

Theme:

Micro and nanoelectromechanics try-out laboratory

Contract: CEEEX no. 271/10.08.2006;

Contracting Authority: RENAR – UMM CEEEX – IV;

Contractor: INCDIE ICPE-CA, Bucharest;

Project Director: Dr. Eng. Mircea IGNAT;

Project time-frame: 10.08.2006 - 30.01.2008;

CEEEX Program: Module IV;

Project Category: P-CONFORM;

Project Acronym: LMNEM

Project Coordinator: INCDIE ICPE-CA, Bucharest.

Areas: Integrating technologies, code 3.2.3

Technological Platform: Advanced materials and technologies, code PT.4

General Objective:

Design and implementation of specific try-outs for micro and nano electromechanics; devices, microactuators, micromachines, microsensors.

The internal development of research in determining procedures and methods of complex try-outs in the field of high precision measuring. In this regard, a well equipped and accredited laboratory will be the foundation for the try-out platforms of future research projects in the field of micro and nano.

Determining through complex research the procedures and methods of measurement, testing and control of electromechanical equipment in the micro and nano domain and the introduction of such a laboratory designed with this purpose in mind have become necessary for the conception, production, exploitation and maintenance phases.

Project finality:

- Accredited laboratory

Realization scheme / calendar:

2006 – Stage 1/ Elaboration of specific procedures – time period: 10.08.2006 – 30.11.2006

2007 – Stage 2/ Precompetitive research – time period: 01.12.2006 – 30.06.2007

2007 – Stage 3/ Elaboration of system documentation, experiments, accreditation paperwork – time period: 01.07.2007 – 15.10.2007

2008 – Stage 4/ Dissemination and accreditation – time period: 16.10.2007 – 30.01.2008

Potential users:

The laboratory can be an effective base for a multitude of beneficiaries, both for other institutions with similar research field and beneficiaries with interests in assimilation and exploitation of MEMS technologies. High cost reduction will be effective for future research projects featuring micro and nano technologies, because of the already available, well equipped material base, funds being able to be directed to other expenses.

Technical - economical and social impact:

Technical impact:

The creation of a specific try-out laboratory for measurement and determinations in the micro and nano electromechanics will highly increase the number of employees with

higher studies. In a society based on knowledge, approaching a highly regarded field of research, which is still in the early stage, will surely induce both a technological progress as well as one in knowledge in general.

Economical and social impact:

- Reduction of costs for the economic agents who activate in the micro and nano technologies fields of research
- Improvement in own research-development capabilities
- Obtaining a higher level of training of the staff working in a cutting-edge field, at European standards
- Higher health and work conditions for the staff operating the laboratory
- Availability for students to train and practice working with high precision instruments
- Avoidance of imports of testing equipment for micro and nano technologies

Planned objective:

Case study – Elaboration of specific procedures for MEMS and NEMS

A technical study has been conducted in regard to the elaboration of specific procedures for MEMS and NEMS technologies. Measurements and measurement procedures with interferometric microscopy and classical, mechanical methods of length measurement have been conducted.

Result:

A study has been obtained which is now a base for future measurement procedures specific to MEMS and NEMS.

Status:

The objectives of the first phase have been obtained in accordance with the activity plan and the project realization scheme.