POWERSIDE®

# Power Quality Engineering Services

## For Specifying, Designing & Operating Power Systems

The design of any facility or infrastructure project requires planning for reliable power systems—and increasingly, it demands a deep understanding of power quality.

Because power quality affects every layer of system performance, including:

- **Safety and reliability**
- **Compliance**
- **Equipment functionality**
- **Operational stability**

As the demands on power systems continue to increase, even the most robustly engineered designs can encounter unexpected issues if the complexities of power quality aren't fully considered. That's why specialized, power quality engineering expertise is a competitive advantage.

### Power Quality Engineering Services That Strengthen Your Team

Powerside provides specialized engineering services focused exclusively on power quality. We support engineering firms, consultants and industrial clients in delivering reliable, standards-compliant solutions for complex power systems. Whether it's for ongoing design support, root cause investigation or the resolution of critical power quality events, our team enhances your technical capabilities and ensures the performance and stability of your electrical infrastructure.

### Every Power System is Unique—So are Our Solutions

No two power systems behave the same—each presents its own set of dynamic conditions, constraints and challenges. At Powerside, we leverage decades of field experience across a wide range of industries to deliver solutions tailored to your specific system. Our engineers work closely with your team to understand the full technical context of your project, providing detailed modeling, system analysis and diagnostics for targeted recommendations and engineered solutions.

## Expertise That Plugs In

Our Engineering Services cover a variety of analyses and simulations that help you design, rate, specify, mitigate and comprehend electrical power system response. Take a deeper look at:

**Power Flow:** Load flow, overloads, voltage regulation, reactive power requirements, equipment ratings and power factor

**Short Circuit:** Fault levels, equipment duty and system strength

**Protection Coordination:** Evaluation of protective devices to balance protection, selectivity, sensitivity and speed respecting standards such as C37.99, IEEE 242

**Motor Starting:** Voltage sag mitigation, voltage level and flicker compliance, stalling prevention, motor startup capacitor sizing

**Harmonic Distortion & Resonance:** Detection, resonance avoidance, damping, filtering and mitigation based on IEEE 519 and/or utility standards

**Harmonic Filter Design:** Component specification and final recommendations on harmonic filter designs based on IEEE 1531, IEEE 18

**Power System Dynamics:** Instability, subsynchronous resonance, voltage response, ride-through capability

**Transients:** Over-voltages, switching transients, inrush currents and resonance based on IEEE 3002.9

**Power Factor:** Penalty avoidance, compliance, billing reduction, var compensation, return on investment (ROI) calculations; IEEE 3002.2, IEEE 141

**Power Quality:** Evaluations, troubleshooting, event analysis, distortion, harmonic compliance, sag/swell impact, interruptions/outages; IEEE 1250, P1159

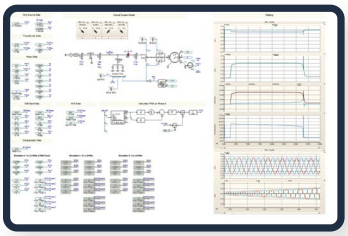
**Load Shedding:** Frequency recovery, load prioritization and timing, generator status and sizing

**Voltage Regulation:** Load allocation, transformer tapping, var compensation, flicker compliance

**Voltage Imbalance:** Load and system imbalance, single-phase compensation and load balancing

## Tools & Diagnostics for Deeper Insight

When power events happen, fast and accurate diagnosis is critical. Stay ahead of issues—and on top of power quality—with our tailored consultative approach and proprietary, state-of-the-art monitoring and analysis tools.

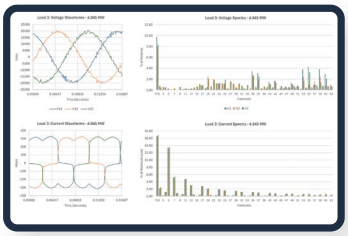


### Motor Starting Simulation

Time domain-based modeling and custom software tools for specifying MV capacitor and filter banks


### Power System Modeling & Analysis

Detailed analysis for modeling and simulation of power system



### Harmonic Distortion Analysis

Analysis of simulated or field-captured power quality data for compliance and mitigation

## Let's Work Together on Your Next Project

Reach out today to talk about how Powerside's Engineering Services can support your next project's success.

**powerside.com/engineering-services**

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