

GENERAL PRESENTATION

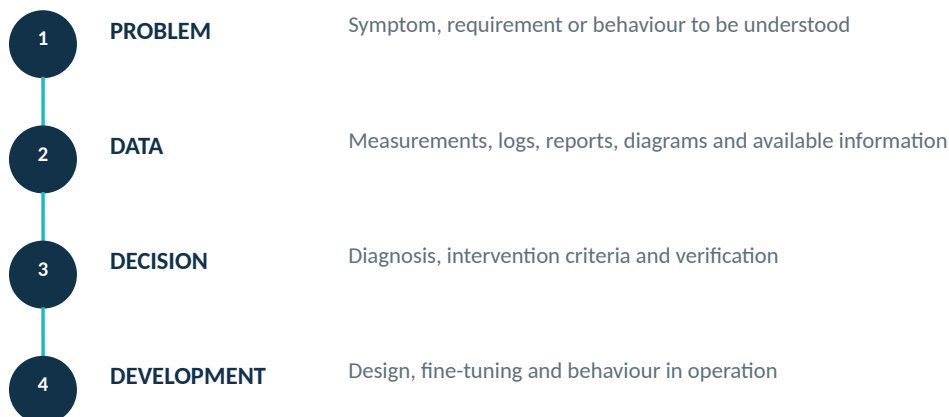
Engineering solutions for electrical systems

Diagnostics • Power Quality • Data, measurements & monitoring • Product development

Studio PQM supports companies, technical managers, maintenance teams and manufacturers in analysing electrical issues, using data and developing technical solutions.

Data, measurements and technical expertise to support sound, verifiable decisions.

A TECHNICAL PROCESS



We start with the problem, before choosing the solution.

AREAS OF EXPERTISE

Studio PQM's activities are integrated when a problem requires different perspectives: diagnostics, measurements, monitoring and technical development.

01

ELECTRICAL ISSUE DIAGNOSTICS

Machine stops, resets, recurring faults and abnormal behaviour.

02

POWER QUALITY ANALYSIS

Harmonics, unbalance, flicker, voltage dips, overvoltages and other power quality phenomena.

03

MEASUREMENT REVIEW

Technical review of reports, recordings and existing data to guide further analysis and corrective actions.

04

ENERGY USE AND MONITORING

Load profiles, energy use, key electrical parameters and support for monitoring systems.

05

PRODUCT DEVELOPMENT

Design, verification and fine-tuning of equipment and solutions for electrical systems.

06

MEASUREMENT SYSTEMS

Measurement architecture, instrument selection, data acquisition and management.

THE METHOD

From the right data to useful decisions. Measurements are used when they help distinguish cause, effect and events occurring at the same time.

1

Frame the problem

Symptoms, recurrence, consequences and operating conditions.

2

Review what is already available

Logs, measurements, reports, diagrams, photos and available records.

3

Define the useful measurement

Only when it answers a specific technical question.

4

Correlate events and process

Relate electrical data to system and process behaviour.

5

Guide and verify

Support the technical decision and verify its effects.

TYPICAL OUTPUTS

measurement plan

data analysis

technical report

cause hypotheses

intervention criteria

before/after verification

Guiding principle: first assess what is already available, then measure only what is needed.

DIAGNOSTICS AND POWER QUALITY

The symptom shows where the problem appears. Measurement helps determine whether the cause is at the same point or elsewhere.

SYMPTOM

- resets and trips
- process stoppages
- alarms with no obvious cause
- recurring faults



CHECKS

- voltage dips and short interruptions
- harmonics and unbalance
- electrical transients
- load-system interactions



EVIDENCE

- waveforms and trends
- time correlation
- comparison between sections
- before/after data



DECISION

- Separate cause from effect.
- Define the appropriate technical next step.
- Verify the effectiveness of the intervention.

The failed component may be the victim, not the cause.

Further reading: “Electrical Diagnostics and Power Quality” brochure

DATA, MEASUREMENTS AND MONITORING

A new measurement campaign is not always required. The first step is to understand what information already exists and whether it answers the technical question.

1

AVAILABLE DATA

Reports • logs • recordings • existing measurements

Review existing information critically and identify anomalies, limitations and missing data.

2

MEASUREMENT AND MONITORING

Load profiles • energy use • voltages • electrical parameters

Define parameters and acquisition times according to the problem, avoiding unnecessary measurements.

3

MEASUREMENT SYSTEMS

Architecture • instruments • acquisition • data management

Organise measurements that remain useful over time and are aligned with technical and operational objectives.

Data becomes valuable when it answers the right technical question.

PRODUCT DEVELOPMENT

Technical support for the design, verification and fine-tuning of equipment and solutions for electrical systems.

1

DEFINE

Technical and application requirements

System and product constraints

2

DESIGN

Architecture and sizing

Standard or tailored solutions

3

VERIFY

Analysis, simulations and testing

Prototype testing and fine-tuning

4

VALIDATE IN OPERATION

Integration into the electrical system

Measurements and behaviour in operation

FROM TECHNICAL REQUIREMENTS TO REAL EQUIPMENT BEHAVIOUR IN THE ELECTRICAL SYSTEM

Product development combines design, verification and knowledge of real application conditions.

REAL CASES: FROM DATA TO DECISION

Concise examples of completed work; full case studies are available for relevant follow-up.

SECTION COMPARISON

Two electrical sections, two different issues

TDD 10% / 22%

EVIDENCE

Simultaneous measurements showed different current distortion levels and events originating from the supply network.

DECISION

Separate interventions on the internal system from the management of supply events.

SHORT-DURATION EVENT

Regular average values, real anomaly

≈ 1 cycle

EVIDENCE

Waveforms revealed a transient lasting about one cycle, not identifiable from RMS trends alone.

DECISION

Correlate the event waveform with machine behaviour.

INFRASTRUCTURE

Harmonics and power factor correction

THD I ≈ 40-60%

EVIDENCE

The measurement campaign identified high current distortion and interaction with the existing power factor correction system.

DECISION

Intervention defined and sized using actual system data.

Case studies on the website and PDF case study sheets provide the next level of detail.

HOW TO START

The first step is to describe the problem clearly. Before selecting instruments or solutions, define what information is needed to support the technical decision.

1

Describe the symptom

What happens, when, how often, and with what consequences.

2

Share what is already available

Logs, measurements, reports, diagrams, photographs, alarms and operating conditions.

3

Define the useful next step

Data analysis, a measurement campaign or targeted technical support.

WORKING PRINCIPLES

INDEPENDENCE

PROPORTIONALITY

COORDINATION

VERIFICATION