

# Power Quality Practitioner™ training for facility support teams PQP -2FS

“practitioner is one who brings an art or science to full realization”

## Power Quality Inc (USA)/Power Quality Thailand LTD

Practical Power Quality best practices and training for facility engineers, technicians, senior electrical workers. Engineers & technicians in customer service departments and technical support departments.

### Objective for this training:

Increase the knowledge and effectiveness of these teams to work with Power Quality, Power Reliability and Energy Efficiency issues internally or with Customers. Increase their effectiveness at documenting and resolving Power Quality and energy conservation issues in the most cost effective manner.

Session 1. (1 hr) Executive overview. Understanding the basics of Power Quality: Working economic impact of various PQ parameters on equipment and customer impact. Overview of the Power Quality parameters and Energy Saving technologies impact on Power Quality. (Non-technical overview)

Session 2. PQ parameter details/Definitions of Voltage stability, voltage imbalance, voltage sags, characteristic measurements, monitoring setup, the sources, causes, effects on voltage quality. Case Studies and Examples of instrument setups, data analysis and review for unacceptable conditions.

Session 2A. Methods, equipment and procedures to reduce the economic impact of Voltage stability, voltage imbalance and voltage sags. Identifying the most cost effective location and method to reduce or eliminate the effects of these events. Case studies and examples.

Session 3. PQ parameters details/definitions of Voltage transients (very fast, fast, slow) Characteristic measurement, set up for monitoring, sources, causes, effects on voltage quality. (case studies)

Session 3A. Methods, equipment and procedures to reduce the economic impact of Voltage transients (very fast, fast, slow). Identifying the most cost effective location and method to reduce or eliminate the effects of these transients. Case Studies and examples.

Session 4. PQ parameter details Voltage and current harmonic fundamentals in the electrical network. Voltage Harmonic power flow effects on voltage quality and economic impact. (case study)

Session 5. PQ parameters details Harmonics Characteristics measurement, setup for monitoring, harmonic data analysis and solutions. Case studies

Session 5A. Methods, equipment and procedures to reduce the economic impact of harmonic voltage and currents. Identifying the most cost effective location and method to reduce or eliminate the effects of harmonics.

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## Day 2

Session 6. PQ issues (Situations) that are not related to supplied voltage but impact the loads or the customers. These include Grounding/Earthing, electrical system design and construction and non-technical issues. case studies

Session 6A. Testing and troubleshooting grounding/earthing issues/problems examples and case studies

Session 7. An overview of the technologies of Power Quality and reliability solutions and mitigation for voltage sags. Case study of the most cost effective.

Session 8. International Standards related to Power Quality parameters, measurements, acceptable levels and terminology.

Session 9. PQ monitoring instruments history and a review of various brands and technologies of PQ instruments. A review of product differences, similarities, software capabilities and user friendly capabilities.

Session 10. Energy efficiency, energy conservation devise and their impact on Power Quality. Power Quality vs Energy efficiency. As energy efficiency projects and products are implemented they have a significant impact on the susceptibility to PQ situations and an impact on the current and voltage distortion within the facility.

Session 11. Energy saving devices do they work? how do they save energy? Are they cost effective?

Session 12. Loads and their sensitivity to Power Quality situations. How load designs are changing and the impact on both Power Quality and the sensitivity to Power Quality situations.

Session 13. Power Quality forensics, what happened, what was the root cause, how can we prevent it from happening again. Case Studies

Session 14. Summary, final case studies and review

About the author and senior trainer: Terry Chandler [Terryc@powerquality.org](mailto:Terryc@powerquality.org)

Terry Chandler is a pioneer in the Power Quality industry. His career in Power Quality Engineering began in the 1970's as systems application engineer for automatic test systems. He was one of the founders of ONEAC, a pioneer in the Power Conditioning market and Reliable Power Meters Inc where they developed the first PQ instrument that could record all PQ and energy parameters simultaneously. He founded Power Quality INC (USA) and Power Quality Thailand LTD. He has written more than 100 technical papers on various aspects of Power Quality and taught hundreds of engineers the various aspects of Power Quality. Mr. Chandler developed the Power Quality Practitioner™ courses for those engineers who are involved in the practical aspects of resolving Power Quality related situations.