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Transient and Surge Protection of Variable Speed Drives

Problems occur on variable speed drives switched by vacuum contactors on plants because of the transient spikes generated by the vacuum contactors and longer term over voltages generated by lightning and induced currents.

A solution has been formulated by Strike Technologies (Pty) Ltd to overcome the loss of these drives. The symptoms are typically electronic cards failures which are expensive to repair.

Strike Technologies (Pty) Ltd is the designer of the well proven ZORC equipment.

In order to solve the two above problems, STRIKE formulated the use of ZORC and Lightning Protection Units (LPU s)

ZORC operates in a time domain of .1-2 microsecond rise times. This successfully captures the transients generated by the vacuum contactors. The spikes can have amplitudes between 1-6 p u. Normal RC filters will fail after a while. The ZORC has a special self protecting mechanism

Note however that the Total Harmonic Voltage Distortion level is not exceeding 5% (THD (V) <.05)

The LPU s will handle the general surge over voltages with longer time domains

The connection to the ZORC phases is typically 4 mm² single strand and to the LPU 35mm² single strand or 25mm² multi strand

The ZORC needs to be earthed to the VSD earth or the cable shielding with an earth path resistance below 0.5 Ohm. The typical earth connection is 25 mm² multi strands or 16mm² multi strands.

The LPU s need to be earthed to the general earth with an earth path below one Ohm

It is recommended to use lugs

This combination has been tested and tried in numerous applications with great success

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