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## **INSTITUTIONAL DEVELOPMENT PLAN OF ICMET CRAIOVA FOR THE PERIOD 2016 – 2020**

### **1. Present stage**

ICMET Craiova is the only institution in the country and in South-Eastern Europe which has retained to a great extent the research, development and innovation (RDI) activity in the field of high and very high voltage electrotechnical equipment.

Benefiting by exceptional experience gained over time due to the fact that it has served virtually all of Romanian electrical engineering industry, through the offered scientific services, it has been continuously tailored to the market requirements in the field, competing on a worldwide scale to similar acknowledged organizations (KEMA, CESI, IPH, WEIKI, ABB, Areva, etc.).

The activity has taken place in the following directions:

- applicative research consisting in services provided to economic agents, universities, other RDI institutions;
- manufacturing of special equipment resulting from the research and development activities (monitoring and diagnostic systems for electrical engineering equipment);
- carrying out special works requested by economic agents (test stands);
- providing internship environment for pupils, students, MSc. and PhD students in the specific fields of ICMET.

Through the activity carried out in previous years, ICMET has managed to keep in service the installations and equipment which are unique on a national and European scale, to improve their features as well as to develop new activities in its field of competence.

ICMET is the owner of the installation of national interest “High current generation, measuring and recording systems”.

As a result of the activity carried out in the field of RDI, it was assessed by a team of international independent experts, and received score A.

## **2. Tasks assigned to ICMET Craiova in the framework of Romanian economy in accordance with the national strategy of research, development and innovation (SNCDI) for 2014-2020**

In the context of the new strategy for the period 2014-2020, it aims to:

- increase the number of researchers
- increase the use of its installations
- increase the funds required for the RDI activity
- develop new RDI directions entailed by the requirements of the economy development stage

## **3. The directions of development for ICMET Craiova**

- increasing the competitiveness of the offered services through:
  - product development;
  - development of technologies;
  - development of RDI infrastructure;
  - development of skills for promoting smart specialization in electrical engineering;
- increasing the ICMET visibility through:
  - collaborations with other economic institutions, as well as public sectors (schools, universities, other RDI institutions) etc.
  - Dissemination of the research results through participation in conferences, publications in peer-reviewed journals, publishing books, patenting of innovative solutions, etc.;
  - participation in economic missions, fairs and exhibitions, etc.;
  - development of partnerships and the creation of incentive environments for the private sector initiative;

ICMET Craiova has an organizational and procedural structure so that its activity ensures the development of scientific research in the field of electrotechnical equipment, the development of new technologies, the implementation of electrotechnical, power engineering, and electro-mechanical equipment testing, etc.

The structure of the personnel and the material resources allow the approach of research, development and innovation projects in complex areas such as:

- high voltage technique;
- high currents and high power technique;
- materials science;

- electromagnetic compatibility;
- high forces technique;
- electric and non-electric quantities measurement, acquisition and monitoring systems;
- development of electrical engineering products;
- development of hydro-pneumatic technologies and equipment;
- development of equipment and methods for product quality testing and assessment.

As the owner of the installation of national interest “Generation, measuring and recording systems for short-circuit currents and their output, it is one of the most powerful research and testing laboratories in Europe in the field of power engineering equipment.

ICMET Craiova has competence in testing, measurement and calibration in the following fields:

- low and high voltage;
- high currents and high power;
- electromagnetic compatibility;
- climatic, mechanical and fire safety testing.

The two laboratories in ICMET, namely:

- The Low and High Voltage Testing Laboratory
- the High Power Testing Laboratory

are accredited by the national accreditation body RENAR, providing services according to the international standards.

ICMET Craiova specialists are well experienced in implementing projects through international and European programs, being involved in various collaborations with economic institutions, research and development institutions, universities, etc. ICMET offers internship opportunities for students, MSc. and PhD students etc.

#### *ICMET strengths*

- unique material resources in the area of Central and Eastern Europe;
- connection to the domestic and international economic market;
- experienced staff in the areas of activity;
- the need for the development of electrical engineering industry by creating low cost and high efficiency competitive products.

- opportunity for training and specialization of young employees, in the field of high voltage and high power electrical engineering equipment.

#### *ICMET weaknesses*

- there are some old installations operating close to the peak values and high energy consumption
- in some cases, it does not provide the entire range of type tests for certain products
- high average age of staff (over 45 years)
- small proportion of staff with *PhD's in science* from total employees.

#### **4. Strategic goals for the development of ICMET Craiova activity**

*General objective:* ICMET Craiova's development strategy for the period 2016-2020 will focus on the National Strategy for Research, Development and Innovation (RDI) for 2014-2020 and its implementation.

#### *Directions:*

- the development of the infrastructure for innovative products and technologies;
- the important role taken on by ICMET Craiova in Romania and in the area, to become the leader in providing scientific services within the fields of competence and the development of new fields;
- increasing the international visibility of the experimental research and development offered by ICMET;
- continuous adjustment to the requirements of the economic and social development.

#### *Specific strategic objectives*

a) the increase of ICMET's research and development potential through:

- further development of the material resources intended for the research activity by supplementing the existing facilities and creating new laboratories;
- achieving high performance equipment and technologies;
- increasing the number of the RDI personnel;
- continuous professional training and a work environment which favors the development of research skills;
- stimulating the research personnel;
- partnerships with institutes, universities and RDI entities in economic companies;
- approaching new areas of research.

b) Retaining the status of National Institute for Research Development and Innovation and of leader in the field of research for high voltage and high power equipment through:

- participation in national and European research programs and projects in accordance with the national strategy;
- establishing national and European partnerships;
- patenting of innovative solutions at national and European levels as results of the activity in the field of RDI;
- participation with scientific papers in scientific conferences and publication in specialized magazines;
- participation in technical committees of international bodies in the field of electrical engineering;
- increasing the proportion of PhD staff in RDI personnel;
- creating the conditions and achieving the facilities to approach new topics (purchasing high performance equipment);
- holding meetings, workshops, conferences to promote its own results;
- the activities will be directed so as to correspond to national policies in the field of RDI and integration into the scope of the European Union through partnerships, associations, etc.
- retaining the accreditation of the Testing Laboratories according to ISO 17025 for their national and international recognition;
- the development of the activity in the field of high voltage and high currents equipment calibration.

c) Providing services for economic institutions in the field of activity through:

- retaining/extending/obtaining authorizations to acknowledge ICMET as service provider for the energy sector;
- ensuring the traceability of its own standards in the international system;
- acquiring the STL (short-circuit Testing Liaison) membership for the High Power Laboratory;
- retaining the LOVAG membership for the High Power Laboratory and the Low and High Voltage Laboratory;
- retaining the certification of the integrated quality management system.

*ICMET's strategy on the development of research, development, innovation and testing capacity* in the field of electrical engineering to match the current state-of-the-art and standards in force:

- the development of high-energy current impulse generation systems;
- increasing the research and testing capacity for the quality assessment of high voltage electrical cables;
- the development of on-site assessment methods for power equipment such as: partial discharge and corona measurement, behavior assessment in terms of electromagnetic compatibility, assessment of the isolation condition and the level of operation reliability, etc.;
- the development of assessment methods for energy consumption and energy quality;
- the development of systems for characterization of materials used in electrical engineering, power engineering, etc.;
- the development of high voltage tests by using combined voltages;
- increasing the high power testing capacity through the development of synthetic scheme testing;
- the development of research systems for the assessment of equipment performance to mechanical and environment factors;
- compressed air shock systems;
- environmentally friendly freonless air-conditioning systems;
- expanding the systems based on optoelectronic measurement and monitoring methods in electrical systems;
- the development of high power research and assessment systems for DC equipment;
- the development of high performance equipment and energy services in order to connect the power equipment to the National Energy System;
- the development of skills necessary for the research and design of equipment in the AUTOMOTIVE field (electric car, tram, etc.);
- the use of fuel cells;
- the development of equipment and installations for the production of green electricity;
- the implementation and development of ecotechnologies and nanotechnologies;
- the achievement of high performance equipment and technologies in order to increase the quality of electric supply (SMARTGRID and MICROGRID networks)