

Power Quality Fundamentals PQ-101.1



PQ Logic Corporation
100 – 400 Applewood Cres.
Vaughan, Ontario, Canada L6A 0G8
905.482.4950 | www.pqlogic.com

Instructor: Pietro Manni, P.Eng.

Introduction	
Defining Power Quality	Cause & Effect Analysis
Structuring Concepts	Acute Events vs. Chronic Trends
Exercises & Case Studies	
Basic Concepts	
The Sine Wave	Power, Energy, Power Factor
Resistance & Reactance	Transient & Steady State Response
Exercises	
Wiring & Grounding Basics	
Grounding vs. Bonding	Single Point Grounding
HRG Grounding	Grounding in Data Centers
Grounding of UPS Systems	Ground Fault Considerations
Exercises & Case Studies	
The Power Quality Event Landscape	
RMS Deviations	Transient Events
Standards & Guidelines	Under-Voltage & Over-Voltage
Sags, Swells & Interruptions	Voltage Unbalance
Flicker	Harmonics
Oscillatory & Impulsive Transients	Rapid Voltage Changes (RVC)
High Frequency Noise	Equipment Tolerance Envelopes
Wave Reflection & Cable Lengths	Exercises & Case Studies
Power Quality Problems & Mitigation Techniques	
Variable Frequency Drives	Uninterruptible Power Supplies
Line Reactors	Power Conditioners
Passive vs. Active Harmonic Filters	dV/ dt Filters
Generator/UPS Interaction	Issues with Solar & Wind Power
Exercises & Case Studies	
Power Quality Surveys & Monitoring Basics	
Organizing and Effective Survey	Site Inspection
Equipment Maintenance Records	Equipment Performance History
Types of Equipment PQ Meters	Efficient Setup of PQ Meters
Event & Data Interpretation	Effective Report Setup
Examples	

Seminar Description:

This two-day workshop covers all the essential concepts of Power Quality analysis as well as the strategic thinking needed to establish a sound root-cause-analysis approach to problems. The range of topics spans from key sine wave markers all the way up to harmonics, transient analysis, and monitoring.

About the Instructor:

Pietro Manni is the founder of PQ Logic Corporation, a PEO registered engineering firm based in Toronto, Canada. Since 1996 he has devoted his practice to the study of Power Quality. He has experience in innovative computer-based modelling techniques, needed to understand and solve complex problems. His most recent projects include harvesting energy from DC transit systems as an integral part of a Micro-Grid network and mitigating the effect of utility capacitor switching transients on large industrial variable frequency drives. With over 200 major projects under his supervision, his firm has provided consulting services for clients in the industrial, commercial, medical, government, military, and nuclear areas worldwide. Parallel to his consulting work, Mr. Manni conducts advanced engineering training and delivers lectures in power systems to audiences and other consultants all around the globe. Mr. Manni is a registered professional engineer in the province of Ontario, Canada.