Medium Voltage Power Products | High Voltage Power Products

VD4G-50
Vacuum circuit-breaker for generator applications

Power and productivity
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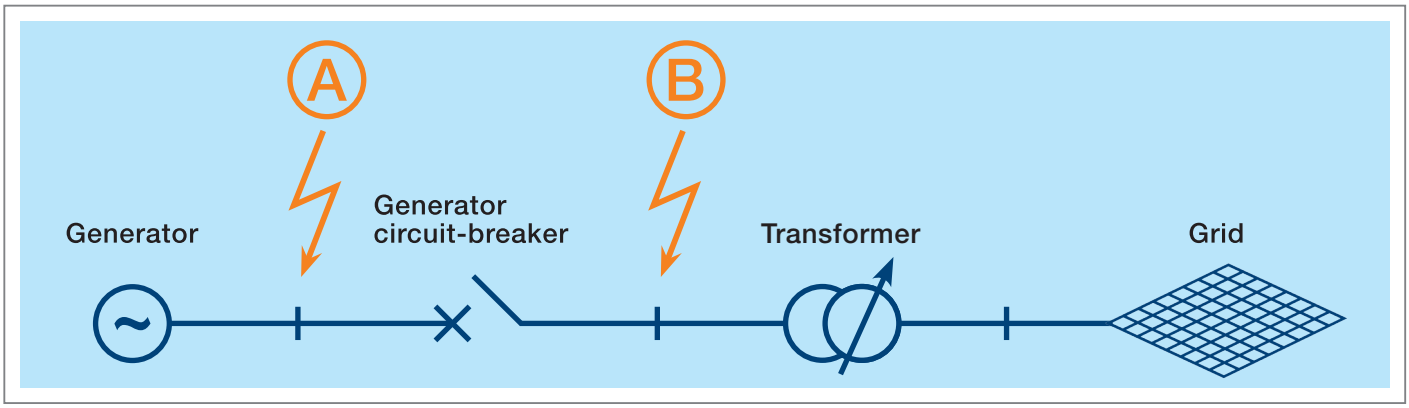
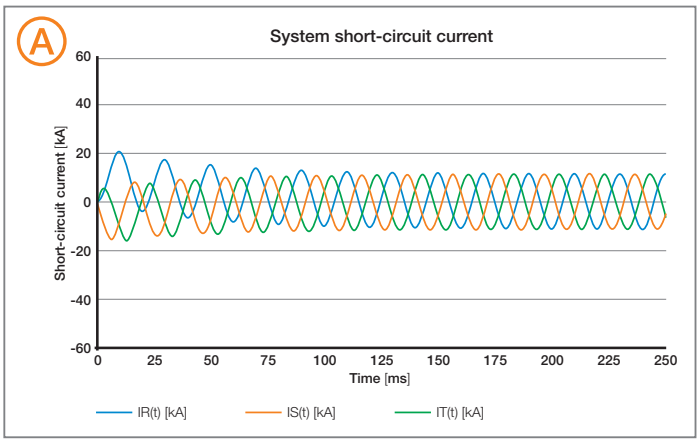
VD4G-50 – the new vacuum circuit-breaker for generator applications

The worldwide increasing energy demand is covered more and more by decentralized power plants and renewable resources of small unit size. As the generated energy is fed into the grid by step-up transformers and MV distribution boards, VD4G-50 offers a reliable and economical solution to protect the power plants assets.

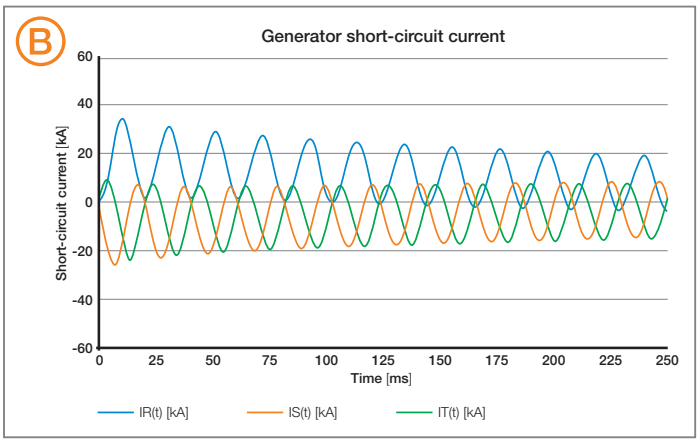


Typical schematic of generator circuit-breaker application

The challenge to protect the grid as well as the generator against failures makes generator circuit-breakers essential. Each generator has specific technical characteristics. A suitability analysis of the generator circuit-breaker application is indispensable. The system-fed fault (A) and the generator-fed fault (B) of a grid need to be reliably interrupted by the generator circuit-breaker.



Failure location A: System-fed fault
Fast decaying DC component



Failure location B: Generator-fed fault
Slowly decaying and raised DC component results in delayed current zero.

The new VD4G-50 is the next generation of VD4 vacuum circuit-breaker for generator circuit-breaker (GCB) applications. The VD4G-50 is suitable for the small power plants as well as for industrial, oil and gas applications in which generators are connected to the MV distribution of the plant.

Your benefit VD4G-50

Protection:

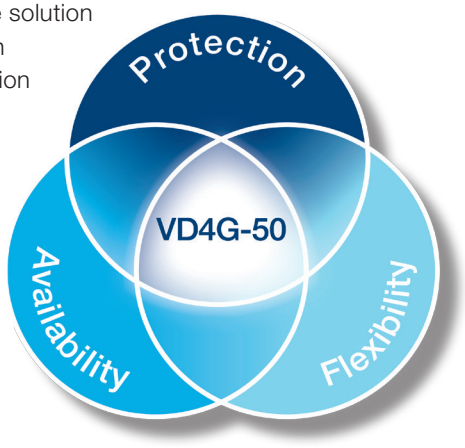
- Suitability analysis using grid calculation tool
- Optional system study for additional circuit-breakers in grid
- Fast interruption of system- and generator-fed short-circuit currents up to 50 kA
- Tested according to the latest edition of generator circuit-breaker standards including the IEC / IEEE 62271-37-013 (2014-01-24)

Availability:

- High TRV withstand capability
- Suitable for an increased DC component and longer arcing times
- More reliable synchronization
- More reliable supply for unit auxiliaries

Flexibility:

- Only one circuit-breaker shall be operated during the starting-up or shutting-down of generator
- Maintenance-free solution
- Compact solution
- Economical solution



Possible applications

- Renewable energy power plants
- Small energy power plants
- Networks with emergency power generator
- Process industry with own power generation
- Retrofit solutions

Special requirements for suitability analysis with grid calculation tool

ABB can provide you with adequate support for the suitability analysis and proper selection of GCB by providing the following information:

- Single Line Diagram
- Technical data sheet of generator, transformer and other grid equipment

Technical data

- System- and generator-fed faults tested up to 50 kA
- High TRV withstand capability
- Suitable for switching under delayed current zero conditions
- Type tested according to Dual Logo IEC/IEEE 62271-37-013 (2014-01-24) covering also IEEE C37.013

		VD4G-50	
Rated voltage U_r	kV	15	
Rated normal current (40° C) I_r	A	3150	4000 [1]
Rated frequency f_r	Hz	50 / 60	
Withstand voltage at 50 Hz U_d (1 min)			
- common value	kV	38	
- across the insulating distance	kV	45	
Impulse withstand voltage U_p			
- common value	kV	95	
- across the insulating distance	kV	110	
Rated breaking capacity I_{sc}			
- symmetrical short-circuit current	kA	50	
- asymmetrical short-circuit current	kA	73	
- first pole-to-clear factor		1.5	
- rated operating sequence during short-circuit interruption		CO-30 min-CO [2]	
Making current I_p	kA	137 [3]	
Rated breaking current under out-of-phase conditions			
- symmetrical breaking current	kA	25	
- asymmetrical breaking current	kA	37	
Rated short-time withstand current I_k (4 s)	kA	50	
Maximum total breaking time (from tripping start to final arc extinction) (3 cycles)	ms	≤ 61	
Transient recovery voltage TRV			
- TRV rate for system-fed faults	kV / µs	3.5	
- TRV rate for generator-fed faults	kV / µs	1.6	
- TRV rate for out-of-phase faults	kV / µs	3.3	
Dimensions			
- Pole center distance	mm	275	
- Height	mm	636	
- Depth	mm	459	
- Width	mm	750	
Weight	kg	210	

1) On request
2) Other operating sequences on request.
3) Higher values on request.

Contact

ABB AG

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