

ZF15

550

## INTRODUCTION

ZF15-550 gas insulated metal enclosed switchgear (GIS) is an advanced product in the world, introduced and developed to meet the demands of power industry development. The product has passed national evaluation, as well as the ministerial evaluation by the coalition of The National Association of Machinery Industry and the State Power Corporation.

The product is part of significant technology and equipment R&D project for the "Tenth Five-year" Plan of China. Its successful development does not only satisfy some national key projects' demands, such as Three Gorges Project, in replacing imported equipment, but also promotes the upward development of power industry in China.



ZF15-550kV GIS in Sonla Hydropower Substation in Vietnam

## MAIN FEATURES

●High fault current breaking capacity

The circuit breaker has smaller single-pressure arc extinguishing chamber and special nozzle, and has good air blowing capacity as well as strong arc extinguishing capacity.

●High insulation level

The electric field design is optimized by computers, which makes the component structure and size the most rational and the electric field distribution in best status. Appropriate shielding technology is adopted. Thus the insulation level of this product is high.

●No eddy-current loss for aluminum enclosure

The aluminum enclosure of GIS is light, of good conductivity and high corrosion resistance, but has no eddy-current loss.

●Strong current carrying capacity of the circuit breaker

The circuit breaker uses spiral spring sliding contacts, with simple structure, small size, and good conductivity, which is reliable in operation.

●High-performance basin-type insulators

Basin-type insulators are casted by the imported vacuum casting production lines. There are more

than ten tests in the insulator manufacturing process from materials to end products. Some of the tests are special in our company, guaranteeing high quality as well as high performance.

●Common use of modular design

GIS components are standardized modules with various joints convenient for combination. The components can be combined according to different connection and projects with flexible structure and layout. The structure combination can be commonly used both outdoors and indoors.

●Ready for being assembled into HGIS

Standard modules like circuit breaker, disconnecter, earthing switch, CT and bushings in GIS can be assembled into a SF<sub>6</sub> HGIS conveniently.

●Easy installation

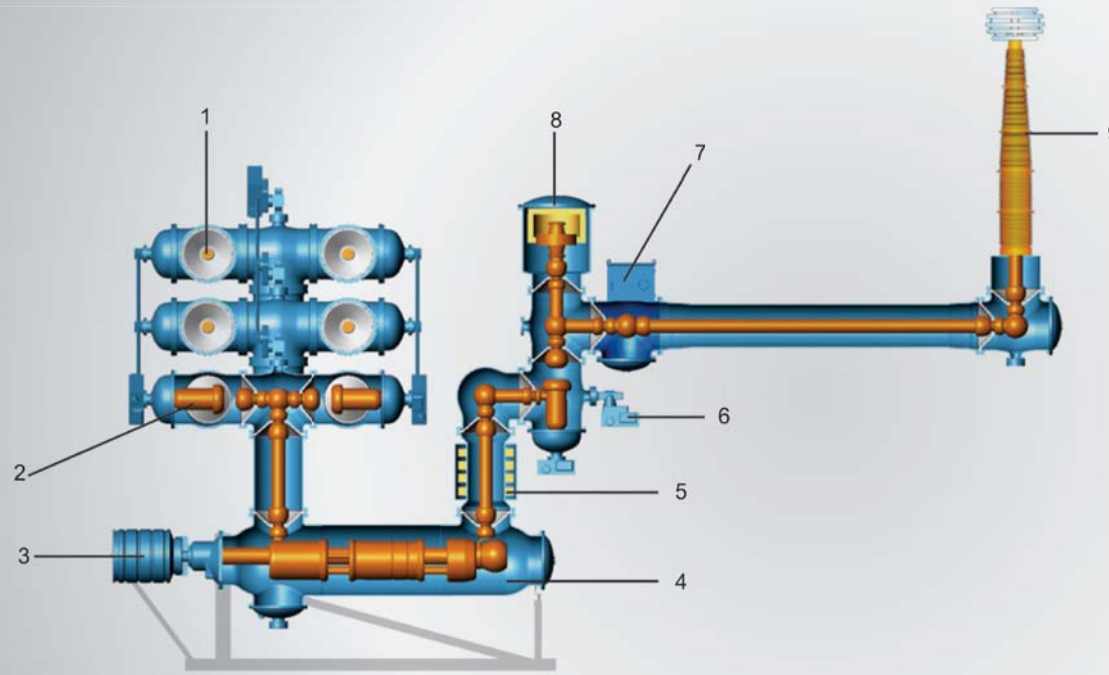
After assembly and tests in the factory, GIS is disassembled into separate transportation modules which are easy to be reassembled on site in short period.

●Ready for adding intelligent components as clients' requirement.



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Sectional view of ZF15-550 GIS bushing feeder bay with double busbar

- |                        |                |                                       |
|------------------------|----------------|---------------------------------------|
| 1 Busbar               | 2 Disconnector | 3 Circuit breaker operating mechanism |
| 4 Circuit breaker      | 5 CT           | 6 Maintenance earthing switch         |
| 7 Fast earthing switch | 8 PT           | 9 Outdoor bushing                     |

## OVERALL STRUCTURE

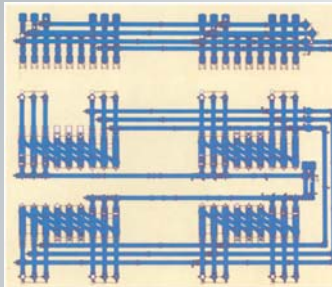
The three phases of ZF15-550 GIS are enclosed in separate enclosures. Circuit breaker, disconnectors, earthing switches, CTs, PTs, busbars and terminal components are arranged in flexible and compact standardized modular design, which makes it possible for future extension and satisfactory for various wiring connection.

All live parts are protected by aluminum enclosures. SF<sub>6</sub> is used as insulation medium of conductors and the outer earthing enclosure. High-quality basin-type insulators support the live parts of enclosure and also serve as the partition of adjoining SF<sub>6</sub> compartments. The conductors in separate gas compartments are connected by silver-plated plug contacts. The whole switchgear is mounted on a hot dip galvanized steel pedestal.

Derivative from ZF15-550 SF<sub>6</sub> GIS, ZF15-550 SF<sub>6</sub> HGIS is composed of basic GIS components like circuit breaker, disconnectors, earthing switches, CTs, and bushings etc..

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ZF15-550 GIS one and a half connection layout



ZF15-550 HGIS ( with one circuit breaker ) structural layout

## MAIN TECHNICAL PARAMETERS

| Item                                                      |                                           | Unit                                      | Technical data                       |
|-----------------------------------------------------------|-------------------------------------------|-------------------------------------------|--------------------------------------|
| Rated voltage                                             |                                           | kV                                        | 550                                  |
| Rated current                                             |                                           | A                                         | 4000,5000,6300                       |
| Rated frequency                                           |                                           | Hz                                        | 50                                   |
| 1min. rated power frequency withstand voltage             | Phase to earth                            | kV                                        | 740                                  |
|                                                           | Across open contacts                      |                                           | 740 ( +315 )                         |
| Rated lightning impulse withstand voltage peak value      | Phase to earth                            | kV                                        | 1675                                 |
|                                                           | Across open contacts                      |                                           | 1675(+450)                           |
| Rated switching impulse withstand voltage peak value      | Phase to earth                            | kV                                        | 1300                                 |
|                                                           | Across open contacts                      |                                           | 1300(+450)                           |
| Rated short circuit breaking current                      |                                           | kA                                        | 63                                   |
| Rated short circuit making current                        |                                           | kA                                        | 171                                  |
| Rated short time withstand current and duration time      |                                           | kA/s                                      | 63/3                                 |
| Rated peak withstand current                              |                                           | kA                                        | 171                                  |
| Radio interference voltage                                |                                           | μ V                                       | 500                                  |
| SF <sub>6</sub> gas pressure (at 20℃gauge pressure)       | CB gas compartment                        | MPa                                       | 0.6                                  |
|                                                           | Other gas compartments                    |                                           | 0.5/0.4/0.36                         |
| SF <sub>6</sub> gas leakage rate for each gas compartment |                                           | %/year                                    | 0.5                                  |
| SF <sub>6</sub> gas humidity                              | Gas compartment with arcing decomposer    | Acceptance value                          | 150                                  |
|                                                           |                                           | Permissible value for long time operation | 300                                  |
|                                                           | Gas compartment without arcing decomposer | Acceptance value                          | 250                                  |
|                                                           |                                           | Permissible value for long time operation | 500                                  |
| Circuit breaker operating mechanism                       |                                           |                                           | Spring hydraulic operating mechanism |
| Disconnecter operating mechanism                          |                                           |                                           | Motor operating mechanism            |
| Earthing switch operating mechanism                       |                                           |                                           | Motor operating mechanism            |
| Fast earthing switch operating mechanism                  |                                           |                                           | Motor spring operating mechanism     |
| Applicable standards                                      |                                           |                                           | GB、DL、IEC                            |

Note: special orders can be made if customer's requirement exceeds above-mentioned technical data.