



GENERATOR SET UPS AND RECTIFIERS

UNINTERRUPTIBLE POWER SUPPLIES AND RECTIFIERS

Uninterruptible Power Supply (UPS) systems and rectifiers can cause voltage harmonics to appear on the output voltage of a generator set leading to harmonic currents flowing in the alternator windings.

OBSERVED PROBLEMS

Harmonic currents flowing in the alternator windings can cause over heating of the windings.

Harmonic voltages can over-stressing the alternator winding insulation and can cause voltage regulation problems.

EFFECT ON THE UPS

The distorted waveform of the generator set (although created by the UPS) may be deemed outside the input voltage parameters of the UPS causing it to transfer onto its batteries.

SOLUTION

The solution to these problems is as follows:

- 1) Use a 3-phase sensing AVR
- 2) Use a separate source of excitation power i.e. a permanent magnet (mounted on the shaft of the alternator) or an auxiliary alternator winding (ARUP)
- 3) De-rate the alternator by about 20%