



POOR POWER QUALITY COSTS EUROPEAN BUSINESS MORE THAN €150 BILLION A YEAR

Reliability and consistency of electricity supply is critical to many industrial and service activities. When the Power Quality is inadequate, business suffers. It is both surprising and alarming that companies often do not recognize that the causes of poor reliability are of their own making and that cost-efficient solutions are in their own hands. This was one of the main conclusions drawn from a European-wide survey in 2007.

SURVEY SHOWS SIGNIFICANT IMPACT ON COMPANY TURNOVER

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The 2007 survey was divided into two sub-samples: 'Industry' and 'Services'. Data analysis revealed that:

- **Several companies are losing up to 10 per cent of their turnover to poor Power Quality.** And even when poor Power Quality losses do not appear to be excessive as a percentage of the total turnover, they can still be large in absolute figures and comprise an important part of the budget of individual business units.
- **Total wastage due to poor Power Quality in the service sectors is almost certainly under reported.** The causes and consequences of poor Power Quality are often difficult to identify in service organizations. To cite just one example: how does one calculate the losses in productivity due to flickering lights and screens that affect the comfort and health of staff?

HOW MUCH ARE POOR POWER QUALITY EVENTS COSTING YOU?

The following average costs by type of poor Power Quality event were calculated from the survey results:

Surge or transient:	€120,000 - 180,000
Long interruption:	€90,000
Short interruption, service sectors:	€18,000 - 36,000
Short interruption, industry:	€7,000 - 14,000
Voltage dip:	€2,000 - 4,000



**PQ solutions
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THE TOTAL COST TO YOUR COMPANY IS OFTEN HIDDEN

Power Quality events often affect several different cost centres of an organization, as the following scenarios illustrate:

- For a continuous manufacturing process, an unreliable power supply not only slows down or damages production; it also leads to equipment damage and additional maintenance. Moreover, the staff involved can be left idle until the line is running again. Revenues are postponed, if not lost entirely, cash flow is affected, and the organization's reputation for product quality and supply reliability suffers.
- Power interruptions in a service sector organization affect the reliability of the service, a key deliver-able. The organization loses credibility, usually followed by the loss of clients.
- For an R&D organization, the cost of data loss due to power interruptions is usually much more than just the time wasted. It substantially affects intellectual property due to the loss of irreplace-able samples, experiment data, and any work not yet adequately backed-up.

According to the survey respondents, it is often a lack of inter-departmental communication that blocks accurate calculation and complete understanding of the total impact of a Power Quality event.

'Cost of poor Power Quality' Research Project

This European Copper Institute 2007 research project into the **economic consequences of unreliable electrical power for European business** covered industrial sectors representing over 70 per cent of the EU-25's economic output. It was partnered by several academic and commercial organizations. The survey consisted of **62 face-to-face interviews** among heavy users of electricity and organizations for which continuity of power supply is vital. Respondents were senior enough to have access to commercially sensitive information and to sanction its disclosure. **Rigorous statistical testing** confirmed the reliability of the survey results.

What is Power Quality?

Electrical power is perfect for end users if voltage and current are correctly balanced and describe a pure sinusoidal wave form. This can be distorted by disturbances such as interruptions, dips or surges, harmonic pollution, and interference. Power quality can be degraded by any of these phenomena.

EUROPEAN BUSINESS IS UNDER-INVESTING

The survey shows that poor Power Quality is seriously affecting business results in the industrial and service sectors. It amounts to a total loss of €150 billion annually in the EU-25.

The majority of the causes identified are avoidable since they stem from problems relating to the end users' own electrical systems.

The industrial sectors for which electrical power is critical to their operations only invest approximately €50bn annually in PQ solutions – this equates to a third of the costs incurred by them caused by poor power quality.

This survey demonstrates that PQ solutions often cost less than the financial losses they resolve. Since individual sectors are affected differently by PQ phenomena, the ECI has produced sector specific information sheets.

Do you know what PQ is costing your organization?

Your engineering management can contact us at <http://contact.leonardo-energy.org> to find out how the issues raised here may be affecting your company.