

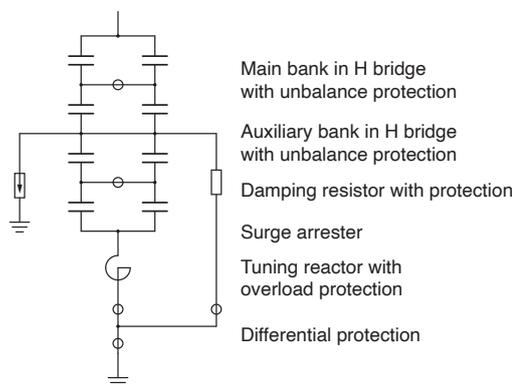
High voltage harmonic filters

ONE performed detailed harmonic assessments, conceptual filter designs, rating calculations, specified, and then delivered and assisted with site installation and commissioning of two 132 kV 50 Mvar C-type harmonic filters at a large wind farm in Victoria. These filters are, at the date of publication, the largest and highest voltage C-type filters installed in Australia.

Ensuring adherence to strict power quality standards at the connection point to a wind farm consisting of more than 120 wind turbine generators, three 132 kV collector substations and transmission lines, and over 100 km of 33 kV cables, and delivering the necessary practical implementation requires the type of experience and specialist skills that ONE are known for.

132 kV C-type filters

The high level schematic of the C-type filter with aspects of protection philosophy is shown here:

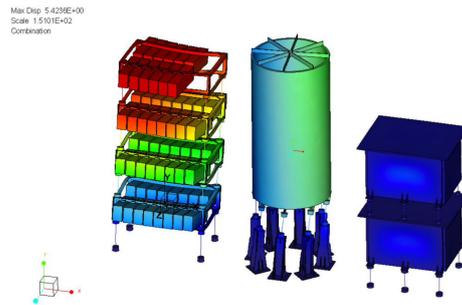


C-type filters have become ubiquitous in renewable generation projects for good reasons: excellent suppression of harmonic distortion across a wide range of frequencies (achieved by careful selection of tuned frequency and damping characteristics), low power frequency losses, small footprint, and relatively low cost when compared to alternative harmonic mitigation methods.

Challenges

There are many steps between selecting a C-type filter configuration in your favourite power systems analysis tool and delivering a reliable, safe and effective solution. Calculating appropriate continuous and short time ratings for all components, ensuring safe voltage gradients within

the bank, and selecting components from suppliers that can be trusted to support the project over the long term are some of the hidden challenges.



Add to this the ability to perform detailed finite element structural analysis for the complete installation and the need to manufacture, test, ship, and coordinate delivery to site in the midst of the logistic challenges of a global pandemic and the gap between concept and execution becomes clear.

Supply

GE performed overall detail design, manufactured, tested at works and shipped the filters that were delivered to site by ONE and installed, tested and commissioned with our assistance.



Contact us

ONE can assist you in feasibility analysis, project scoping, application engineering, design, delivery, installation and commissioning of any aspect of your reactive power or power quality project. Talk to us about your harmonic filter, capacitor bank, series and shunt compensation, whether dynamic and passive, low or high voltage.

Reach out to us at www.onegrid.com.au/contact to get reliable assistance with your power quality or reactive power solutions.