powerPerfector

powerPerfector is an all-in-one solution to a number of common power supply problems. powerPerfector technology provides energy, cost and carbon savings by efficiently optimising a site's supply voltage.

Background

powerPerfector technology helps businesses and organisations to reduce their energy consumption and carbon emissions, and to protect their equipment and data from harmful harmonics and transients.

powerPerfector Plc, who is currently ranked 33rd in The Sunday Times Fast Track 100 league table (Britain's fastest growing private companies), required a testing partner to measure how a typical unit would perform under the influence of electrical network harmonics, static and dynamic loads and measure the effect on network protection.

powerPerfector Technology

The powerPerfector provides the following functionality:

- The incoming voltage, which is typically around 240V, is brought to the optimal operating level for most equipment at around 220V.
- Voltages on the three supply phases are balanced, which dramatically increases the efficiency of 3-phase AC motor equipment.
- A harmonic filter is integrated into the design to reduce the 3rd, 5th and 7th harmonics, which are potentially damaging to electronic equipment and reduce the efficiency of HV transformers.
- A powerPerfector typically increases the site's power factor which may alleviate the need for additional Power Factor Correction.
- A powerPerfector will protect a site from transients up to 25kV which can have a devastating effect on sensitive electronic equipment

Process

A 30kW powerPerfector unit was tested at Narec's EnergyLINK Laboratory, Blyth and Clothier Laboratory, Hebburn to determine the effects of:

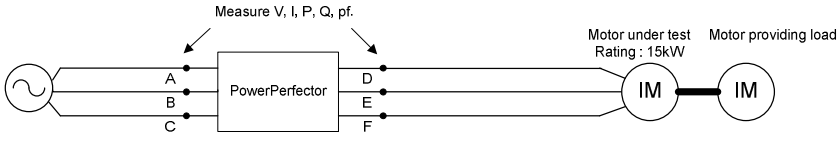
- Voltage imbalance (1-phase and 2-phase)
- Harmonic distortion (varying supply harmonics with a resistive load)
- Harmonic distortion (varying supply harmonics with a 11kW motor load)
- Power flow and power factor with a 15kW motor load
- Motor starting
- Protection (simulation)

A schematic showing measurements being made at the powerPerfector input and output was used to measure the effect of the powerPerfector in the network (see diagram).

Results

The testing proved a valuable exercise in assessing the performance of the powerPerfector unit under actual network conditions, and demonstrated its ability to improve power quality under laboratory conditions.

"Narec conducted a series of thorough and informative tests which greatly helped us to understand the performance of the powerPerfector under actual network conditions. We were very happy with Narec's service and professionalism." *Alex Rathmell, Head of Analysis, powerPerfector Plc*



Advancing Renewable Energy

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