

## ZFW41-126 Gas-insulated Metal-enclosed Switchgear

### Summary

ZFW41-126 Gas-insulated Metal-enclosed Switchgear (hereinafter referred to as GIS) is the latest improved mini nonsegregated phase GIS jointly developed on the bases of being made full use of Russian GIS/GCB advanced technology from Lenin All-Russian Electro Technical Institute (VEI for short) by HEAG and Longyuan Research Institute (VLI for short). This product does not only accords with standard of IEC517, idt GB/T 7674-1997: Gas-insulated metal-enclosed switchgear for rated voltages above 72.5 kV, but also conforms to IEC 62271-203-2003: High-voltage switchgear and controlgear - Part 203: Gas-insulated metal-enclosed switchgear for rated voltages above 52 kV.



### Ambient condition

Installation site	Indoor	Outdoor
Environmental temperature (°C)	-25~+40	-30~+40
Altitude above sea level (m)	1000 (2000+, 3000+)	
Relative humidity (°C)	Daily average ≤95%	condensation and rainwater
Pollution class	III grade, IV grade	
Max. wind speed (m/s)	/	34
Earthquake intensity (g)	Level acceleration ≤0.4, vertical acceleration ≤0.2	
Sunshine strength (w/m <sup>2</sup> )	/	≤1000
Ice covering thickness (mm)	/	≤20

Remarks: For \* Special service conditions, please consult with the manufacturer.

### Technical specification

#### 1. Main technical parameters of GIS

Rated voltage	126kV	
Rated frequency	50 or 60Hz	
Rated current	630, 1250, 1600, 2000, 2500, 3150A	
Main busbar	630, 1250, 1600, 2000, 2500, 3150A	
Rated short-time withstand current	40kA	
Rated short-circuit continuous time	main circuit: 4s; control circuit 2s.	
Rated peak withstand current	100kA	
Rated insulation level	Rated short-time P.F. withstand voltage	To ground: 230/265kV; across open contact: 230+73*kV
	Rated lightning impulse withstand voltage	To ground: 550/650kV; across open contact: 230+103*kV
SF6 gas pressure (20°C gauge pressure) Ratings/Alarm value/Locking value	Circuit breaker bay: 0.6/0.55/0.5MPa other bays: 0.5/0.45MPa	
5 min P.F. withstand voltage at SF6 zero gauge pressure	To ground, between gaps, interphase: 95kV	
Annual gas leakage rate of SF6 gas	≤0.5%	
Rated voltage of control circuit and auxiliary circuit	DC 220V, AC 220V	

Remarks: \*-Polarity reversal applied voltage.

## Product feature

### 1. Technology cooperation of China and Russia

This product is supported by basic theory, product design capability and operating experience of VEI, its technology and technics is mature.

### 2. Modular design, high reliability

GIS is a combination of standardized function modules such as circuit breakers, busbar/disconnector/earth switch, outgoing disconnector/fast EIS, current transformer, potential transformer, aerial/cable outgoing, etc. is of nonsegregated phase structure and a function combination. Compared to the traditional GIS, the quantity of components and gas sealing face greatly decrease; three-position disconnector/earth switch ensure the reliable interlocking between disconnector and earth switch, so as to greatly improve the operating reliability.

### 3. Small volume, light weight

This product is one of domestic GIS with smallest bay unit, the width of standard bay is only 0.8m. Both enclosure and conductors are made of Al alloy, light weight and corrosion protection, and the weight of standard bay is less than 3 tons.

### 4. Strong breaking ability

The circuit breaker adopts third generation of advanced arc extinguishing principle “auto puffer + small gas pressure”, and applies the advanced fluid analysis software to analyse the gas flow field in the breaking process to get the best gas flow structure, so that, it has high short-circuit breaking and making capacity, the charging current of switching circuit does not have reignition and restrike events and the full capacity electrical durability can be over 20 times; The disconnector can satisfy the requirements of switching busbar transfer current and charging current; The earth switch can satisfy the requirements of making short-circuit current and switching induction current.

### 5. High insulation level

The insulation structure design is reasonable, all the insulation parts are strictly inspected, and the general withstand voltage level meets or exceeds the relative national standard or IEC standard, as a result, its insulation level is stable and reliable.

### 6. Long life

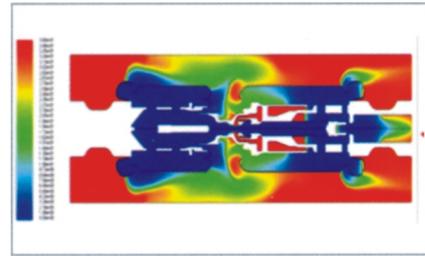
The circuit breaker is combined with spring operating mechanism, its operating feature is stable and the mechanical life is over 10000 times; The combined disconnector and earth switch is combined with a high-performance three-position mechanism, its mechanical life is over 10000 times.

#### ◆ Good to environment

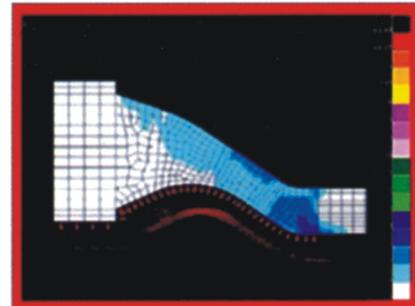
The insulation structure is optimal design after E.M. Field analysis, air consumption is little; The rotating seal adopts the special structure, which is without leakage and the sealing performance will be up to 20 years; The static seal adopts single-channel double-sealing technology to ensure the annually leakage rate is far less than 0.5%.

#### ◆ Short site installation period, low maintenance

The product is pre-assembled at the factory, then is completely delivered to the user site after test, so the amount of site installation work is little and the site installation time is greatly saved, also for this reason, it fully ensures the quality of each function unit, the product can be immediately delivered into operation after site installation & commissioning. This GIS is a real maintenance-free or low maintenance product, the overhaul period is up to 20 years, and the cost performance is extremely high.



Gas flow analysis



Electric field analysis

