



Power Quality – Electrical tests and calibrations

CIRCE owns the only laboratory accredited in Spain by ENAC (LME-CIRCE) with the join capacity to perform Electrical Calibrations and Power Quality tests with the maximum quality guarantees and excellence in the electric power distribution framework. CIRCE also provides customized measurement solutions in Smart Grids and wind turbines, as well as in the design and validation of algorithms for accurate and reliable Power Quality assessments.

Service offer

The service offer related to electrical tests and calibrations includes:





- 1** **Accredited** calibration of instrumentation in low voltage and low frequency.
- 2** **Accredited** tests on distribution grids and wind turbines, in accordance with the international IEC 61000-4-30 and EN50160 standards.
- 3** Analysis and proposal of mitigation of Power Quality issues.
- 4** Guidance and implementation of high-end Power Quality algorithms for new power quality analyzers.
- 5** Electrical tests aimed at the certification of power quality analyzers according to the IEC 62586-2 international standards.
- 6** R+D in new measurement methods applicable to complex power quality assessments and advanced solutions of measurement.

Flexibility in our work

We adapt our service offer to what is demanded by customers:

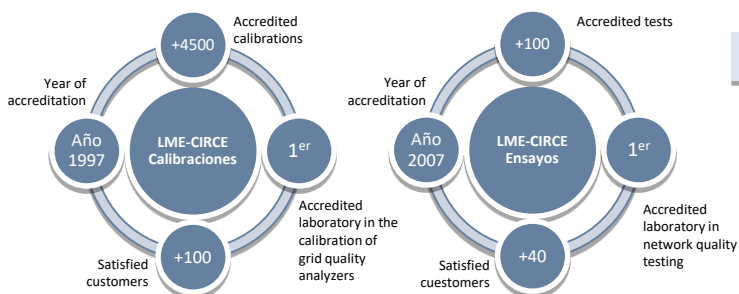
- 1** Monitoring of wind turbine production to verify if the operation of the controls implement in the machines is in line with expectations.
- 2** Analysis of incidents in industries derived from short duration dips in the supply voltage, harmonic problems, por grounding...
- 3** Verification of measurement algorithms in power quality analyzers (class A and S).
- 4** Power Quality campaigns through remote download.
- 5** Synchronized multipoint measurements to detect the propagation of quality grid phenomena and evaluate their incidence in the grid.
- 6** Advice on the selection of transducers and equipment for a precise evaluation of different Power Quality parameters and definition of technical requirements depending on the application.

Focused on:



-  Generation farms operators
-  Analyzers manufacturers
-  Maintenance managers in industries
-  Electrical measuring instrument users



Key figures



Available equipment

-  **LME-CIRCE Calibrations:** Fluke 8508A DMM, Fluke 6100A electrical power standard, Fluke 5502E calibrator, controlable power supplies, voltage dividers, etc.
-  **LME-CIRCE Tests:** class-A power quality analyzers, power transducers, 24-bits simultaneous DAQ cards, NI PXI systems, GPS receivers, etc.

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Objectives and Benefits

Benefits derived from a suitable power quality grid, through an adequate measurement campaign, are the following:

- 1** Optimization of production processes by eliminating stops as a result of a bad power quality (short-term dips and Rapid Voltage Changes).
- 2** Extended lifespan of assets through an adequate control of the quality grid. This is of vital importance in capacitor banks and transformers (harmonics).
- 3** Control and mitigation of harmonic resonances in the Common Connection Point (PCC) of electrical installations and ferro-resonances in power transformers.
- 4** Mitigation of sudden tripping of protection elements in electrical installations (earth leakage, overloaded lines, etc.).

Facilities and equipment

The LME-CIRCE, laboratory accredited by ENAC, has the most advanced equipment in terms of precision and accuracy. All standards and equipment used have their calibration certificate traceable to international standards according to ISO/IEC 17025



European R+D projects and collaborators

- 2018-2021** EMPIR FutureGrid II, "Metrology for the next-generation digital substation instrumentation".
- 2017-2020** EMPIR MICEV, "Metrology for inductive charging of electric vehicles".
- 2014-2017** EMRP Project "Sensor network metrology for the determination of electrical grid characteristics".
- 2010-2013** EMRP Project "Metrology for Smart Electrical Grids".
- 2008-2011** IMERA+ Project "Next Generation of Power and Energy Measuring Techniques".

Success stories

Throughout these years of activity, the LME-CIRCE has achieved several milestones, highlighting the following:

- 1** Development of the National Power Quality Standard for the CEM. Reference calibrator for high-end electrical power standards.
- 2** Development of the AIRE equipment, a digitizer/analyzer of metrological grade level.
- 3** Firmware development for microprocessors dedicated to the measurement of PQ parameters.
- 4** Realization of multipoint measurement campaigns to determine the propagation of PQ disturbances in the Walqa Technology Park (Huesca, Spain).
- 5** Development of new methods for the detection of voltage events, measurement of fluctuating harmonics and supra-harmonics through different Wavelet transform strategies.
- 6** Development and implementation of class F1 flickermeter algorithms according to IEC 61000-4-15 standard.

Main customers



CONTACT

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