

Improved reliability of critical processes with active harmonic filtering

Challenge

Laboratory consisted of several non-linear loads causing high harmonic current distortions. These loads include AC drives, Uninterruptable Power Supplies (UPS), Switch Mode Power Supplies (SMPS) and laboratory equipment. These loads were fed by two separate transformers each rated at 2500kVA. The presence of high harmonic distortions threatens the reliability of operations and shortens the lifetime of expensive laboratory equipment.

Initial design considered a K-rated transformer to mitigate the harmonic distortions. However, customer wanted to avoid this due to higher costs and longer lead-time. Furthermore, compliance to the G5/4 was not guaranteed with this proposed solution.

Solution

Merus Power's partner Power Capacitors Ltd proposed active harmonic filtering solution to cancel the harmonic distortions at the laboratory. This solution offered better value proposition to the customer in terms of shorter lead-time, more economical with guaranteed compliance to the standards.

Compact Merus™ A2-series Active Harmonic Filters modules in IP20 protection were shipped from Finland to UK to save shipping costs. Cabinets to house active harmonic filters were manufactured in UK by Merus Power partner Power Capacitors Ltd. End customer received a free-standing active harmonic filtering cabinet with 450KVAR detuned capacitor banks. Installation was made in closed loop connection and selectable mode was chosen.

Result

Total Harmonic Distortion Current (THDI) percentage at the laboratory was measured at 14%. The measurement also revealed high 3rd, 5th, 7th and 11th harmonic currents and exceeding the limits specified in the G5/4.

Merus™ Active Harmonic Filters were commissioned in selectable operation mode targeting all above mentioned high individual harmonics. Post commissioning report confirmed total harmonic distortion current less than 5% as well as individual high harmonics 3rd, 5th, 7th and 11th harmonic currents were successfully brought under the desired limits.



Application:
Medical research

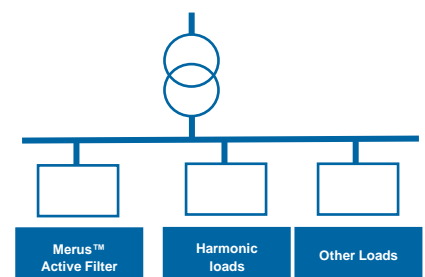
Location:
Cambridge/UK

Power quality issues:

- High harmonic current distortion

Merus™ Solution:

- Merus™ A2-series Active Harmonic Filters



Customer Benefits:

- Economical solution with shorter lead time
- High reliability of critical processes
- Longer lifetime of sensitive medical equipment