

GROUND FAULT DETECTION METHOD AND SYSTEM FOR ELECTRICAL SYSTEMS WITH PARTIAL POWER CONVERTERS

The present invention allows detecting ground faults in systems with partial power converters, although they have power transformers between their inputs and outputs, they do not provide galvanic isolation to the different parts of the circuit.

TYPE OF DEVELOPMENT

Conductive coatings

DESCRIPTION

Method and system for detecting ground faults in electrical systems with partial power converters that allow varying the voltage between both sides of direct current where galvanic isolation between both sides of the partial transformer is not possible characterized because, with at least three ground switches the system and a possible current-limiting impedance between a point of the system and ground, It is capable of detecting a ground fault in the event that it occurs within the system, discerning the side where it occurs (direct current or alternating current) and specifically discriminating in which subzone of the partial power converter it is located (positive pole, negative pole, intermediate terminal of direct current, primary of the partial transformer series or secondary of the partial transformer series) with the system in operation. In addition, such a method and system can characterize the severity of the fault by calculating the defect resistance.

INDICATION

- The invention has potential for electrical systems with DC/DC conversion by means of partial power converters of either step-down or step-up topology.

NOVELTY/ADVANTAGE

The system is novel, since partial power converters do not have specific protections for them against ground faults. Alternative products to such an invention may be biased or toroidal differential relays implemented upstream and downstream of the PPC. However, these relays often cause unwanted tripping due to the saturation of the magnetic core of the sensor's current transformer when the fault occurs in direct current. In addition, they cannot distinguish in which zone the fault has taken place unless a differential is installed per zone. Another alternative product is the injection of current between phase and ground, but these systems are invasive and very expensive.

Reference: PPC



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COOPERATION GOAL

License agreement.