

Metior



The calibration service in Italy and in the world

Isoil Impianti SpA developed the Metior Division in 1998, to offer to its customers a Laboratory able to calibrate proving tanks and PD (Positive Displacement) Meters, both Isoil or different brand.

Measuring Instruments have an important role in any production line, to allow for marketing of products able to perform what they are projected for.

Due to this important and strong role the measuring instrument must be efficient and needs an error proportional to the tolerance the process must check and guarantee.

All measuring instruments are subject to a deterioration of the first initial error, as time passes by, thus it is mandatory to check periodically that the error remains the same as requested by

th process. This is the reason for periodical verification of the calibration.

In the year '90, with the ISO 9000 standard, the Quality System requires that the instruments used in any process guarantee the metrological inalterability over time and, more and more often, Scientific and Legal Metrology laboratories have similar standards and operating modes.

Metior Division of Isoil Impianti is an Accredited Laboratory LAT n. 108. LAT are the Italian Laboratories accredited by ACCREDIA, the sole Italian Accreditation Body.

With ACCREDIA Italy has adapted the Regulation of the European Parliament and of the Council no. 765, dated 9 July 2008 that from 1 January 2010, applied for accreditation and market surveillance in all EU countries.

Certificates issued by LAT Laboratories are officially recognized at regional level (Europe) and international, since ACCREDIA is part of EA (European Cooperation for Accreditation) and ILAC- MRA (International Laboratory Accreditation Cooperation) that promote mutual recognition agreements.



With instruments calibrated by LAT laboratories, each user can start, under the control of his Quality System, a traceability chain, which meets the requirements of international standards (ISO 9000, ISO 10012, ...)



Firmatari degli
accordi di mutuo
riconoscimento

Signatary of the
mutual recognition
agreements

Metior, LAT Calibration Centre N° 108

SECTOR A: Calibration of proving tanks for liquids SECTOR B: Calibration of positive displacement meters (PD Meters) for liquids

Sector A

The approval of the Laboratory covers the proving tanks.

Proving tanks for liquids are devices having known capacity that are filled with liquid up to a nominal level, which is detectable on a window fitted with gauge scales or at the upper edge of the neck.

Normally they are built in metallic material or glass.

In the metrological literature different names are used for proving tanks, like: standard capacity measures, standard flasks, proving tanks, standard test measures, volume vessel, metal contents, delivery measures...

In the chemical / food / industrial process, they are normally called as "calibrated tank"

Our Laboratory is accredited to calibrate prover tanks from 1 L to 25.000 L.



Nominal coefficients of cubic expansion for the materials normally used in the tanks building.

Glass (borosilicate)	10	10-6°C - 1
Carbon steel	36	10-6°C - 1
AlSi304 St. steel	48	10-6°C - 1
Copper	51	10-6°C - 1
Brass or bronze	54	10-6°C - 1
Aluminium	70	10-6°C - 1

For any other material we refer to coefficient's values available in the technical literature. During the calibration the following characteristics are determined:

- Volume of collected liquid corresponding to the nominal graduation mark
- Calibration of the mean graduation marks of the gauge scale (if applicable)
- Uncertainties of measurement (after determining of the uncertainty of the measuring method)

The measuring method is based on liquid transfer into (or from) certified proving tanks. The expanded uncertainties, with a confidence level of about 95%, given to the Laboratory, are summarized as follows in function of the capacity of the tanks in calibration:

• from 1 to 5 liters	0.12%
• 10 liters	0.06%
• over 10 to 2000 liters	0.03%
• over 2000 to 25000 liters	0.035%

Sector B

Object of the LAT approval is the calibration, by a test rig, with water solution, of positive displacement meters PD Meters).

The flow rate range is from 5 to 12,500 liters/min. The value of the expanded uncertainty stated for Laboratory(see on the WEB site www.accredia.it) is:

for flow rate from 5 to 250 L/min	0.12%
for flow rate from 250 to 12,500 L/min	0.10%

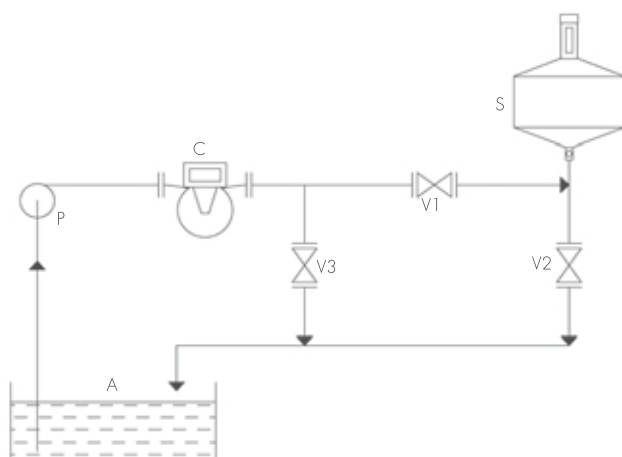
The measuring method is defined as “standing start and finish” and is based on volumetric proving facilities in a closed loop.

In these facilities, at the opening of a shut-off valve, the pump supply the meter with a set flow rate and sent the liquid into the proving tank.

When the proving tank is full of liquid, the shut-off valve is closed and the quantity of collected liquid is measured and compared with the reading of the meter under test.

PD Meters have different applications. The most known

is in the measure of petroleum liquids (with metrological standards), but typical application are also in the food (water, alcohol, ...), chemical and generic industry.



Schematic diagram of the measuring method

- P = pump
- C = meter under test
- V1 = intercepting valve
- V2 = emptying valve
- V3 = bypass valve
- S = proving tank
- A = reservoir