



European Research Infrastructure supporting Smart Grid Systems Technology Development, Validation and Roll Out

TRANSNATIONAL ACCESS PROVISION

RESEARCH INFRASTRUCTURE DESCRIPTION AND TRANSNATIONAL ACCESS CONDITIONS

Hellenic Electricity Distribution Network Operator



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Hellenic Electricity Distribution Network Operator



1. Research Infrastructure

Name of Infrastructure/Installation	Electricity Meters Laboratory of Laboratories and Radios Section (L&RS)
Location	HEDNO - Athens, Greece
Web Site	www.deddie.gr

2. Description of the Research Infrastructure

The HEDNO L&R Section, located in Athens, Greece, provides an exceptional precision, validation and testing infrastructure allowing the testing of single devices of measuring equipment – especially smart meters and measurement transformers – which have great influence on the Hellenic Power Grid. The laboratory has been accredited by the National Accreditation Body "ESYD", in order to comply with the general requirements of ISO/IEC 17025 which is the main ISO standard used by testing and calibration laboratories.



Figure 1: HEDNO Laboratory testing facility for measuring equipment with Iskramatic-CATS Meter Test Station.

Smart metering testing facility

The metering lab facilities have advanced capabilities in order to conduct various tests including testing, certification, calibration and validation of all types of electricity meters (electromechanical and smart).

The facility consists of:

- A configurable Three-Phase Meter Calibration Set. The model of the set is the Iskramatic-CATS-083.030.735 Meter Test Station. The calibration set is suitable for experiments in three-phase / single-phase meters for active and reactive power of all types (optionally adding various harmonics). The testing processes are managed and monitored via IT infrastructure and the data are stored there. The calibration set consists of an electronic power source (EPS 80-3H-

Meter Supply Unit) and two movable testing racks. The capacity of the laboratory includes two racks with 20 adjustable positions, thus it can test 40 meters simultaneously.

- A Three-phase Comparator Zera COM3003.
- Computer Aided Testing System (CATS) Software that supports configuration and handling of the equipment.
- Warm-up Device for Electric Meters (Type ND 409).

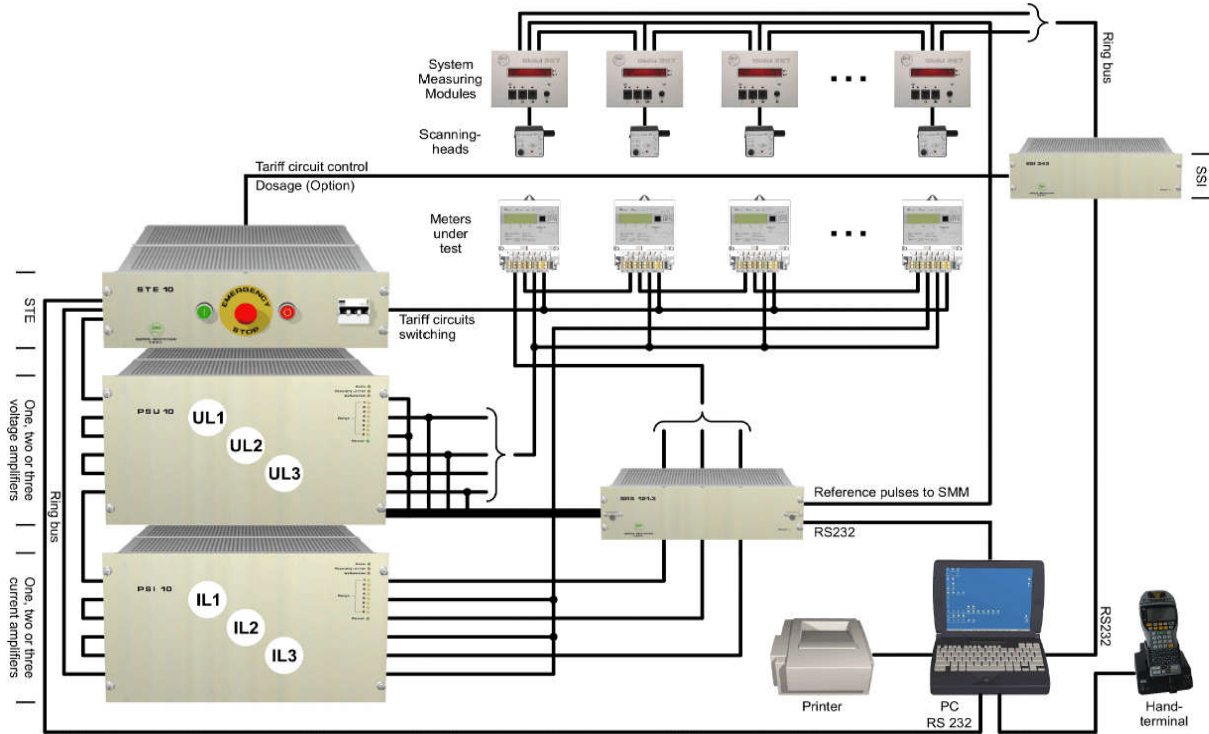


Figure 2: Measuring equipment assembly of L&R lab

Measuring transformers testing facility

The facility is used in order to conduct various tests including testing, certification, calibration and validation of current measuring transformers (MV, LV) and voltage measuring transformers (MV). It consists of an Automatic Instrument Transformer Test Set (Tettex 2767) which includes:

- a Standard Voltage Instrument Transformer (Tettex 4820)
- a Current Comparator (Tettex 4761).
- a Current and Voltage Burden (Tettex 3631)

This test set is a fully automatic instrument for fast, accurate measurement of instrument transformer errors. It is measuring continuously and displaying in digital form current or voltage error as well as phase displacement. The dielectric strength is measured as well.

The laboratory itself is supplied from the local 20 kV medium-voltage power grid via two independent medium- and low-voltage (MV/LV) transformers. The test facility has been used for multiple applications, in order to ensure that the equipment used in the grid complies with national and international grid codes and standards based on the accreditations held by L&R section of the HEDNO's Network Department.

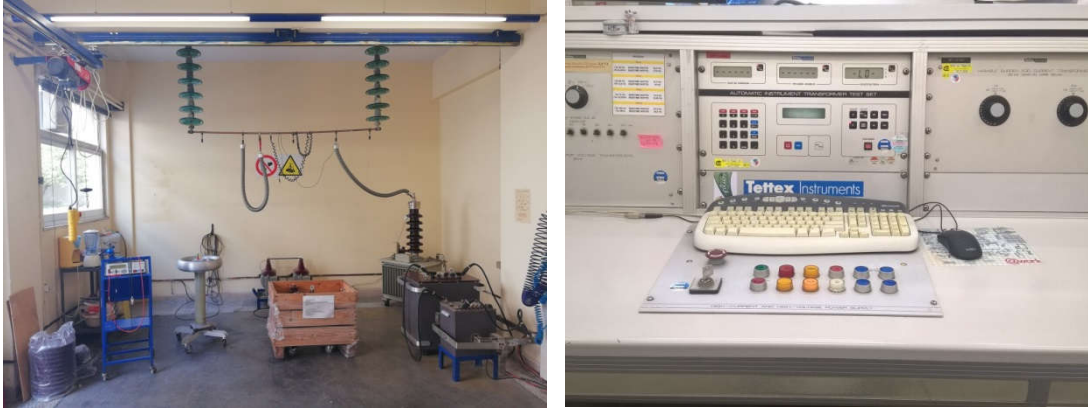


Figure 3: Measuring transformers testing facility

3. Services offered by the Research Infrastructure

In the HEDNO L&R laboratory the main services provided are as follows:

- Testing of electricity meters (electro-mechanical).
- Programming and testing of smart meters (local & remote).
- Testing of electricity meters installed on the grid.
- Testing of current measuring transformers (MV, LV) and voltage measuring transformers (MV).
- Certification of electricity meters (customers, suppliers) and transformers.
- Validation of methods of measurements (according to ISO/IEC 17025).
- Integration of standards
- Technical support to the Remote Measurements Operation (section of Network Department).
- Cooperation with other Departments of HEDNO, concerning the installation of electricity meters on the grid.

Furthermore, the L&R section cooperates with the Remote Measurements Operation section of the HEDNO's Network Department. The Remote Measurements Operation Section refers to the following:

- Telemetry of Medium Voltage Customers.
- Telemetry of Low Voltage Customers with contractual power higher than 55 KVA.
- Telemetry of PVs and other RES.
- Metering data security and personal data protection.
- Customer data analysis.

4. Brief description of the organization managing the Research Infrastructure

HEDNO S.A. (Hellenic Electricity Distribution Network Operator S.A.) was formed by the separation of the Distribution Department from PPC S.A. in order to comply with the 2009/72/EC EU Directive.

The company's tasks include the operation, maintenance and development of the power distribution network in Greece, as well as the assurance of a transparent and impartial access of consumers and of all network users in general. The company aims at providing reliable power supply to all customers, quality of electricity voltage and constant improvement of quality in services.

Its mission and vision are the response to its customers' expectations and the contribution to the development and welfare of fellow citizens with respect to people and to the environment.

The projects executed by HEDNO S.A. refer to the following:

- The fulfillment of the users' requests

- Network Development
- Network exploitation works
- Normal and efficient operation of the Electricity Market as far as networks are concerned
- Reliable and economical advantageous operation of the islands autonomous electricity systems

HEDNO believes strongly that its participation in relevant research programs aids to its commitment to keep up with the technological progresses and use state of the art technologies in order to serve in the optimal way the needs of its customers and the society. Hence its participation in various European research programs such as TILOS, SmarterEMC2, WiseGRID, SHAR-Q, GRIDSOL, etc.

5. Transnational Access conditions offered by HEDNO

The offered experimental systems, the whole L&R section as well as the Remote Measurements Operation Section are located in the same building in Athens, 6 km away from the city's center.

For **safety reasons**, for **critical applications**, the users are not expected to operate the systems by themselves; even when safety instructions will be provided, tests will be carried out by staff of HEDNO. For **the rest of applications** and after ad-hoc training, the user group will have full access to the related facilities for the duration of the stay (with the support of HEDNO's engineers and laboratory technicians when necessary). The **scheduling of the experiments** will be agreed and booked prior to the stay according to the availability of the involved staff and equipment. Administrative documentation for the access (contract, non-disclosure agreement, etc.) will comply with ERIGrid common indications.

In addition to the general corporate services (Internet connection, canteen, etc.) and the support and advice on accommodation and transportation to HEDNO's infrastructure, the access being offered includes supervision and help of HEDNO's staff:

- As a complement to the pre-access contacts between the user group and HEDNO, the stay will start with an introductory meeting with the responsible engineer for confirming the stay conditions (confidentiality, safety indications), scheduling the activities, explaining the on-site procedures, clarifying the logistics and technical details.
- Preparatory work: a laboratory technician will assist the users for the installation of the devices, electrical connections, use of the specific instrumentation, preparation of a test procedure (if necessary) on the basis of the users requests, and programming of the experimental conditions.
- HEDNO's employees will support the realisation and follow-up of the experiments.
- HEDNO's employees will support the results interpretation, data processing and analysis, and test report preparation.

In principle, a typical stay of 1-3 weeks is foreseen for a single user group but this period could be extended depending on the concrete user project. The user group (usually 1-3 persons) can use the infrastructure for the defined time.

Reimbursement of expenses:

User expenses for the Trans-national Access (TA) are paid by ERIGrid (EU H2020 Programme). This includes travels to HEDNO L&R section by plane/trains, accommodation, daily subsistence, and daily transportation during the stay.

For the user projects taking place in L&R section, HEDNO will refund the stay expenses when the stay is finished: the user must declare the incurred expenses and present the invoices/receipts to HEDNO in order to get the refund.

Reasonable expenses must be made by the user: travels will be made in economy class and conventional hotels (not luxury) or equivalent accommodation will be used. As an indication (it is not a daily allowance), a maximum subsistence fee of 150 €/person must be considered per day.

6. Contact details for Research Infrastructure

Laboratories and Radios section – HEDNO Address: Ag. Annis 70, 12241 Egaleo, Greece Website: www.deddie.gr			
<i>For lab management/technical issues (measuring field, etc.):</i>		<i>For TA management/organization issues:</i>	
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