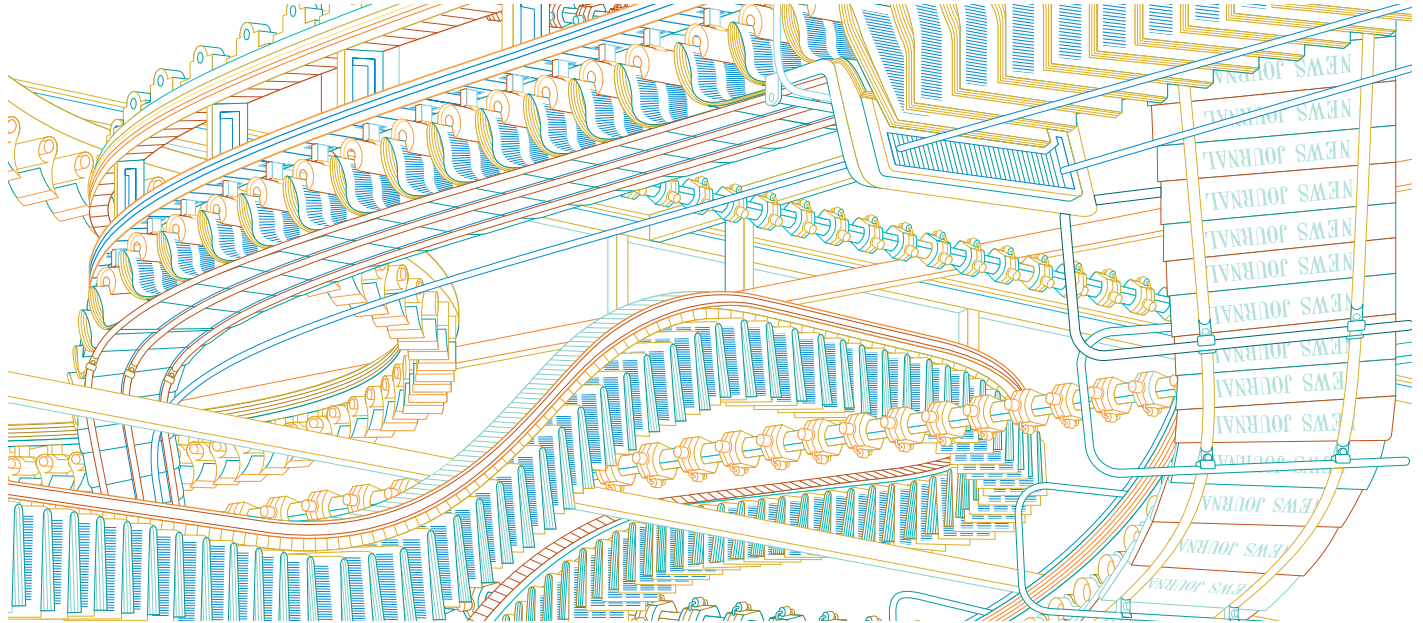


Low Voltage Products Keeping the printing presses rolling at *The Press*



Christchurch's ongoing earthquake activity forced the relocation of all *The Press* staff from the CBD to the Printing Facility in Harewood. High levels of harmonics had already been identified at the site. With the extra pressure of ensuring business continuity, more staff, and complying with supply network requirements, it was time to address the issue.

The solution

ABB was invited by electrical and communications engineering specialists, O'Donnell Griffin, to explain harmonic distortion to *The Press* and show how the problem could be solved with ABB's PQF active harmonic filters technology.

Initial monitoring and calculations showed a THDi of approximately 60 percent. Based on this measurement, ABB calculated an overall filter size requirement of 410 A.

A PQFI-M45 was delivered to the site earlier this year. Once installed, ABB used the PQF measurement monitors to show a before and after comparison. This confirmed that before the filter was switched on there was an indicated THDi of

approximately 60 percent, therefore the PQFI was sent to the maximum filtering target of 0 A across harmonics H3...H49 and filter mode 1.

Once the unit had reached full filtering, a measurement was taken via the independent network analyser, Fluke, which showed that THDi had instantly been reduced to 2.5 percent.

O'Donnell Griffin's Bryan Roper commented:

"After much research and the fact that Consultants have been specifying ABB on other projects we decided that the ABB's PQF was the best solution to propose to our customers. Offering benefits such as a reduced footprint and economical installation costs, the ABB filters are as good as anything else that we have found on the market. We experienced good follow-up service by ABB and we were happy with the delivery and installation."

The Press' Maintenance Manager, Paul Schreurs, commented:

"The product is performing well and fully meeting expectations by reducing harmonic distortion, increasing power factor to 0.99, and reducing KVA demand."

ABB's PQF active harmonic filters offer the following system benefits:

- Reduced production downtime and/or commercial installation downtime.

- Increased system efficiency and reduction of CO₂ emissions.
- Compliance with the strictest power quality regulations thanks to their unique control concept, thereby avoiding penalties and/or refusal by utilities to connect installations to the electrical grid.
- No detailed network analysis is required which means the solution can be implemented easily and rapidly.
- Not able to be overloaded thanks to their active concept, therefore well adapted to LV installations where loads are upgraded frequently.
- Poor power quality when excessive, costs money. It leads amongst others to:
 - Frequent failures of equipment
 - Reduced lifetime of equipment
 - Production losses

The cost of poor power quality electrical networks can result in financial loss, have a negative environmental impact and/or safety concerns. There are three significant sources of poor power quality caused by a variety of loads in customer installations:

- Harmonic pollution
- Load imbalance resulting in voltage imbalance and phase to neutral voltage
- Reactive power



ABB's Low Voltage Products engineer working on the PQF installation.

In addition, there are costs incurred due to extra kWh losses in typical network components such as transformers, cables and motors. These losses are cascaded back to the utility power plants and result in increased CO₂ emissions. The emissions can be significant or marginal depending on the process and the fuel type from which the electrical power is generated.

ABB's PQF active filters are the ultimate answer to tough power quality problems caused by harmonics, load unbalance and reactive power demand.

ABB's PQF active filters can be applied to small, medium or large applications and are suitable for both industrial and commercial installations. They provide harmonic mitigation, load balancing and step-less reactive power control for inductive and capacitive loads. Selection from the large choice of ratings from several tens of Amps to several thousands of Amps enables the optimal solution for each system to be easily defined. The desired filter rating can be obtained by combining different master and slave units.

Under normal conditions, the load of the filter will be distributed evenly over all the filter units operating in parallel. ABB's PQF active filters can be installed in LV networks. They can also be employed in MV networks through the use of a suitable coupling transformer.



Power Quality filters PQFI, PQFM, PQFK, PQFS.

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