
Ente Nazionale per l'Energia Elettrica  
Sulcis and Mercallo 420 kV s/ss  
**Australia**  
State Electricity Commission of Victoria  
Sydenham 525 kV s/s  
**People's Republic of China**  
Huaneng International Power Company  
Shindongkou 550 kV s/s





### Hexabloc quality through rigor

Hexabloc gas insulated switchgear complies with **IEC** international recommendations as well as with most **national standards**.

At every step in the manufacturing process, each component is subjected to **inspection** and **rigorous testing** including :

- X-ray analysis of each insulator;
- partial discharge measurements;
- routine tests required by standards and regulations;
- etc.

Moreover, design and production of the Hexabloc GIS range comply with the requirements of the **ISO 9000** standards.

This rigor ensures the **high level of operational availability** indispensable for HV GIS.

*Since 1967, over 1300 Hexabloc switchbays with ratings from 72.5 to 550 kV have been installed and commissioned by Merlin Gerin in over 200 substations around the world.*

*Today, they continue to fulfill the requirements of electrical utilities under widely varying climatic conditions.*

### high safety level

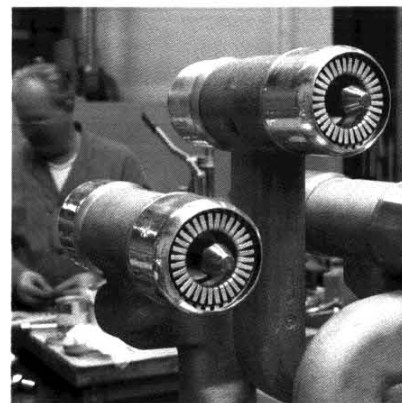
Operating personnel benefit from exception safety conditions preventing :

- direct contact with live parts;
- uncontrolled arcing;
- insulation problems caused by environmental conditions;
- etc.

This high level of safety is made possible by :

- earthing of the metal enclosure;
- reinforcement of the enclosures in the vicinity of the flanges;
- interlocking systems designed to prevent switching errors;
- indicators directly linked to the positions of the moving contacts and clearly visible from the ground.

Furthermore, the enclosures are designed and tested to comply with pressure vessel specifications.

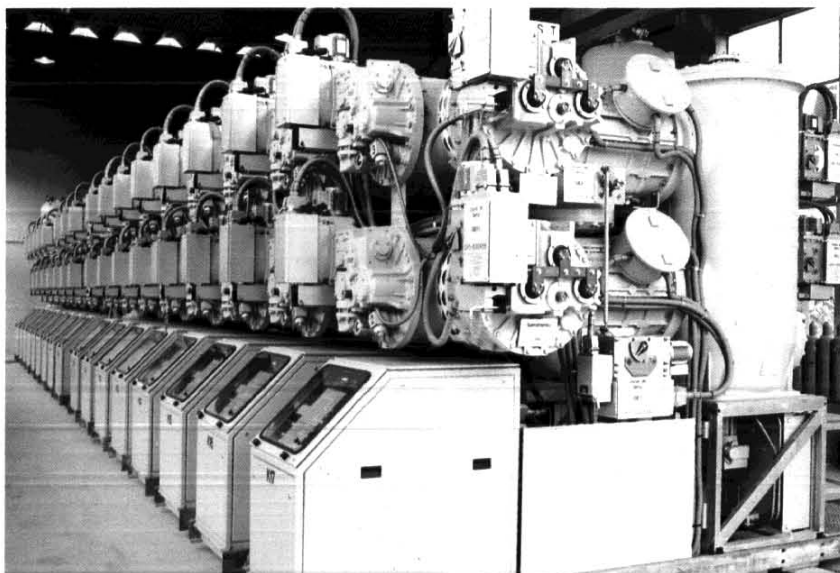


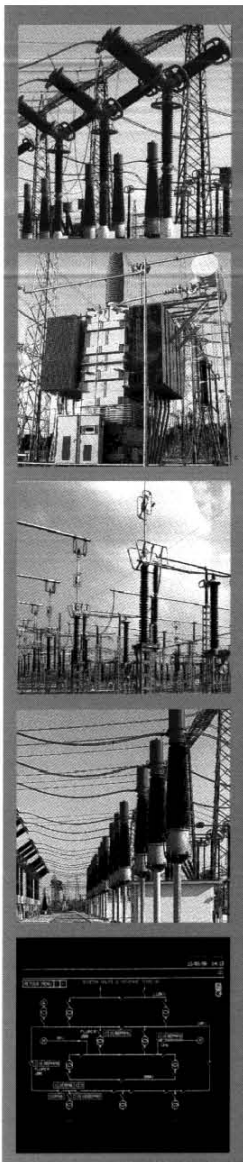
### Hexabloc GIS reducing your workload

The high degree of **reliability** offered by Hexabloc technology has made it possible to considerably **reduce** the frequency and duration of **maintenance operations** :

- initial maintenance is required only after six years of operation;
- maintenance can be carried out at ground level and concerns only the circuit breakers (no compartments need be opened);
- the time required is reduced by easy access to all parts for servicing.

The **low cost** of maintenance represents major **operating savings**.





## Merlin Gerin's high voltage offer includes...

equipment for conventional substations, such as :

- disconnectors;
- instrument transformers;
- circuit breakers;
- surge arresters;
- power transformers;
- shunt coils;
- control, monitoring and protection systems.

## ... and services

- turnkey HV substations;
- commissioning;
- maintenance;
- training.

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Clearwater, FL 34625