



Power Plant Electrical Technologies (Pty) Ltd

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IM-Flex

Insulation Monitoring and High Impedance Earthing Solution

Insulation Monitoring or IM-Flex is an insulation monitoring and high impedance earthing solution, designed to increase operating reliability in low voltage three phase electrical systems. The solution provides a high impedance connection between the supply power transformer's neutral star point and earth, which significantly reduces the potential for high earth fault currents and allows for detection of single phase earth faults.

The IM-Flex therefore serves as an early-warning system, allowing the plant process to operate safely until such time a planned outage can be arranged for appropriate maintenance measures to be implemented.

The IM-Flex solution is manufactured using a combination of quality components conforming to IEC's low voltage distribution system standards (60947-5-1, 61557-1, 61557-8).

The components are arranged to provide the user an insulation monitoring, high impedance earth connection solution, with effective test functionality, surge protection, and simple impedance measurement range selections.

Value-added Options

Remote Terminal Connections

Remote terminal connections are optional upon request. Options for remote terminals features include:

- Hard earth fault alarm or trip contacts N/O and N/C.
- Light earth fault alarm contacts N/O and N/C
- Remote Reset request

Insulation Monitoring

The insulation monitoring system utilises a combination of ABB devices, interconnected and jointly connected across two of the three live supply phases and earth. The insulation monitoring device works on a prognostic measurement principle, with a superimposed square wave voltage signal.

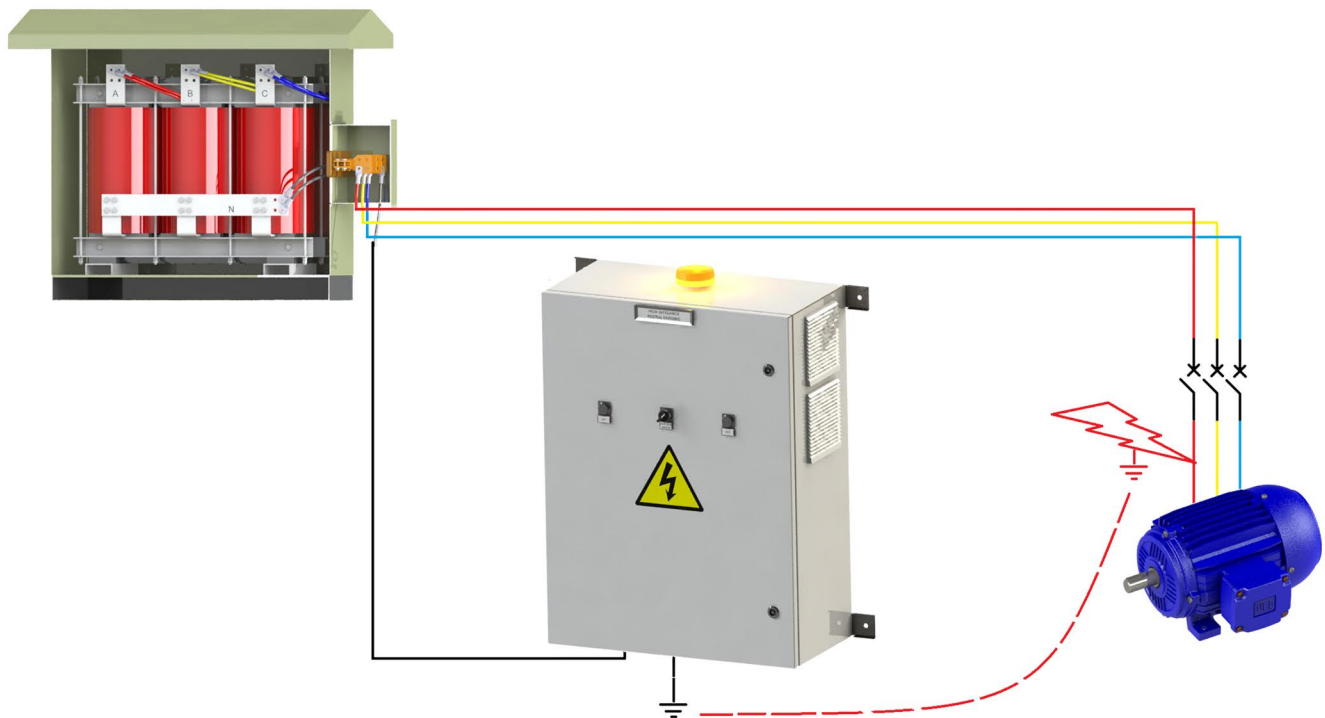
In the event of an insulation fault, the fault closes the measuring circuit between the system and earth, generating a measuring current that is proportional to the insulation fault. This measuring current generates a corresponding voltage drop at the measuring resistance, which is evaluated by the monitoring device. If this voltage drop exceeds a specific value equivalent to the undershooting of a specific insulation resistance, a warning will be issued alerting the shift operator.



IM-FLEX HIGH IMPEDENCE CONNECTION

IM-Flex is designed to establish a **high impedance connection** between the transformer's starpoint neutral and earth. This setup **enhances human safety** and **boosts plant reliability** by allowing a single phase to fail without grounding, resulting in minimal earth fault current. An **insulation monitor** identifies an earth fault and triggers an alarm.

Users can **troubleshoot** the issue at their convenience and trigger the earth leakage protection on the faulty circuit by pressing the test push button. Even in test mode, the earth fault current will be restricted to less than one amp.



IM-FLEX BENEFITS

- Optimised maintenance
- Increased operation reliability
- Increased accident prevention
- Improved economic efficiency
- Increased fire prevention
- High impedance earthing



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