

# **CALIBRATION LABORATORY**

**Accredited and ISO 17025**

**RF and Electric Instrumentation**



# CALIBRATION LABORATORY

## Accredited Permanent Calibration laboratory



00137

Signatory of EA and ILAC  
Mutual Recognition Agreements

<b>Measurable and Generable</b>	Frequency
	HF Power

<b>Field Strength</b>	Electric
	Magnetic

## ISO Permanent Calibration laboratory

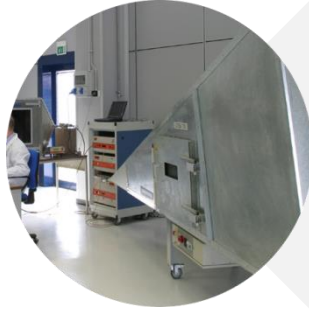
**ISO 9001**  
**ISO 17025**  
**QUANTITIES**

Voltage
Current
Current for Current clamps
Resistance
Capacitance
Temperature
Attenuation
Frequency
RF Power
VSWR
High Frequency Impedance
Electric field Strength
Magnetic field Strength
Pulses
Power Flux Density
Voltage Transients

# Accredited Permanent Calibration laboratory



ACCREDIA CALIBRATION CENTRE LAT N° 103



## ACCREDIA Accredited Calibrations UNI CEI EN ISO/IEC 17025:2018

Established in 1997, the TESEO Metrological Laboratory was Accredited by the National Metrological Institute in 1998 for calibration of RF quantities, and in 2003 for Electromagnetic Field calibrations. Equipped with two metrological rooms with different temperature-controlled levels, the Accredited Calibration Centre is today able to perform calibrations and checks on most of key instruments for EMC applications

<b>HF Power</b>	Generable : 10 kHz ÷ 100 kHz	from 10 nW to 5 mW
	Generable : 100 kHz ÷ 18 GHz	from 1 nW to 5 mW
	Measurable : 10 kHz ÷ 18 GHz	from 10 nW to 100 mW
	Measurable : 10 MHz ÷ 18 GHz	from 1 nW to 100 mW
	Measurable : 100 kHz ÷ 4 GHz	from 10 nW to 10 W

<b>Electric Field Strength (Field Probes)</b>	10 kHz ÷ 200 MHz	from 1 to 200 V/m
	200 MHz ÷ 3 GHz	from 1 to 60 V/m

<b>Magnetic Field Strength (Field Probes)</b>	10 kHz ÷ 200 MHz	from 2.65 to 530 mA/m
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<b>Frequency</b>	Generable: from 1 Hz to 18 GHz
	Measurable: from 1 Hz to 2.7 GHz



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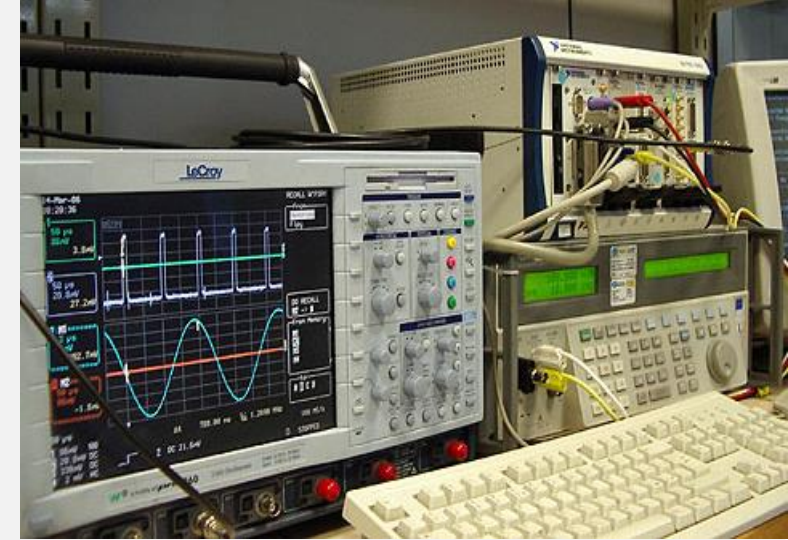
# Permanent Calibration laboratory



CALIBRATION CENTRE ISO 9001 – ISO 17025

<b>Voltage</b>	DC 0 ÷ 1020V; AC 1mV ÷ 1020V 10 Hz ÷ 500 kHz
<b>Current</b>	DC 0 ÷ 11A; AC 0.01µA ÷ 11A 10 Hz ÷ 10 kHz
<b>Current for Current clamps</b>	AC 0.01µA ÷ 1000A; AC 0.01µA ÷ 600A 10 Hz ÷ 1 kHz
<b>Resistance</b>	Short ÷ 330MΩ
<b>Capacitance</b>	330pF ÷ 1100µF
<b>Temperature (Thermocouples)</b>	-210°C ÷ 1370°C
<b>Temperature (Thermometric chains)</b>	-40°C ÷ 180°C
<b>Attenuation</b>	0dB ÷ 60dB 10 kHz ÷ 18 GHz
<b>Modulation</b>	AM 0%-100% - 10 Hz to 10 MHz PM 0%-100% - 10 Hz to 10 MHz

<b>Frequency</b>	1 Hz ÷ 20 GHz
<b>RF Power</b>	10 kHz ÷ 18 GHz +57dBm ÷ -60dBm
<b>VSWR</b>	10 kHz ÷ 18 GHz
<b>High Frequency Impedance</b>	10 kHz ÷ 18 GHz
<b>Electric field Strength</b>	5 Hz ÷ 18 GHz from 1 V/m to 10 kV/m
<b>Magnetic field Strength</b>	5 Hz ÷ 1 GHz from 200 mA/m to 80 A/m
<b>Power Flux Density</b>	10 kHz ÷ 3 GHz from 265 nW/cm <sup>2</sup> to 24 mW/cm <sup>2</sup>
<b>Pulses</b>	from 0 to 20 kV DC ÷ 2 GHz
<b>Voltage transients</b>	(min 500ps rise-time)
<b>Harmonic Distortion</b>	0 to 80 dBc 10 kHz to 18 GHz



## Calibrations according to the UNI EN ISO 9001:2015 quality system

Operating in ISO9001 and ISO17025 Quality System, TESEO uses for its Calibration activities First-Line and Second-Line Standards and validated Calibration Procedures allowing to perform calibrations and checks on measurement fields ranging from DC to 40GHz, for power levels up to 10kW and voltages over 30kV.

# On-Site Calibrations



CALIBRATION CENTRE ISO 9001 – ISO 17025

**Voltage** DC 0 ÷ 1020V; AC 1mV ÷ 1020V  
10 Hz ÷ 500 kHz

**Current** DC 0 ÷ 11A; AC 0.01µA ÷ 11A  
10 Hz ÷ 10 kHz

**Current for Current clamps** AC 0.01µA ÷ 1000A; AC 0.01µA ÷ 600A  
10 Hz ÷ 1 kHz

**Resistance** Short ÷ 330MΩ

**Capacitance** 330pF ÷ 1100µF

**Temperature (Thermocouples)** -210°C ÷ 1370°C

**Attenuation** 0dB ÷ 60dB  
10 kHz ÷ 18 GHz

**Frequency** 1 Hz ÷ 20 GHz

**RF Power** 10 kHz ÷ 18 GHz  
+57dBm ÷ -60dBm

**VSWR** 10 kHz ÷ 18 GHz

**High Frequency Impedance** 10 kHz ÷ 18 GHz

**Pulses** from 0 to 20 kV  
DC ÷ 2 GHz

**Voltage transients** (min 500ps rise-time)

## On-Site Calibrations according to the UNI EN ISO 9001:2015 quality system

Thanks to a Second-Line Standards equipment, TESEO can perform calibrations directly at Customer's facility. Thanks to this Service, the calibration process becomes more safe, avoiding to ship delicate equipment by courier, faster, by booking exactly the days for calibrations, as well cheaper, especially for medium/large instrument stocks.



# National Instruments Calibrations



NATIONAL INSTRUMENTS CALIBRATION ISO 9001 – ISO 17025



## NATIONAL INSTRUMENTS Calibrations According to UNI EN ISO 9001:2015

For years partner of National Instruments as Alliance Member, TESEO extends the services on NI products with calibration and adjustment of boards and measurement - acquisition systems. The TESEO Calibration Laboratory is equipped with NI validated procedures for calibration and readjustment.

**Voltage** DC 0 ÷ 1020V; AC 1mV ÷ 1020V  
10 Hz ÷ 500 kHz

**Current** DC 0 ÷ 11A; AC 0.01µA ÷ 11A  
10 Hz ÷ 10 kHz

**Temperature (Simulator)** -210°C ÷ 1370°C

**High Frequency Impedance** 10 kHz ÷ 18 GHz

**Resistance** Short ÷ 330MΩ

**Capacitance** 330pF ÷ 1100µF

**Attenuation** 0dB ÷ 60dB  
10 kHz ÷ 18 GHz

**Frequency** 1 Hz ÷ 20 GHz

**LF and RF Power** 10 Hz ÷ 18 GHz  
+57dBm ÷ -60dBm

**VSWR** 10 kHz ÷ 18 GHz

**Analog I/O Functions** 1 Hz ÷ 20 GHz

**Digital I/O Functions** 1 Hz ÷ 20 GHz



# AGE Preventive Maintenance and Calibration



ACCREDITED AND ISO 9001 QUANTITIES



## WE CONTRIBUTE TO IMPROVE END USER OPERATIONAL CAPABILITY

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Preventive Maintenance and Calibrations can be executed at military depot or in our premises based on the requirement.

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Turn Around Time and Service Level guaranteed increase significantly AGE availability to service aircrafts.

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Specialised team that can be deployed on-site worldwide.

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Full range of electrical, electronic, mechanical and hydraulic AGE within our scope.

# External Partners Calibrations



ACCREDITED AND ISO 9001 QUANTITIES



## QUANTITIES

*AC and DC Voltage*

*AC and DC Current*

*AC Current for Current clamps*

*Resistance*

*Capacitance*

*Inductance*

*Temperature*

*Time and Frequency*

*Pulses (ESD, Bursts, Surges)*

*Voltage/Current Ratio*

*Voltage transients*

*LF and RF Power*

*Optical Quantities*

*Attenuation*

*Gain for Amplifier*

*Antenna Factor for antennas*

*Electromagnetic Field Strength*

*Flux Density*

*Harmonic Distortion*

*AM and FM Modulation Capacity*

*RF Current for Clamps*

*VSWR*

*High Frequency Impedance*

*Illumination*

*Pressure*

*Sound*



**Italian Accreditation Body**



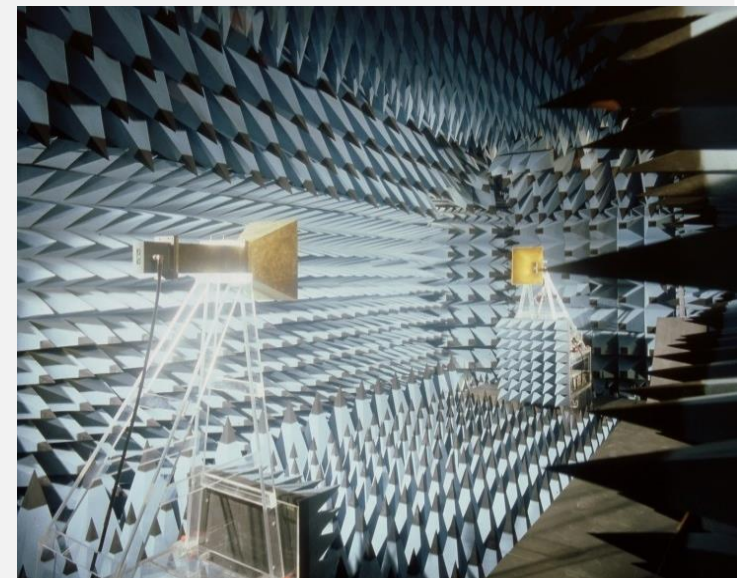
**Dutch Accreditation Council**



**Austrian Accreditation**

## ILAC Signatory Accredited Calibrations and UNI CEI EN ISO/IEC 17025:2018 Calibrations

Further than Accredited Calibration performed in his Accredited Calibration Laboratory, TESEO offers a wide range of Accredited Calibrations covering almost all the Electric and Electronic Quantities, thanks to exclusive collaboration with National and International Accredited Partners.



# Mechanical and Environmental Quantities



ACCREDITED AND ISO 9001 QUANTITIES



## QUANTITIES

### **Mechanical**

Torque

Force

Length and 2D Dimensional

3D Dimensional

Traction - Compression

Temperature

Weight and mass

CNC

### **Environmental**

Temperature

Humidity

Dew Point

Air Temperature

Air Speed

Pressure

Flow Rate (Air – Liquid – Gas)

Particle Quantity

Climatic Chambers

Toxic Gas Analysis

Thermo-Cameras



Italian Accreditation Body



French Accreditation Committee



Federal Republic of Germany Accreditation Body



## Calibration of Mechanical and Environmental Quantities

Leveraging on EIFFAGE Group Resources and trusted National and International Partners, TESEO offers a full ISO 9001 and ISO 17025 Accredited calibration Service for mechanical and environmental measuring instruments.

# Additional Services

+ Calibrations Management



## Booking of the calibration in order to reduce the turn-around time

To minimize the calibration time, our laboratory can be booked for your instruments.

### Fast Calibrations (24H) on demand

When applicable, upon request we can grant the calibration time in maximum 24 hours (shipping time excluded)



### Auto-recall

We will remind you the expiry calibration date of your equipment when in our database. Then the new calibration can be booked at your convenience.

### Pick-Up and Delivery

TESEO can also manage the instrument pick-up and subsequent delivery after calibration completion. This service is carried out by our Technical personnel, or by dedicated transports by trusted carriers



### Yearly and multi-yearly framework contracts

Optimization of your administrative costs and calibration management, granted turn-around time, one single interface for all your periodical calibration needs.

### Maintenance and repair quotations

What happens if an instrument is found faulty or out-of-specs during calibration? TESEO can manage all repair procedures in order to always assure the full-functionality.



### Consultancy

Any doubt about how to calibrate your instruments? TESEO offers consultancy about the metrological confirmation of your equipment.

### Professional training

On measurement methods and uncertainty of measurement evaluation, with UNI CEI EN ISO/IEC 17025:2018 deployment trainings.



# Metrological Laboratory