EFFECTIVENESS OF RESIDUAL CURRENT DEVICES IN CIRCUITS OF ELECTRICAL INSTALLATIONS WITH FREQUENCY CONVERTERS

Paweł CZAJA, Piotr BOROWIK

ABSTRACT  Commonly used in low voltage installations Residual Control Devices are the protective devices capable of detecting low leakage, ground or shock currents, but under certain conditions their trigger threshold may be significantly different from the nominal value, e.g., 30 mA. The existence of power electronics devices in the protected circuits results in generation of differential circuits in a wide range of frequencies. The fundamental frequency as well the existence of harmonics are determined by the internal design of the devices present in the protected circuit. If the RCD switch is to provide a reliable secondary protection, the lowest value of triggering current is crucial for this purpose. In the paper, the problems related to the application of typical RCD switches as an anti-shock protection means in such circuits have been investigated.

Keywords: Residual Current Device, leakage current, anti-shock protection, PWM converter