



PQI Electrical & Automation

Power Quality &
Automation, built for
industry.



Innovative Power Quality Solutions
Made In India | For Indian Industries



ABOUT US

Innovation with purpose: practical solutions, reliable support, and value you can feel.

PQI Electrical & Automation (Power Quality Innovation) is a trusted solution provider in the field of Power Quality, Energy Efficiency, and Industrial Automation. Based in Pune, we specialize in designing, manufacturing, and commissioning advanced electrical systems tailored to enhance energy performance and reliability for industrial and commercial clients.

Our expertise covers a wide range of products and services, including:

- APFC Panels & Harmonic Filters (Active & Passive)
- Static Var Generators (SVG / ASVG)
- Automatic Power Factor Correction Systems
- Power Quality Audits, Energy Audits & Energy Monitoring Solutions
- Custom LT Panels & Distribution Boards
- LV Control Panels
- ARC Flash Study
- Static & Servo Voltage Stabilizers (5KVA – 2000KVA)

With a team of qualified engineers and strong technical experience, PQI focuses on delivering innovative, reliable, and cost-effective electrical solutions that help our customers achieve energy savings, improved system efficiency, and compliance with power quality standards.

We are committed to:

- ✓ Ensuring high-quality engineering and workmanship
- ✓ Providing responsive after-sales support
- ✓ Building long-term relationships based on trust and performance

PQI Electrical & Automation – Power Quality Innovation that Drives Efficiency.



Active Harmonic Filter

- ❖ Available Range upto 200Amp. (30/50/75/100/150/200A).
- ❖ 3 level Topology
- ❖ Current harmonic mitigation upto 51st order.
- ❖ Direct solutions upto 800Urms grid supply.
- ❖ Compliance with IEEE 519
- ❖ 100% Leading and Lagging reactive power compensation.
- ❖ Compatible with backup power sources like UPS, Diesel Generators



ASVG Module

- ❖ Range upto 150kVAr (30kVAr /50kVAr/75kVAr/ 100kVAr)
- ❖ Leading and Lagging reactive power compensation.
- ❖ 50% capacity available for harmonic mitigation
- ❖ Harmonic mitigation upto 15th order
- ❖ 100% capacity for Active load balancing
- ❖ Neutral compensation also available



SVG Module

- ❖ Range upto 150kVAr (30kVAr /50kVAr/75kVAr/ 100kVAr)
- ❖ Leading and Lagging reactive power compensation.
- ❖ 100% capacity for Active load balancing Neutral compensation also available
- ❖ Modular solution for future expansion

Power Factor Correction

Products



etaULTRA APFC Controller

- ❖ 16-Step Intelligent PF Control
- ❖ Auto / Manual Operation
- ❖ Fast & Accurate Response
- ❖ True RMS Measurement
- ❖ LCD Display with Alarms
- ❖ Auto CT Polarity Detection
- ❖ RS-485 Modbus Communication
- ❖ Compact & User-Friendly Design
- ❖ Suitable for rapidly varying loads
- ❖ Alerts for OV, UV, capacitor failure, and THD
- ❖ Clear visualization of parameters and status



Smart APFC Controller

- ❖ Intelligent and smartseries APFCrelays.
- ❖ Available up to 16 Stages in 144x144MM & 96x96MM.
- ❖ Sensitivity up to 20mA of CT secondary. Automatic
- ❖ Setup and steps recognition. Auto Phase and CT
- ❖ Polarity Corrections. RTC based compensations.
- ❖ Available in 1CT & 3CT sensings. RS-485
- ❖ Communication Protocols.



Capacitor Duty Contactors

- ❖ Specially designed for capacitor switching
- ❖ Pre-charging resistors to limit inrush current
- ❖ Long electrical & mechanical life
- ❖ Arc-free and noise-free operation
- ❖ High making & breaking capacity
- ❖ Suitable for APFC panels
- ❖ ISI & IEC compliant for reliable performance

Power Factor Correction

Products



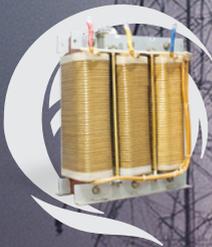
Thyristor Module

- ❖ Available from 5kVAR to 100kVAR models.
- ❖ Inbuilt Active Zero voltage sense logic allows switching
- ❖ Intelligent data loggers storing and displaying all electrical
- ❖ Made from high-grade semiconductor devices
- ❖ 1500,1800 & 2200PIV



Detuned Reactor

- ❖ Range: 5-100 kVAR / 440V / 690V / Tuning: 7% & 14%
- ❖ Windings: Copper / Aluminium
- ❖ High-temperature materials with high insulation
- ❖ VPI treated for durability
- ❖ Multi-strand conductors for better heat dissipation
- ❖ Suitable for APFC, Hybrid APFC, and Harmonic Filter Panels



Shunt reactor

- ❖ Available from 2 Kvar to 50kVAR in Copper and Aluminium windings.
- ❖ Available in 440V for 1 phase & 3 phase leading compensation.
- ❖ Losses less than 5W per kVAR.
- ❖ Thermal switch embedded in winding for over temperature protection.



Power Capacitors

- ❖ Selfhealing MPP Design.
- ❖ From 1kVAR to 50kVAR.
- ❖ APP & MPP Design.
- ❖ Available in 440, 480 & 525V Range.
- ❖ Life >1,300,000 Hrs.
- ❖ IP-20 Design ensures protection against accidental finger contact.
- ❖ Better heat dissipation.

Smart Hybrid Power Factor Correction Panel



SmartPQ DynamicVAR Series

A next-generation reactive power compensation system that combines Automatic Power Factor Correction (APFC) with Static VAR Generator (SVG) technology. This hybrid design ensures precise power factor correction, harmonic mitigation, and enhanced energy efficiency for industrial and commercial installations.

Range

- Rating: 50 kVAR to 2000 kVAR
- Voltage: 415 V / 525 V / 690 V, 3-Phase, 50 Hz
- Control: Microcontroller / PLC-based Intelligent System
- Type: Hybrid (APFC + SVG) / Standalone SVG / APFC Panel

Key Features

- Intelligent real-time power factor correction up to unity
- Automatic switching of capacitor stages with zero-cross control
- Dynamic compensation through SVG for rapid response (<20 ms)
- Harmonic mitigation and improved waveform quality
- User-friendly HMI / Touchscreen interface
- Data logging & communication via Modbus / Ethernet
- Compact modular design with high thermal efficiency
- Suitable for non-linear and fluctuating loads



Smart Hybrid Power Factor Correction Panel



Active + Passive = Perfect Power Quality

An intelligent mix of active and passive solution — for cleaner power, higher efficiency, and reliable system performance.



Power Quality Audit (Harmonic Analysis)



Advanced PQ Audit Features

- Real Time Monitoring
- Waveform Capture and Analysis
- Voltage & Current Measurement
- Power Factor Analysis
- THD & Individual Harmonic Analysis
- Unbalance Analysis
- Power Quality Indexing (As per IEEE519)

PQ Audit Tools & Equipments

- Power Quality Analyses (Kryakard ALM36, Fluke 1738)
- Software (Power Quality Analyzer)
- Current Probes & Voltage Probes
- THD & Individual Harmonic Analysis
- Unbalance Analysis
- Power Quality Indexing (As per IEEE519)

PQ Audit Report

- Executive Summary
- Site Information & Audit Scope
- Measurement Result & Analysis
- Recommendation for Improvement as per IEEE-519
- Energy Saving Opportunities
- Cost Benefit Analysis
- Action Plan & Implementations roadmap



I-THD & V-THD Limit As per IEEE-519-2014

Voltage distortion limits		
Bus Voltage at PCC	Individual Voltage Distortion	V_{THD}
$V < 1.8kV$	5.0%	8.00%
$1.8kV < V < 15kV$	3.0%	5.00%
$15kV < V < 151kV$	1.50%	2.50%
$> 151kV$	1.00%	1.50%

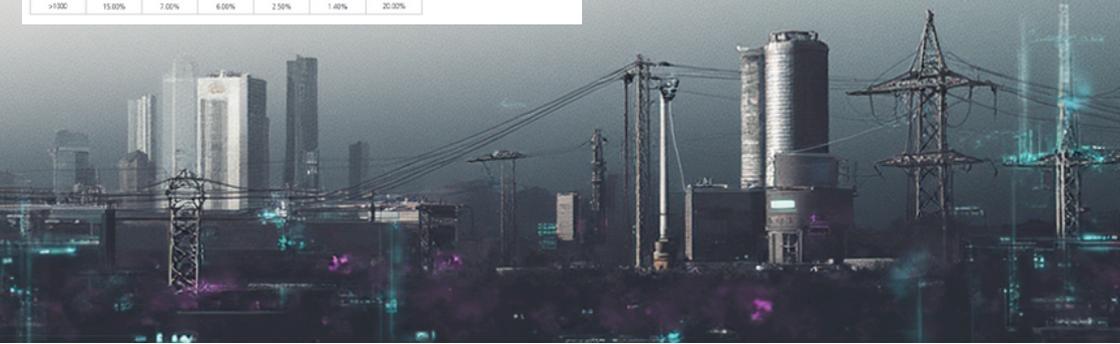
I_{sc} = Maximum short circuit current at PCC I_L = Maximum Demand Load circuit current at PCC

Maximum Harmonic Current Distortion in %						
Individual Harmonic Order (Odd Harmonics)						
h/L	3-h-11	11-h-17	17-h-23	23-h-35	35-h-50	TDD
<20	4.00%	2.00%	1.50%	0.60%	0.30%	5.00%
20-50	7.00%	3.50%	2.50%	1.00%	0.50%	8.00%
50-100	12.00%	4.50%	4.00%	1.50%	0.70%	12.00%
100-1000	12.00%	5.50%	5.00%	2.00%	1.00%	15.00%
>1000	15.00%	7.00%	6.00%	2.50%	1.40%	20.00%

$$I_{FLA} = \frac{AVA \times 1000}{E_{L-L} \times \sqrt{3}}; I_{SC} = \frac{I_{FLA}}{\%Z}$$

Standards & Guidelines

- IEEE-519



ARC Flash Study



Study Objective

- Evaluate Arc Flash Hazards at Electrical Equipment
- Calculate Incident Energy Levels (cal/cm²)
- Define Arc Flash Boundaries & Safe Working Distance
- Recommend Suitable PPE Category
- Ensure Personnel & Equipment Safety as per Standards

Applicable Standards & Guidelines

- IEEE 1584 – Arc Flash Hazard Calculation Guide
- NFPA 70E – Electrical Safety in the Workplace
- OSHA 29 CFR 1910 Subpart S – Electrical Safety
- IEC 61482 – Protective Clothing against Arc Flash

Arc Flash Study Process

- Collection of System Data (SLD, Transformer, Cable, Relay Settings)
- Short Circuit Analysis (Max / Min Fault Level Calculation)
- Protective Device Coordination (TCC Plot & Relay Setting Review)
- Arc Flash Incident Energy Calculation (at Each Bus / Equipment)
- Arc Flash Boundary & PPE Level Determination
- Risk Assessment & Safety Recommendations

Study Inputs Required

- Single Line Diagram (SLD)
- Transformer Rating & Impedance
- Cable Length & Size
- Breaker / Relay / Fuse Details & Settings
- Load Data & Operating Voltage

Study Outputs / Deliverables

- Arc Flash Hazard Report (per Equipment)
- Incident Energy (cal/cm²) & Arc Flash Boundary (mm / meter)
- Recommended PPE Category (Cat 1 to Cat 4)
- Time-Current Characteristic (TCC) Curves
- System Coordination Review
- Label Design for Each Panel / Equipment

Mitigation & Safety Recommendations

- Optimize Relay / Breaker Settings
- Use Arc Reduction Maintenance Switch (ARMS)
- Implement Zone Selective Interlocking (ZSI)
- Install Arc Flash Relays or Fast-Trip Devices
- Use Remote Racking & Operation Systems
- Review PPE & Training Requirements

Final Report Includes

- Optimize Relay / Breaker Settings
- Use Arc Reduction Maintenance Switch (ARMS)
- Implement Zone Selective Interlocking (ZSI)
- Install Arc Flash Relays or Fast-Trip Devices
- Use Remote Racking & Operation Systems
- Review PPE & Training Requirements

WARNING

ARC FLASH AND SHOCK HAZARD

FLASH PROTECTION	SHOCK PROTECTION
6.1 Flash Hazard = 18 inches	480 VAC
Flash Boundary: 84 inches	Glove Class: 0
Available Fault Current: 29 kA	Limited Approach Boundary: 63 inches
	Restricted Approach Boundary: 12 inches

NOTE: WHEN AN INCREASED LEVEL ABOVE OF INCIDENT ENERGY OR ARC FLASH HAZARD EXISTS:

Recommended PPE for Flash and Shock:
Clothing with an arc rating greater than the incident energy. i.e. Shirt and Pants, Hard hat with Face Shield & Sideburns (or hood), Safety Glasses or Goggles, Hearing Protection, Rubber Insulating Gloves with Leather Protectors, Leather

Bus Name: _____ January 7, 2021

WARNING

**Arc Flash and Shock Hazard
Appropriate PPE Required**

FLASH PROTECTION	SHOCK PROTECTION
Incident Energy at: 18 in	Shock Risk When Cover is Removed: 480 VAC
Min. Arc Rating: 0.45 cal/cm ²	Limited Approach: 42 in
Arc Flash Boundary: 10 in	Restricted Approach: 12 in
Glove Class: 00	Bus Name: _____

PPE: Suit & pants or coveralls, Hardhat with face shield or hood and face & neck hat with safety glasses + hearing protection

PNL P-5

Print Dev: 1003 BS-18 LAB PNL





Our Clients mahindra



LEAR



Mira Bhayandar
Municipal Corporation



GET IN TOUCH

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