Cesit Ingegneria S.P.A.
www.cesit.net

Electrical systems

Power Quality

The term Power Quality refers to the electrical network's ability to supply a flow of energy in which voltage and current can be represented by pure sinusoidal waveforms at 50 Hz or 60 Hz. Because of non-linear or other distorting loads, today's electrical networks are subject to frequent deviations from this ideal state.

Harmonic Pollution

Cesit Ingegneria S.P.A. offers its Customers a comprehensive Power Quality monitoring service both for systems in which power quality is critical and systems involving highly sensitive or disturbing loads, for the purpose of avoiding lost or inadequate service, equipment failures or disputes with local power distributors.

Harmonic pollution can also disturb equipment and compromise its performance, thus giving rise to the following problems:

- Overvoltages and overcurrents in the electrical network
- Overheating of cables, transformers and generators
- Reduction of energy efficiency
- Overheating of electronic equipment
- Tripping of circuit breakers and protection relays
- Malfunction of control systems
- Voltage distortion and consequent power factor variation
- Damage to power factor correction units caused by resonance
- Imprecision of measuring instruments
- Interference in telecommunication systems
- Neutral overload
- Generation of braking torque in rotating machinery
- Premature ageing of electrical equipment
- Poor performance of inverters in photovoltaic systems, resulting in reduced production efficiency.

The aim of power quality audits is therefore to monitor the interaction between the electrical system and the load system. This interaction must be considered in terms of the quality of the power supplied to the loads and the impact of the users on the supply system. On the one hand, electricity consumers are buyers of electricity of a certain quality, but on the other, the Customer's own loads can impact negatively on the electricity system, and are therefore also subject to evaluation in terms of quality. In view of the now extensive presence of electronic loads in power networks, the study of these interactions is a key aspect of system engineering and plays a crucial role both in terms of relations with power distributors and in terms of safeguarding the most sensitive systems and loads.

Targeted Services

Cesit Ingegneria S.P.A. is a dependable consultant capable of performing power quality analyses and at the same offering the following targeted services:

Cesit Ingegneria S.P.A. performs its monitoring and analyses with state-of-the-art instrumentation subject to constant calibration. It then provides detailed reports of measurements, accompanied by a wide range of graphs, tables and waveform snapshots.

Voltage and current waveform analysis (amplitude, frequency, phase)

Voltage and current waveform deformation analysis (DC offset, harmonics, interharmonics, notching and noise)

Monitoring of slow voltage variations (undervoltage, overvoltage, prolonged interruptions, fluctuations)

Measurement of voltage asymmetry

Monitoring of rapid voltage variations (voltage sags, voltage swells, interruptions)

Monitoring of voltage and current transients

Thanks to the many years' experience of its technical personnel, Cesit Ingegneria S.P.A. can also give you the right guidance for resolving possible problems, by adopting appropriate countermeasures or installing components and devices for eliminating disturbances, such as:

- Passive, active and hybrid filters for harmonics
- Power factor correction filters for reactive power compensation
- Static VAr compensators (SVCs)
- Saturable reactor fault current limiters (FCLs)

Power quality is an essential requirement for the types of load in widespread use in today's world of increasingly advanced technology. The vast majority of failures, low service levels, operating anomalies on devices and disputes with power distribution companies are connected with problems of power quality. Cesit Ingegneria S.P.A. is the right partner to ensure that you have high-quality power at all times.