
LABORATORIO CENTRAL OFICIAL DE ELECTROTECNIA
FUNDACIÓN PARA EL FOMENTO DE LA INNOVACIÓN INDUSTRIAL
High Voltage Technological Center
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LCOE LABORATORIES

TOUR

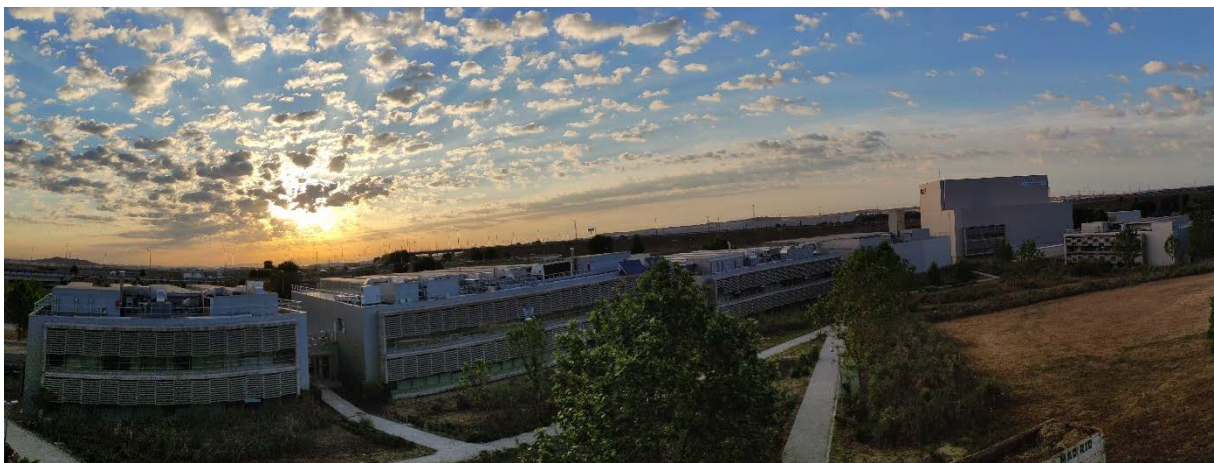


INTRODUCTION

The High Voltage Technological Centre of the Fundación para el Fomento de la Innovación Industrial is configured as a supporting tool for the industry and for the R&D&I activity in the electrical sector, in either of their several fields of action.

Our structure, staff and facilities, together with our experience, prestige, accreditations and national and international acknowledgements, make a place for us as an International reference in the high voltage and metrological sectors.

It is made up of the testing departments, either in their own facilities or on site, the metrology department, and the R&D&I department, all of them aimed to offer to our clients the highest quality service.



HIGH VOLTAGE LABORATORY

Our High Voltage Laboratory has two screened testing halls, the High Voltage one, sized 40 x 25 x 25 (h) metres, and the Medium Voltage one, sized 29 x 13 x 12 (h) metres, together with a climatic chamber sized 5.5 x 3 x 3 (h) metres.

The High Voltage hall has a power frequency generator up to 1 MV (50 Hz / 60 Hz), and an impulse generator up to 2.4 MV (lightning impulses) or 1.6 MV (switching impulses).

The Medium Voltage hall is divided in five testing areas, where it is possible to perform power frequency tests up to 150 kV, lightning impulse tests up to 400 kV, ratio and phase measurements on instrument transformers, both voltage and current types, high sensitivity partial discharges measurements in the Faraday cage, and performance tests over power transformers, such as measurement of short-circuit impedance, no load and load losses, temperature rise test, winding resistance measurement, induced overvoltage test, and so on.

The climatic chamber allows to make performance tests at extreme temperatures, simulating severe ambient conditions between -40 °C and +60 °C.



Impulse generator up to 2.4 MV

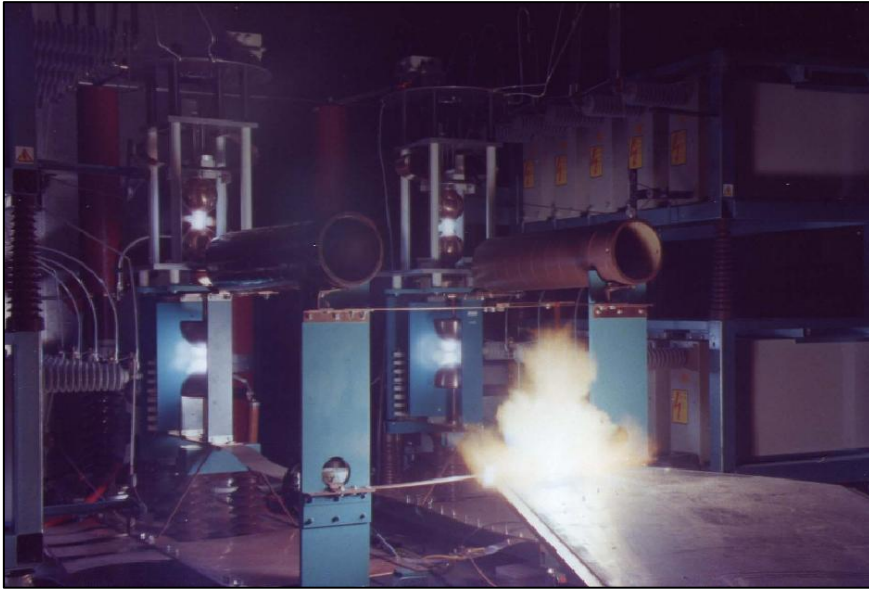


Power frequency generator up to 1 MV (50 Hz / 60 Hz)

HIGH CURRENT LABORATORY

The high current impulse laboratory is located in a separate, specific chamber from the general high voltage test facility. This chamber was designed by LCOE as an internal R&D project to meet the demand on Aircraft Lightning Direct Effect tests. Since the beginning, the high current laboratory has continued evolving by diversifying its test catalogue. Currently, this test catalogue includes Aircraft testing, high voltage surge arresters, lightning protection system components and wind turbine generators.

<i>WAVEFORMS</i>	<i>RATINGS</i>
<i>AIRCRAFTS</i>	
<i>Lightning Direct Effects</i>	
<i>High Current Testing</i>	All waveforms and zones defined by the standard
<i>High Voltage Testing</i>	Waveforms A and B up to 2000 kV Waveform D up to 1600 kV
<i>Lightning Indirect Effects</i>	
<i>Pin Injection Tests</i>	All waveforms and zones defined by the standard
<i>Cable Bundle Tests</i>	
<i>HIGH VOLTAGE SURGE ARRESTERS</i>	
<i>Distribution</i>	Up to Heavy Duty Distribution $Q_{rs} \geq 0.4$ C
<i>Substation</i>	Up to Substation Low. $Q_{rs} \geq 1$ C. $W_{th} \geq 4$ kJ/kV
<i>LIGHTNING PROTECTION SYSTEM COMPONENTS</i>	
<i>Waveform 10/350 μs</i>	Up to 200 kA



High current impulse laboratory



Aircraft Lightning Direct Effect tests

METROLOGY LABORATORY

Our Technological Centre has also an ENAC accreditation according to ISO 17025 for calibration in other areas, with unique capacities in Spain, in specific magnitudes as flicker measurements or the optical calibration area. The accredited areas are:

- Direct and low frequency voltage electrical area.
- Time and frequency.
- Optical.

Calibrations are aimed to numerous clients such as calibration laboratories, testing and quality control laboratories, assessment evaluation entities, manufacturers, engineering companies or installers from the low or high voltage electrical sectors. Passive standards (resistances, capacities and inductances), direct voltage references, high resolution voltmeters and calibrators, AC-DC transfers, current or voltage transformers and comparators, transformation ratio measuring bridges, capacity and dissipation factor measuring bridges, RLC and resistance measuring bridges may be highlighted among the different types of instruments that are often calibrated.

In the energy metering and wave quality area, power and energy analysers or flicker and harmonics meters are calibrated. In the industrial area, aimed to give service to engineering companies or installers, digital multimeters, clamps, electrical safety testers, ohmmeters, ground resistance meters, low voltage testers, residual current devices, tachometers and frequency meters among other devices are calibrated.

Optical area is aimed for calibration of lux meters and luminometers.



Low voltage calibration