

The KEMA Calibration and Metering Laboratory.

An overview.



KEMA's Calibration and Metering Laboratory is housed in a building on our campus in Arnhem, the Netherlands, that has served us well for many years. From within these walls, we have been able to develop our knowledge and garner the industry experience that only comes with a lengthy history.

On the inside, we have divided the lab into four sections: electrical, thermal, pressure and kWh type test. The facility was also built partially underground to protect it against external influences such as EMC, vibrations and temperature. Both modern equipment and your grandfather's time-tested tools are utilized so that we may perform the perfect job. For electrical testing, we measure up to $1 \cdot 10^{-5}$ U, $5 \cdot 10^{-5}$ I, R up to $1 \cdot 10^{-5}$ and DC up to 3 GHz. In pressure testing, $3 \cdot 10^{-4}$ Pa is our maximum capability, for temperatures up to 0.02K.

All calibrations come with RvA certificate.

KEMA's Calibration and Metering Lab is a Notified Body for kWh type testing according to MID, as well as being accredited (ISO 17025) according to EN and IEC standards like IEC 62052-11 and 62053-11, -21, -22 -23 and EN 50470.

A certificate or type test from KEMA equates to a strong marketing advantage all over the world. A KEMA evaluation is striking – in the positive sense of the word – both in pre-selection rounds and in contract decisions. Further, Calibration & Metering Laboratory takes care of all clearly 8 million domestic and industrial energy meters in the Netherlands, including all problems that might occur if it comes to quality and reliability.

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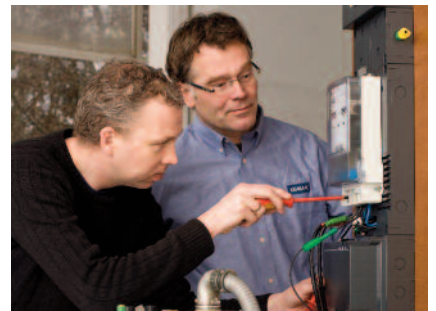
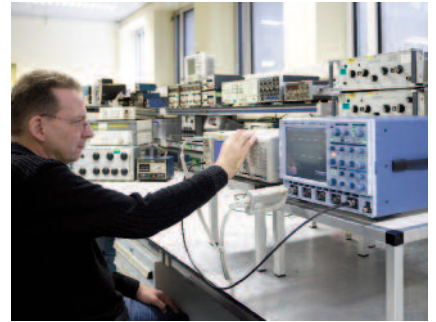
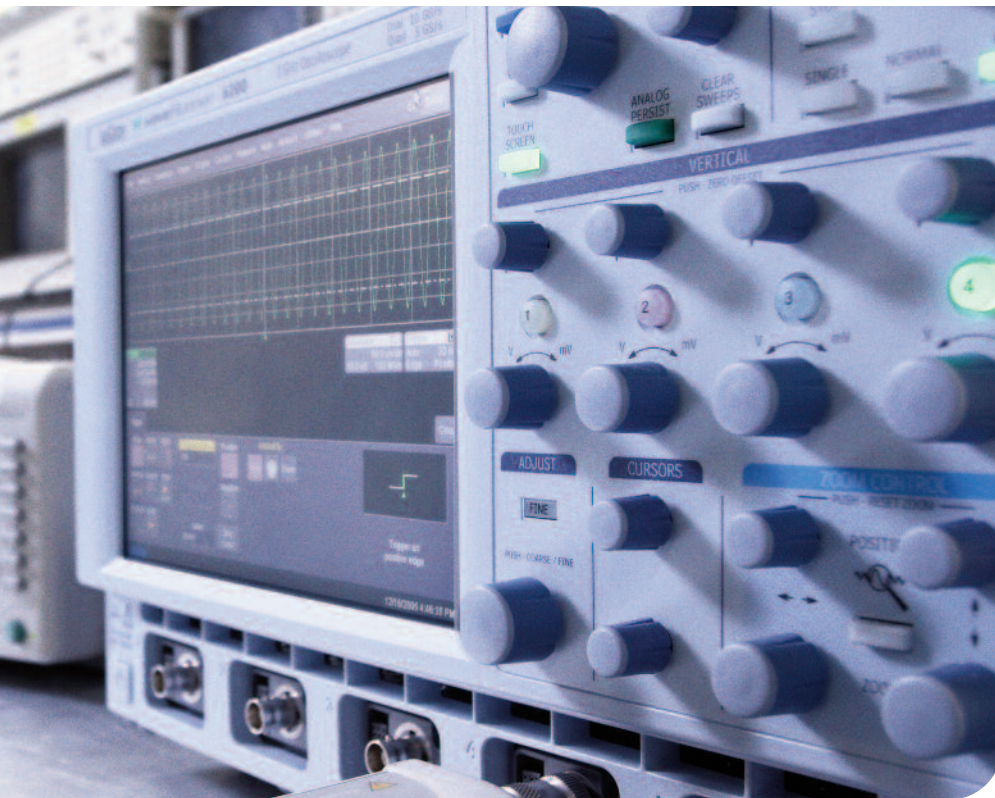
Calibration services

Reliable measurements require reliable instruments -- sometimes 0.01 sec. can determine whether or not you are the world champion. Our main objective is to see to it that you have demonstrably reliable instruments for electrical units, pressure, thermal values, and time measurements, among others.



Your accuracy is our business!

- KEMA offers a “quick and one-stop shop” for calibration services. We perform calibrations of parameters such as electrical units, temperature, pressure, and time. KEMA is your partner for the calibration of highly diverse types of measurement equipment
- we can correct any identified deviations
- KEMA documents the calibration status and history of your equipment, so it is verifiable
- we can conduct an electrical safety approval in conformance with NEN 3140
- in most cases you decide about the results but at your request, we will provide a clear statement concerning your measuring device: approved or rejected
- KEMA is flexible. You can use us for incidental calibrations, or you can entrust KEMA with the management of your entire calibration system
- because the RvA accreditation council recognizes nearly all of the calibrations KEMA performs, you also meet requirements for measurement instrument calibration, such as those mandated by ISO 9001.



Service package

We conduct (RvA) accredited calibrations for the following equipment:

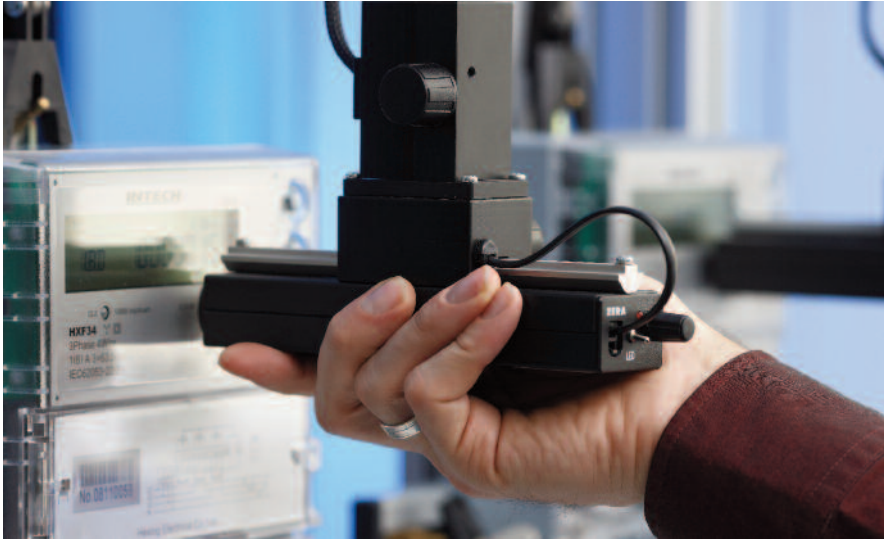
- instruments for measuring electrical units, including energy meters, voltage and current meters, multimeters, ohmmeters, oscilloscopes, safety testers, temperature meters/loggers, transformers and high-voltage testers
- instruments for temperature measurements, including thermocouples, PT-100s and temperature loggers with probes
- instruments for pressure measurements, including absolute and relative pressure meters – both analog and digital

- instruments for noise and vibration measurements, including sound level meters and accelerometers
- instruments for EMC approvals, including measurement receivers.

Our advantages

- one-stop shop service with complete service package
- calibration of a wide variety of measurement equipment
- rapid turnaround, often just a few days or even less
- over 30 years of experience performing RvA accredited calibrations (accreditation K 006)

- adjustment, repair, on-site calibrations, electrical safety tests (NEN 3140)
- pick-up and return service
- on-site calibrations especially of kWh meters
- complete calibration management system including history overview, calibration-due notification to meet the requirements of ISO, GMP, NIAZ, HACCP or any other quality system, quality plan and certificates (also for electrical safety).



Strategic Metering Services
Type testing of electrical energy
(kWh) meters

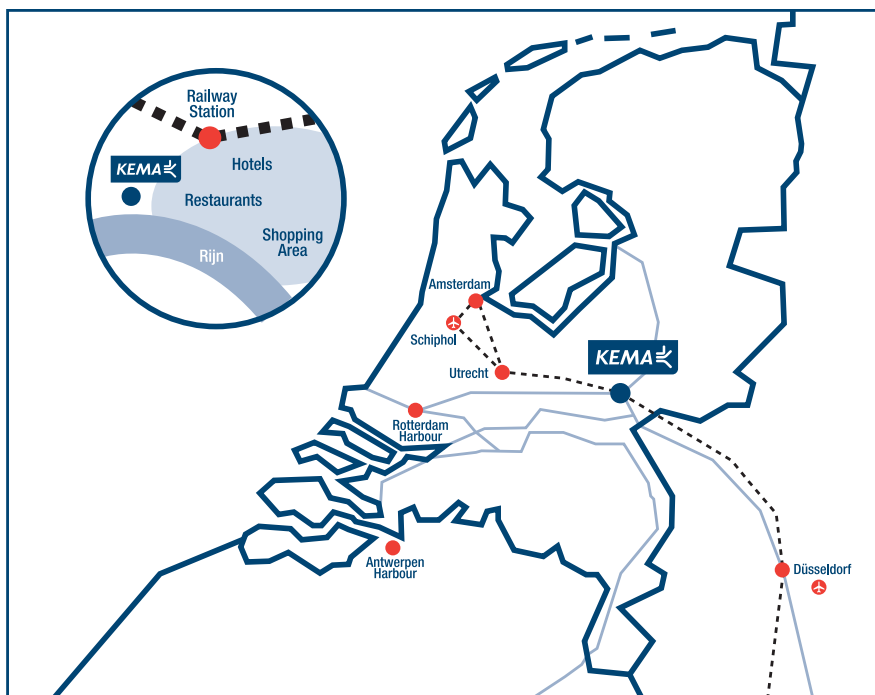
KEMA can type-test and certify both electronic and electromechanical energy meters in accordance with the applicable IEC and EN standards. For Europe also according 'Measurement Instrument Directive' (MID). The MID specifies the criteria that measuring instruments, such as

kWh meters, must meet, in reference to international standards (EN 50470). In case of MID certification, quality audits of the production process at your factory are also included. With a MID certificate you can market your products anywhere in the European market. KEMA may issue these certificates. Tip: the combination of IEC- and MID certification in one type test can be an attractive solution if you want to sell your products worldwide.

The KEMA laboratories in the Netherlands are very well equipped.

Relevant tests pertain to:

- *mechanical requirements*
- *insulation properties*
- *accuracy requirements*
- *electrical requirements*
- *electromagnetic compatibility*
- *effect of climatic environments*
- *tests of the terminal block material (ISO 75)*
- *salt spray tests, "weatherometer" tests and rain tests.*



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