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PQCA NEWSLETTER

Issue 7 January 2016

2014/2015 Report Update

The most comprehensive PQ reports ever – 14 years in the making

The 2014/2015 Power Quality Compliance Audit (PQCA) reports have now been issued to most participants. These latest reports have been heavily modified to be more compliance orientated and for the first time reports have been prepared using limits specific to each client.

From a pilot study in 2001 with 72 sites to the Power Quality Compliance Audit (PQCA) of 2014/15 with over 4,000 sites the Long Term National Power Quality Survey (LTNPQS) as it was formerly known has continued to develop and provide participants with informative insights about their own networks as well as valuable benchmarking among participants throughout Australia. Participation in the PQCA benefits not only each participant but the industry as whole.

The 2014/15 report has seen a major shift in the focus of the report towards compliance and this is reflected in the changes to the report format. In moving to compliance focus a significant change is that limits used in the report are now jurisdictional based for each individual participant. In addition to different limits among jurisdictions, the report also now allows for different limits at different MV nominal voltage levels. Reflecting this, the limits used in each participant's report are included at the start of the report, and in the Network Reporting section there is now a separate section for each nominal voltage level. In addition, some charts in the Utility Reporting section now display as percentage of limit rather than the index value since there could be multiple limits for a given index depending nominal voltage. This enables the limit to be indicated at the 100% mark regardless of the limit in units of the index.

Additional changes have been made to improve the readability of the report. In the Executive Summary a new feature is the Summary of Compliance which provides a visually easy to read indication of compliance in the major disturbances at various nominal voltage levels. In the Network Reporting section a summary of site compliance for a given disturbance at a given nominal voltage level is also provided. Where possible the key information for a disturbance also appears on a single page to enable a quick evaluation of the performance related to that disturbance.

Formatting for most charts has also been updated for readability. Most of the detailed tables have been removed from the main Part A report, and this information can be found in other documents or online.

As always we value your feedback and comments on all aspects of the report (what information to include, formatting, etc) so that we can continue to ensure it provides the most useful information for our

participants in the successful operation of their businesses.

PQCA Expansion to Transmission Sector

A new frontier

PQA is continuously looking for opportunities to expand and develop the power quality compliance audit (PQCA) that has been so far aimed at Australian distribution network service providers (DNSPs). With a view to extending the PQCA to the Australian transmission sector, a power quality forum was held in February 2015 in Sydney where all Australian and New Zealand transmission network service providers (TNSPs) participated. Based on the interest shown at the forum by the representatives of the TNSPs, PQA is now in the process of negotiating proposals with a number of TNSPs to join the PQCA. Progress has been made in this regard with one TNSP already committed to provide data commencing from January 2015 and several others showing significant interest. The ultimate aim is that all Australian TNSPs join the PQCA over a period of time.

Noting the fact that there can be significant difference between operation at transmission and distribution, PQCA reporting techniques will have to modified to suit participation of TNSPs. TNSP reports will include similar analysis and benchmarking to that provided in the DNSP reports. The cost of power quality to TNSPs will also be included in the reports and this will bring further benefits to the TNSPs in running their businesses in a cost effective manner.

Visit by Dr Jan Meyer

Distinguished researcher visits UOW

Power Quality Australia and the University of Wollongong were fortunate enough to welcome renowned PQ expert Dr Jan Meyer of the Faculty of Electrical and Computer Engineering, Technische Universität Dresden, Germany for an extended stay in September 2015. Dr Meyer's visit was funded by the European Union's Erasmus Mundus programme which aims to enhance quality in higher education through scholarships and academic cooperation between Europe and the rest of the world.

During his stay, Dr Meyer worked closely with Power Quality Australia researchers investigating the statistical nature of power quality disturbances. The outcome of this work is expected to assist in determining the optimum number of sites required for statistical confidence to be maintained in PQ monitoring programs. Dr Meyer's stay was highly productive and further enhanced the already strong links between PQA and Dr Meyer's institution in Germany.

Extension of PQCA to New Zealand

New frontiers for PQ monitoring

In 2016, the PQCA will be marketed into New Zealand (NZ). Power Quality Australia (PQA) will be working with the University of Canterbury to introduce the benefits of joining the PQCA to the NZ distribution companies.

A pilot survey of some NZ distribution companies has taken place for some time in conjunction with the University of Canterbury to help establish PQ limits for the

NZ network. This will be an extension of that activity and will allow for the first time an international comparison of PQ data using the methods and techniques developed at the University of Wollongong.

A number of NZ distribution companies have shown some initial interest in the project.

AUPEC 2015

Highly successful power engineering conference held in Wollongong

The 2015 edition of the Australasian Universities Power Engineering Conference (AUPEC) was held in Wollongong during September 2015. The conference was a great success and offered researchers from around the world the opportunity to meet with colleagues, exchange research ideas and share new knowledge. The conference was organised under the auspices of the Australian Committee of Power Engineering (ACPE), the Institute of Electrical and Electronics Engineers (IEEE) Power Engineering Society (PES), the Australian Power Institute (API), University of Wollongong (UOW) and the Australian Power Quality and Reliability Centre (APQRC).

The 2015 Conference featured a strong technical program including technical sessions and keynote addresses covering topics of current interest in the area of Renewable Energy including Photovoltaic and Wind Power Systems, Smart Grid Development, Energy Conversion and Storage Technologies, Power Generation, Transmission, and Distribution, Energy System Monitoring, Power Electronics and Drives, Power Quality, and Predictive Maintenance. Overall 141 papers from all over the world were peer-reviewed, and finally 124 papers from 25 countries were accepted for presentation at the conference.

University of Wollongong Vice Chancellor Professor Paul Wellings Opening the AUPEC2015 Conference

AUPEC2015 Conference Chair Professor Danny Sutanto at the Conference Opening Ceremony

CIGRE C4.40 Report

PQA staff members make contribution to international PQ standards

Sarath Perera and Vic Gosbell have been appointed to CIGRE JWG 4.40 which has been recently set up to review and revise IEC power quality standards, specifically IEC 61k-3-6, -3-7, -3-13 and -3-14. The first three concern harmonics, flicker and unbalance in MV and HV power systems, while the last concerns all three PQ disturbances in LV installations. The meetings are convened by

Mark Halpin of USA and the next meeting will be held next year in Knoxville. Sarath and Vic are keen to contribute their experience in simplifying and refining the existing standards for applications in distribution systems, as described in the recent guidelines they developed for ENA. For example, they will encourage the use of the Voltage Droop concept in harmonic allocation as it will result in less data required, less guesswork and reduced scope for utility/customer conflict. This method can be applied to power system topologies with spurs and closed meshes with no complex calculation requirements.

The third Australian representative of the joint working group is Alex Baitch, an honorary professorial fellow of the University of Wollongong, so PQA should be able to have a significant impact on the new edition of these PQ standards.

Upcoming Training Courses

Basic Power Quality	Mid 2016
Advanced Power Quality	Late 2016

For information on upcoming training courses visit the training course website at: www.elec.uow.edu.au/apqrc/training.

Have you considered our Master of Electrical Power Engineering Course? Click here for more information.

Looking for Further Information?

If you would like more information on any of the articles published in this newsletter please contact Dr Vic Smith at the University of Wollongong on 02 42214737 or vic@uow.edu.au.