Grid Solutions

DT1-72.5g-40

SF_6-free Dead Tank Circuit Breaker 72.5 kV, 40 kA, up to 3000 A

Grid Solutions, a GE Vernova business, has more than 100 years of experience in the design, material selection, development, engineering, manufacturing, and servicing of circuit breakers.

Some Compactness, Reduced Carbon Footprint

Based on this expertise, we have developed an SF_6-free dead tank circuit breaker (DTCB) that is very similar to its SF_6 predecessor, the DT1-72.5-40. Using our g^3 insulating and switching SF_6-free technology, the new DT1-72.5g-40 remains compact with the same footprint. Performance and life cycle costs remain similar while offering a significant decrease in the carbon footprint. The SF_6-free gas mixture used in the new DT1-72.5g-40 works on the same well-known principle for insulation and breaking purposes as that of SF_6 gas.

The g^3 gas is a mixture of carbon dioxide (CO_2) with oxygen (O_2) and a small percentage of an additive (C_4F_7N), whose physical properties are essential to g^3. Its contribution to global warming is significantly lower than that of SF_6 gas – reduced by 99%.

Reliable Performance

The DT1-72.5g-40 is suitable for applications up to nameplate ratings, including definite-purpose switching. It meets the challenges of networks up to 72.5 kV for power generation, transmission, and energy-intensive industry applications.

Our spring-spring-operated mechanism and extensive mechanical design testing to 10,000 operations and Class M2 certification ensure trouble-free operation for the lifetime of the circuit breaker.

Certified Quality

We design, manufacture, test, and deliver our dead tank circuit breakers in accordance with the latest IEEE/ANSI and IEC standards, maintaining a quality assurance system according to ISO-9001 and ISO 14001 certifications.

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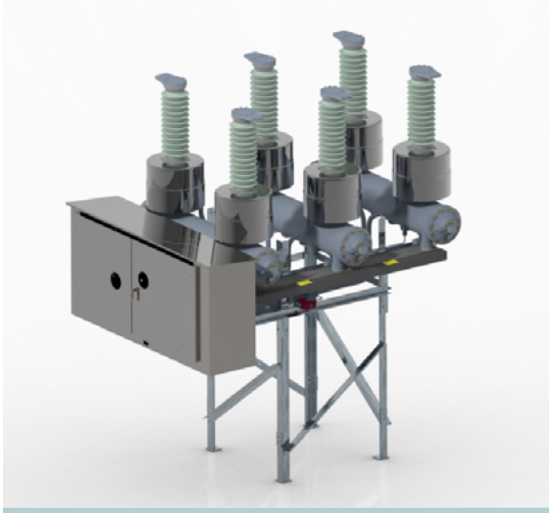


The Path to Decarbonization

- DT1-72.5g dead tank circuit breakers are part of GRiDEA, our portfolio of solutions designed to accelerate the decarbonization of the grid
- SF_6-free circuit breakers
- Lower carbon footprint over a 40-year substation life cycle compared to other SF_6 alternatives
- The gas contribution to global warming is reduced by about 99% using g^3 gas instead of SF_6
- Similar weight and dimensions as the SF_6 circuit breaker, thus no need to increase the overall size of the substation
- Fitted with digital gas monitoring

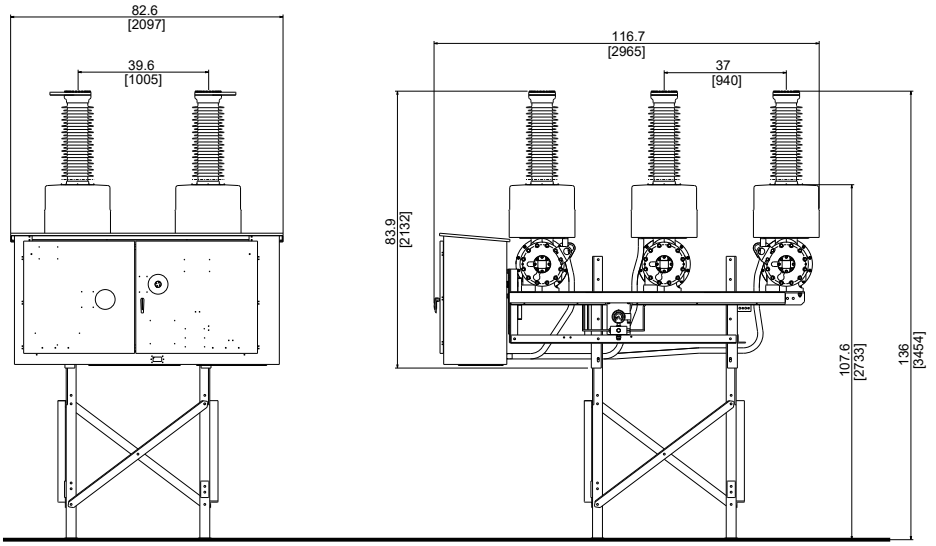
Main Characteristics

- Advanced self-blast interrupters
- Shares many components with the DT1-72.5FK-40 SF_6 circuit breaker
- Durable low-energy spring-spring-operated mechanisms
- More than 200,000 circuit breakers with self-blast interrupters and FK spring-operated mechanisms in service since 1989
- 2 µs chopped wave 452 kV
- Zero bar withstand capability

Easy System Integration

- Breakers are completely factory-assembled, wired and tested before shipment
- Similar operational and maintenance procedures as with SF_6 circuit breakers
- Compact design that's common to all substation applications, including extension of existing substations

Dimensions



Technical Data

	VALUE	UNITS
Motor	1,600	watts
Close coil/Trip coil	440/440	watts
Ambient temperature range*	-30 to +40	°C
Seismic capability*	High seismic per IEEE 693	
Weight (without current transformers)	3,000/1,360	lb/kg

**Optional values available upon request.*

Ratings

IEEE/ANSI	IEC	VALUE	UNITS
Rated maximum voltage	Rated voltage	72.5	kV
Rated power frequency	Rated frequency	60	Hz
Rated dielectric withstand capability: • dry withstand • wet withstand	Rated insulation level • at power frequency, dry • at power frequency, wet	 160 140	 kV kV
Rated lightning impulse withstand voltage	At lightning impulse	350	kV
Rated chopped wave impulse voltage 2µs		452	kV
Rated continuous current	Rated normal current	1,200/2,000/3,000	A
Rated short-circuit current	Rated short-circuit making current	40	kA
Rated closing, latching and short time carrying current		108	kA
	Rated short-circuit making current	100	kA
Rated interrupting time		3	cycles
	Rated break time	50	ms
Rated standard operating duty	Rated operating sequence	O-CO-15s-CO O-0.3s-CO-180s-CO	

Gas Data*

The functioning of this equipment relies on a gas mixture based on CO_2/O_2 and 3.5% of an additive, C_4F_7N (also known as C4-FN or $IsoC_3F_7CN$), a fluorinated greenhouse gas, which helps preserve dimensions and performance equivalent to those of SF_6 equipment while reducing the carbon footprint.

	SF_6	g^3	
		C_4F_7N ADDITIVE **	g^3 GAS MIXTURE
Average mass of gas/mixture in the equipment (lbs./kg)*	29/13.2	2.6/1.18	17.2/7.8
GWP_{100} of gas/mixture (CO_2-equivalent)	24,300	2,750	419
CO_2-eq of gas/mixture in the equipment ($t_{CO_2\text{-eq}}$)*	320.8	3.3	3.3

**For information purposes only. Values are given for the DT1-72.5g-40 dead tank circuit breaker. It can vary a bit depending on configuration or the equipment considered.*

***This component's physical properties are essential to g^3.*

For more information, visit
gevernova.com/grid-solutions

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English
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