

MAXIMUM SYSTEM AVAILABILITY DEMANDS CONTINUOUS POWER SUPPLY

Power continuity failures often create costly domino effects for IT and telecom networks.

To achieve system availabilities of the order of the six “9”s and beyond, IT and Telecom service providers are totally dependent upon a continuous power supply. Power variations or interruptions create significant disruptions for sectors that are judged by the reliability of their services. Where the reliability of a system is only as good as its weakest link, built-in design redundancies have to be sufficient to guarantee that service.

The European Copper Institute’s (ECI) Power Quality Survey demonstrates that the IT and Telecom sectors underestimate the impact of power interruptions and other Power Quality (PQ) incidents. It further illustrates that there is insufficient system design redundancy built into the electrical power systems to guarantee this level of reliability.

A small PQ event can create substantial costs

A service interruption immediately generates substantial costs, particularly when service level agreements are involved. A power interruption not only has financial consequences in terms of equipment, maintenance, and personnel required to fix the problem. It also has an impact in terms of revenues, contractual agreements and customer satisfaction.

The consequences of power interruptions or variations include:

- ▶ **Costly customer claims.** With IT and Telecom companies expected to deliver a flawless service, any power interruption often results in costly claims and customer service credits.
- ▶ **Impact on business reputation.** A power continuity failure is liable to affect a company’s business reputation and therefore result in losing clients. Once a company’s reputation is dented, it takes far more time to restore it than it has to weaken it.
- ▶ **Immediate multi-site impact due to the very nature of IT networks.** The central data centre of an IT company feeds data to many computers around the world. When it stops running, data becomes unavailable to multiple locations; furthermore, revenue is lost as employees are at a standstill.
- ▶ **Expert technicians need to be called in to address the cause of the problem.** These additional, unscheduled and often out of contract man-hours are very costly.
- ▶ **Cost of servicing clients.** The cost of a single service call may seem insignificant. However, in the case of a telephone company with broad geographical coverage, the cost of these calls (particularly exchanges in remote areas) mounts up surprisingly quickly.
- ▶ **Electrical systems may need to be completely or partially redesigned.** The cost of redesigning an electrical system is higher than designing a system from scratch. However, both are cheaper than the problems they are designed to avoid or resolve.
- ▶ **Repairing subsequent damage to servers, switchboards, hubs, etc. is an expensive business.** Replacing IT or telecom equipment can be a considerable hit for a company’s budget, especially if it is unforecasted.

Resilient and robust design is key to keeping a data centre or telecom network up and running.





Unresolved power quality issues can have an immediate impact on an IT or Telecom company's reputation.

BLOWN TRANSFORMER COSTS DATA CENTRE 3 MILLION USD

A fire at a large data centre resulted in the sudden unavailability of a number of popular Web sites. The fire broke out following a blown transformer, which knocked out power to the entire building that hosted the servers. In order to get the system up and running again, power supply from the UPS and back-up generator also had to be stopped, resulting in an extended period of inconvenience for the public using the service. The cost of equipment damage and repairs apart, the incident is expected to cost the company some 3 million USD in service credits to customers.

POWER SUPPLY VARIATIONS COST TELEPHONE COMPANY MILLIONS PER EVENT

Due to its sheer size and geographical coverage, a telephone company incorporates vast amounts of data exchanges dependent on electrical systems. A large telephone company calculated that its systems' inability to cope with power surges or dips costs around €24 million per year for this type of event. Power variation issues are more likely to affect the remote and generally older local exchange facilities. These, as well as being less resilient, also cost more to service than more accessible units. The overall cost is based on the additional service calls to clients following power supply variations or interruptions.

Understanding the problems – designing the solutions

ECI's PQ Survey demonstrates that the majority of the PQ problems faced by IT and Telecom service providers could be avoided by better designed electrical installations. The solutions therefore lie very much in the sector's own hands.

Both electrical design engineers and their management were involved in this survey. They recommend a holistic approach to review all the issues at hand, based on three operational pillars:

- **Correct measurement**, to assess the full impact of power interruptions and why they are happening
- **Appropriate design** for the electric installations, to ensure system reliability and resilience
- **Considered investment** justified by assessing system renovation cost against the accumulated losses.

PROFITABLE INVESTMENT OPPORTUNITIES

IT and Telecom companies suffer unnecessary financial costs caused by electrical power systems that often cannot cope with a variable electric power supply and increasingly demanding power requirements.

- Have you ever experienced power outages?
- Have you assessed the impact on your business of disruptions caused by power interruptions?
- Are your clients 100% satisfied with the reliability of the service you are providing?
- Have you installed a monitoring system to check that your site is free of harmonics?
- Is your staff sufficiently trained to detect potentially damaging PQ issues?

ECI's PQ Survey has identified significant costs and wastage due to poor electric power supply in the IT and Telecom sectors. The Survey also shows that, by investing in up to 3 times the minimum design requirements and in buying the "top-of-the-range" power supplier agreement (specification that goes beyond the UpTime Institute Tier 4 classification for availability and equipment) a data centre can operate with a PQ problem free environment. This Survey also demonstrates that PQ solutions often cost less than the financial costs they eliminate.

Do you know what PQ is costing your organisation?

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.