

ADVANCED POWER QUALITY ANALYSIS



Automate analysis of your power quality to cut energy costs and reduce the risks of equipment damage and failure

Emerging risks to heavy users of electricity

Consumers face growing risks from:

1. Rising energy costs
2. Problems caused by poor power quality

The rapid increase in electronic loads has increased instability in the grid and on private distribution networks. As electric vehicles become commonplace, this problem will get worse.

The true cost of poor power quality

Poor power quality:

1. Causes electrical equipment degradation and failure
2. Stops production lines
3. Increases maintenance and equipment replacement costs
4. Increases energy use

The Electrical Power Research Institute calculated that poor power quality cost US businesses between \$119-188bn in lost revenue with 4% of companies reporting annual costs of 10% or more of annual revenue. Poor 'Power Quality' is estimated to cost industry and commerce in the EU in excess of 150 billion euros per annum [1].

Poor power quality increases operating risks and business costs. Power Quality problems are rarely identified and treated, in part due to the cost and difficulty of acquiring and analysing electrical data.

Power Quality analysis and ongoing risk management

RPQ's engineers have decades of experience solving complex power quality problems. Our **Remote Power Quality Analytics** Platform analyses data from your fixed metering systems to:

1. Identify existing Power Quality problems
2. Identify emerging problems including upstream changes and failing systems
3. Provide clear, actionable information to help solve these problems
4. Capture events and seasonal demands
5. Providing ongoing analysis and support
6. Do this at a fraction of the cost of a typical site study

To learn more about the RPQ Power Quality Analytics Platform, contact:

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[1] www.leonardo-energy.org; European Power Quality Survey Report; Jonathan Manson & Roman Targosz; 2008

Case Study: Paper Mill

Misinterpreting the true loading of a transformer by simply looking at the Apparent Power (kVA) is increasingly common. The bar chart below gives an example of an industrial application following the overheating and catastrophic failure of the supply transformer. The cost associated with each failure was approximately £1.5 million (x2 failures = £3 million).

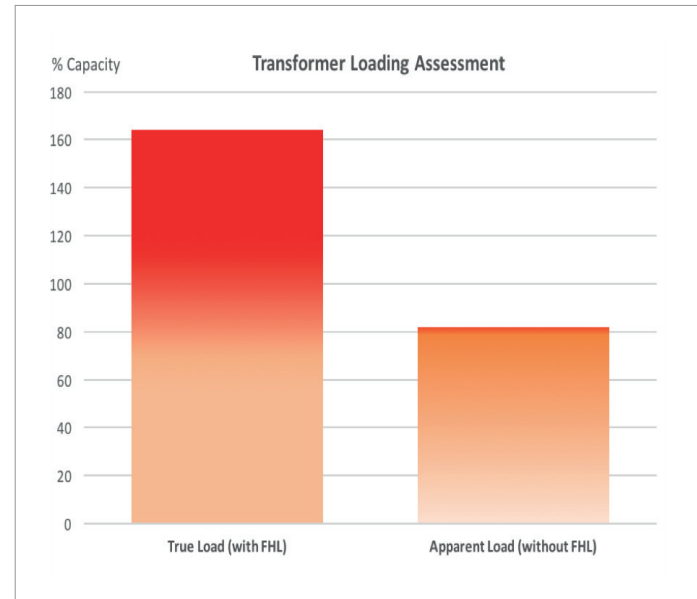


The apparent loading was 83% during typical peak utilisation.

However, a detailed assessment of the harmonic losses and derating effect revealed that the actual load was over 160% of the transformer rating.

In recent years, industry has invested heavily in fixed metering systems, many of which are capable of harvesting data that can be used to identify problems and assess risks. In the majority of cases this data is not utilised. The RPQ reporting facility has been developed to complement existing metering systems and dashboard tools and provide valuable information to facility operators.

The cost of engineering solutions will vary. However for a typical application the cost of this integrated power quality watchdog is <0.1% of the annual energy spend.



Transformer loading/derating assessment using Harmonic Loss Factor (FHL)

The RPQ facility has a number of unique advantages

Reporting facility key features;

- Calculate true transformer loading and spare capacity.
- Voltage management assessment & calculation of potential savings.
- Site specific harmonic analysis and identification of mitigation solutions, as required.
- Power factor & reactive power assessment and identification of compensation, where applicable.
- Regression analysis to identify failing or undersized systems such as power factor correction and harmonic filtration.
- Calculate and monitor changes in upstream supply voltage and background harmonic voltage distortion.
- Detection of imbalance and migration required.
- Time stamped voltage events for association with plant & equipment failures.
- Capture of inrush current events and assessment against specific overload protection settings.
- Computation of transformer losses and energy savings associated with modern replacements.
- Ongoing monitoring & support.

This data is transmitted from your local area network to our secure servers and analysed remotely.

Reports are generated periodically or on demand, providing you with a detailed understanding of your power quality status, electrical consumption and potential savings.