INCDMTM
Nr. Reg. Comertului:
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C.I.F. RO 930

MINISTRY OF NATIONAL EDUCATION AND SCIENTIFIC RESEARCH
NATIONAL AUTHORITY FOR SCIENTIFIC RESEARCH AND INNOVATION
NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT IN MECHATRONICS AND MEASUREMENT TECHNIQUE
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RESULTS OF RESEARCH, DEVELOPMENT & INNOVATION IN INCDMTM BUCHAREST

2015

VOL. XXI

To the attention of the:
- *Quality Manager*
- *Marketing Manager*
- *Technological Transfer and Innovation Manager*

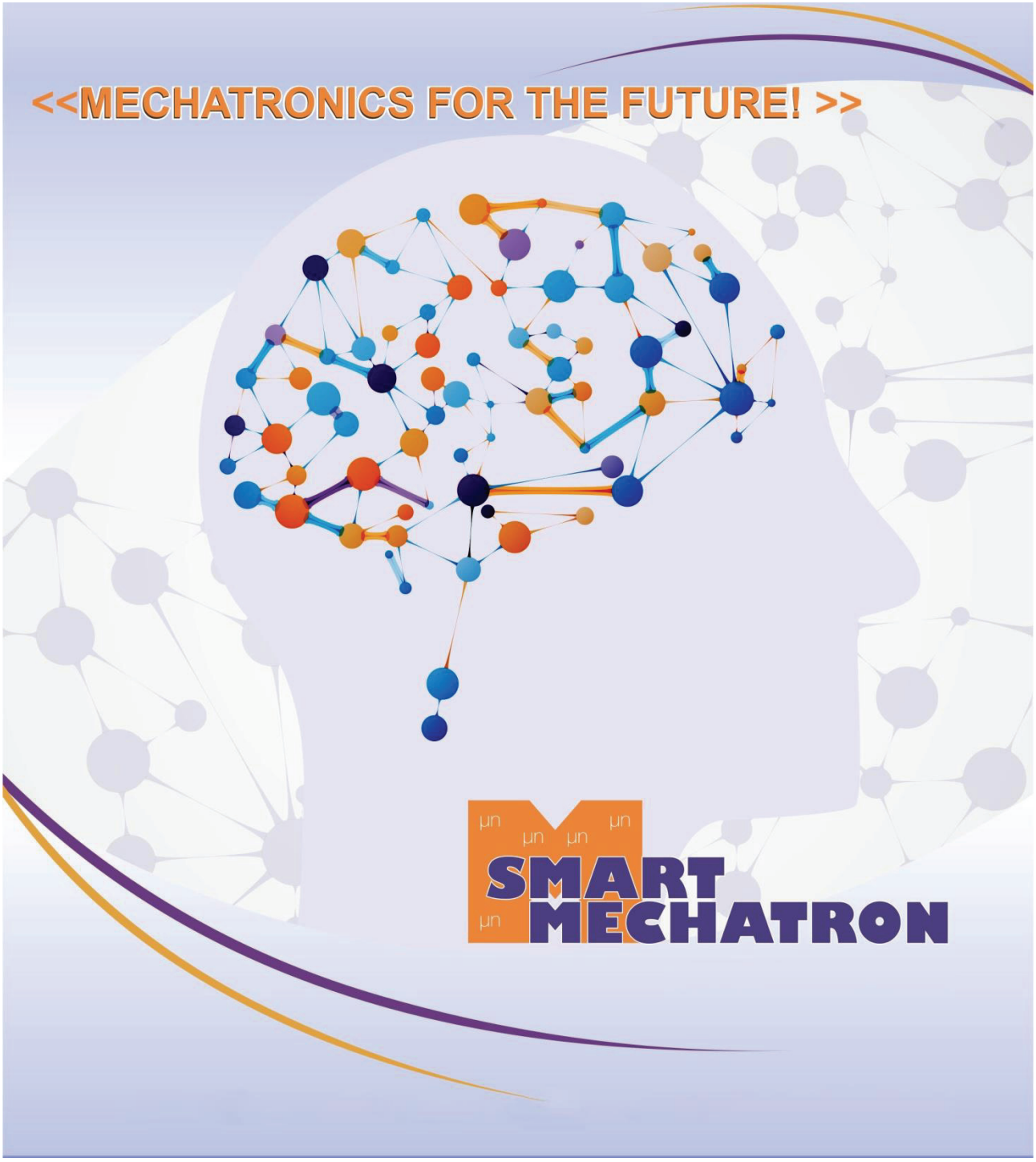
Elaborated by INCDMTM – Bucharest, by:

- **Strategy, Development, Marketing and Technological Transfer Division – CSDMTT;**
- **Relay Centre of Technological Transfer and Consultancy – CRTTC;**
- **Inter-Regional Centre of Innovation and Technology Transfer Chisinau –Iasi –Bucharest – CIITT;**
- **Industry Links Office – OLI;**
- **Evaluation and Training Centre for Mechatronics – CEF „MECATRON";**
- **Business and Innovation School – SAI „MINATECH";**
- **Bucharest - Ilfov Regional Mechatronics Cluster – "MECHATREC";**
- **Competitiveness Strategic Pole in Mechatronics, Integronics and Adaptronics "INDMECATRON".**

Edited with the support of Ministry of National Education and Scientific Research
National Authority for Scientific Research and Innovation

CONTENTS

- **INCDMTM Bucharest Logo & Brand**



INSTITUTE OVERVIEW

GENERAL MANAGER
Gh. Ion GHEORGHE
Univ. Professor PhD Eng.
EurIng

▶ **The National Institute of Research and Development in Mechatronics and Measurement Technique – INCDMTM Bucharest has as main objectives**:

- **basic research**
- **industrial research**
- **technological development**
- **elaboration of development strategies for national and European Precision Mechanicss Integronics, Adaptronics,and Mechatronics industry;**

▶ **INCDMTM identifies with the following strengths**:

- **intelligent measurement technique,** active, automatic and computerized control;
- **equipments and integronic, adaptronic, mechatronic devices** for multi-parameter integrated control;
- **non-electric physical quantities control** (pressure, temperature, mass, strength, time);
- **innovative technologies**;
- **tribotechnology** of cutting and micro-nano-cutting processes;
- **intelligent mechatronic, integronic and adaptronic biomedical equipment**;
- **robotic, microrobotic and nanorobotic systems;**
- **methodologies, standards, testing and certification**;
- **linkswith industry**;
- **technology transfer**;
- **development and sustainability strategies**;

▶ ***INCDMTM participates in National and European RESEARCH-DEVELOPMENT-INNOVATION programs***.

The National Institute for Research & Development in Mechatornics and Measurement Technique (INCDMTM), is a quasi - governmental organization, established by the national law for promoting R&D activities. We, at INCDMTM, are mainly responsible with fundamental and industrial researches, technological developments, technical and economic regulations, with national or limited applicability, all these regarding the field of precision mechanics and MECHATRONICS, INTEGRONICS AND INTEGRONICS. INCDMTM takes part in working out national strategies for development, giving priority to achieving the scientifically and technological objectives included in National Programs.

▶ **INCDMTM activities, according to NACE:** 2571; 2573; 2652; 2813; 2824; 6201; 6311; 6312; 6399; 7021; 7112; 7120; 7211; 7320; 7410; 7490; 8230; 8299; 8541; 8559; 8560; 7811; 5812; 5814; 5819; 5829; 7219; 2651; 2660; 2670; 3250; 3320 include:

↳ basic research and development;

- applied research activities;
- information technology;
- manufacturing activities to support specific R&D;
- studies, strategies and analyses;
- technological transfer, results capitalization and managerial consulting;
- general and special training seminars;
- publishing specialized publications and ordering information;
- activities in tertiary education;
- joining activities;
- activities abroad;
- activities additional to R&D work;

▶ **Sub-fields covered:**

- intelligent measurement technique;
- systems for measuring non-electrical dimensions and specifics technologies for precisions mechanics, mechatronics, integronics and adaptronics;
- MEMS and NEMS;
- instruments for laboratories and research, special biomedical and environment equipment;
- quality engineering, assurance and certifying;
- strategy development, marketing and technological transfer.

▶ **Our main achievements grouped according the aforementioned activity sub-fields:**

• ***Methods, technologies, measuring and control instruments for assessing quality characteristics through different proceedings, according to measuring techniques:***

a) **dimensional control integrated with manufacturing process - in process control, automated and numerical control** for:
   → automotive industry;
   → bearings industry;
   → injection pumps industry;
b) **out of process dimensional control** for:
   → FMCG industries;
   → motors industry;
c) **control technologies and measuring equipment using laser interferometers, inductive and photoelectric sensors and transducers**;
d) **MECHATRONIC, INTEGRONIC AND ADAPTRONIC equipment and installations for multidimensional control, using a high degree of automation and numerical data processing**;

• ***Concepts and methods for improving competitiveness, reliability and capability inindustrial processes; new materials, along with appropriate technologies for using them inmechatronics, integronics and adaptronics:***

a) **control of non-electrical sizes** - pressure, temperature, mass, force, time;
b) **technologies, carbide tools, diamond tools, posts for tools**;
c) **equipment for specific testing and investigation methods and procedures**;
d) **adapting and applying new technologies and micro-nano-technologies for rationalization and optimization in industrial processes, for cutting costs and consumption, and raising productivity;**
e) **building and developing seismic stations**;

f) **surveillance active/passive mechatronic, integronic and adaptronic systems for normal wear and catastrophic tools;**
g) **tribotechnological characterization of cutting and micro-cutting processes** (grinding, turning, super-equalling) with tools with the active part made up of hard materials

- ***Methods, procedures and instruments for evaluation of trends, prognoses and strategies for the industry of precision mechanics, mechatronics, integronics and adaptronics:***
  a) **strategies for restructuring and development the precision mechanics, integronic, adaptronic,and mechatronic industry**;
  b) **strategies for approaching and integrating the precision mechanics, integronic, adaptronic, and mechatronic industry**to EU market.
- **Technological transfer, result capitalization and consulting, offered to manufacturing companies *and consumers in the industry:***
  a) **control technology for gears parameters**;
  b) **control technology for the main parts of the motors with internal combustion**;
  c) **manufacturing technologies for blanks from sintered metal carbides and diamonds**;
  d) **equipment for gears profile and lead.**

▶ **Other data:**

- Year of establishing: 1971
- Number of employees: 168 (18 PhD Engs, 5 PhD students)
- Collaborators: - over 40 R&D Romanian institutions operating in different fields of knowledge and industry;polytechnic and specialized universities in Brasov, Cluj, Bucuresti, Timisoara, etc.
- Endowment: suitable to accomplished activities
- INCDMTM is registered in the Registry of Commerce
  ✓ Member of:
  - Romanian Chamber of Commerce and Industry, Bucharest
  - General Engineers' Association in Romania
  - Romanian Society of Mechatronics
  - Association of the Romanian Patronage in Precision Mechanics, Optics and Mechatronics Industry
  - Professional Association of Precision Mechanics and Optics from Romania

  ✓ Tutelary Forum:
  - Ministry of Economy, Commerce and Business Environment;
  - Ministry of Education, Research and Innovation;
  - National Authority for Scientific Research
- **In 2013, INCDMTM has been the subject of an international evaluation process (between September 12-13), and received the highest rank A+.**

CODIFICATION OF PRODUCTS ACCORDING TO NACE
ARRANGEMENT OF ACTIVITIES IN THE NATIONAL ECONOMY

√ **Metallic construction and metal products industry:**	**NACE 257**
√ **Cutting tools and products:**	**NACE 2571**
√ **Hand Tools:**	**NACE 2573**
√ **Machinery and medical instruments, precision, optical and watch making:**	**NACE 265;266;266; 267;325;3320**
√ **Machinery and medical instruments:**	**NACE 2660; 3250**
√ **Machinery and tools of measurement, verification and control:**	**NACE 2651**
√ **Measurement, regulating and controlling equipments:**	**NACE 8320**
√ **Optical and photographic devices:**	**NACE 2670**
√ **Clocks and clock mechanisms industry:**	**NACE 2652**

«MECATRON»
INCDMTM

DIVISION OF RESEARCH AND DEVELOPMENT FOR INTELLIGENT MEASURING MECHATRONICS

THE DIVISION OF RESEARCH AND DEVELOPMENT FOR INTELLIGENT MEASURING MECHATRONICS

offers

Professional solutions and services

of excellence

The INCDMTM proposal – through the DIVISION OF RESEARCH AND DEVELOPMENT FOR INTELLIGENT MEASURING MECHATRONICS -comprises a wide palette of computer-aided intelligent complex measuring and integrated control equipments.

The DIVISION OF RESEARCH AND DEVELOPMENT FOR INTELLIGENT MEASURING MECHATRONICS, oriented on producing and developing mechatronic measuring means and techniques is prepared to help clients efficiently with the view to obtaining a quality production and to transform production in a intelligent production processes.

The DIVISION OF RESEARCH AND DEVELOPMENT FOR INTELLIGENT MEASURING MECHATRONICS also offers service; this facility includes:

- **Putting into operation;**
- **Training;**
- **Warranty;**
- **Service;**
- **Maintenance and product remedy contracts.**

NACE 265;267;332;

- ✓ **Intelligent Measuring, Testing and Control Devices and Tools;** ◄NACE 2651►
- ✓ **Mechatronic, Integronic and Adaptronic Measuring, Arrangement and Control Devices for industrial processes;** ◄NACE 3320►
- ✓ **Optical and Photographical Devices;** ◄NACE 2670►
- ✓ **Watches and timing mechanisms** ◄NACE 2652►

COMPLEX CONTROL FOR BORES ON GEAR CASING JH3

PRODUCT OVERVIEW

The devices are made from electronic and pneumatic gauges for verifying the bores on Gear Casing JH3.

Pictures from the production line

TECHNICAL FEATURES

- Electrical supply: 220 V ac /50 Hz;
- Pressure supply: 5 bar;
- Measuring time: maximum 10 sec. per every hole of the part;
- Display resolution: 0,001 mm;
- Electronic gauge with inductive transducers: for 9 diameters;
- Pneumatic gauge: for 6 diameters;
- Pneumatic-electronic transducers: TPE99/1;
- Filter regulator: FESTO
- Industrial processor : CMZ 200 ETAMIC Station;
- Mechanical device-Station's interface: SATELIT ETAMIC;
- Operating system: Windows2000;
- Measuring software: INCDMTM Bucharest;

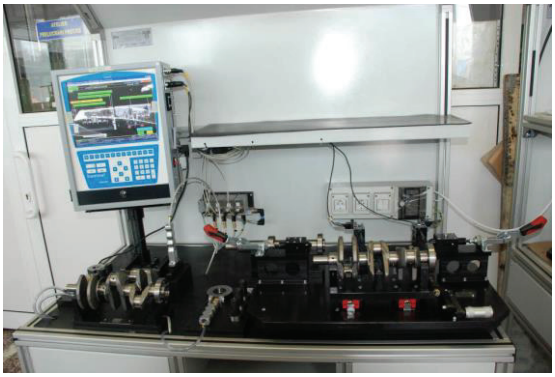
APPLICABILITY: Pneumatic and electronic measurements for bore's diameters of the gear casing JH3.

TECHNOLOGY TRANSFER: JH3 Gear Casing production line

BENEFICIARY: S.C. Automobile Dacia Group Renault S.A. Mioveni, Argeş, Romania.

FURTHER INFORMATION: Mihai Hacman : laborator_tm1@yahoo.com

ASSEMBLY FOR CRANKSHAFT CONTROL H4x OP.200-210



PRODUCT OVERVIEW

The devices are made for verifying the dimensions and specified criterions for the piece Crankshaft H4x series, by the beneficiary's demands:

- pressing diameter for pinion gear;
- tapering;
- centered/aligning diameter for flywheel;
- plate diameter;
- position to the bearing no.2 (flywheel) to flywheel front;

TECHNICAL FEATURES

- Electrical supply (for CMZ200 ETAMIC): 220 V ac /50 Hz;
- Pressure supply: 5 bar;
- Measuring time: maximum 10 sec. per every piece;
- Display resolution: 0,001 mm;
- Measurement elements with inductive transducers: pneumatically actuated;
- Industrial processor : CMZ 200 ETAMIC Station;
- Mechanical device-Station's interface: SATELIT ETAMIC;
- Operating system: Windows2000;
- Measuring software: INCDMTM Bucharest;

APPLICABILITY:

Pneumatic measurement for diameters and specified criterion for the H4x-crankshaft's production line.

TECHNOLOGY TRANSFER

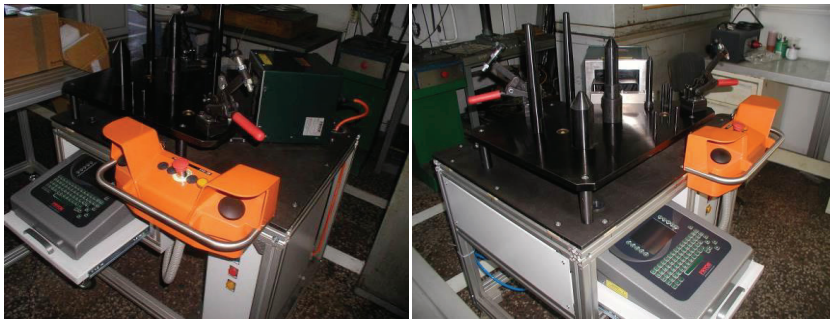
- H4x-crankshaft's production line

BENEFICIARY:

S.C. Automobile Dacia Group Renault S.A. Mioveni, Argeş, Romania.

FURTHER INFORMATION: Mihai Hacman : laborator_tm1@yahoo.com

MECHATRONIC INTELLIGENT EQUIPMENT FOR VERYFING CROSS-OUT HOLES ON CLUTCH CASING & DIFFERENTIAL GEAR BOX



PRODUCT OVERVIEW

The equipment is designed for verifying the existence of the cross-out holes in the auto-part "Clutch Casing and Differential Gear Box" – H5 TL8, and the scratch-out marking for the burden casting (with three digits).

- The position of the holes : with pins;
- Detection correct position of the holes: with three inductive proximity sensors;
- Marking command: bi-manual;
- Automatic marking good parts: Pryor device (scratch-out);
- Piece clamping: with toggle clamps;
- Automation box: command and signals management; operator protection; proper operation signalization;
- Operating panel: for commands.

TECHNICAL FEATURES

- electrical supply : 230V ; 50Hz ;
- input (without marker) : 500VA
- charging voltage : 24V cc;
- pressure supply : 4 bar ;
- overall size : 800x700x1850 [mm] ;
- engineering shop temperature : 18-38C ;
- relative humidity : 40-70% ;
- engineering shop brightness : 250-260 lux

APPLICABILITY

The equipment verifies the existence of the cross-out holes in the engine part "Clutch Casing & Differential Gear Box" type H5 TL8.

TECHNOLOGY TRANSFER

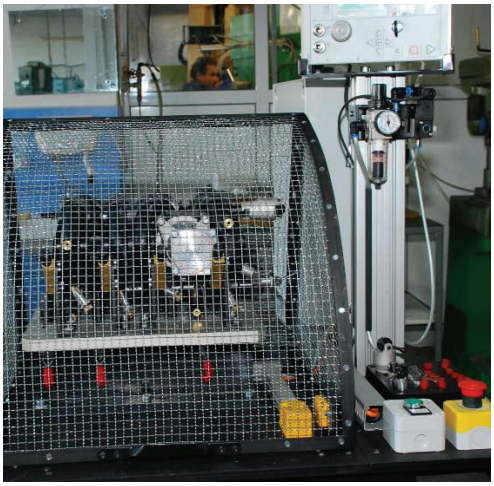
The product is put into service in the production line "Clutch Casing & Differential Gear Box" type H5 TL8.

BENEFICIARY

S.C. Automobile DACIA Groupe Renault S.A

FURTHER INFORMATION: Mihai Hacman: laborator_tm1@yahoo.com

MECHATRONIC INTELLIGENT UNIT FOR TIGHTNESS CHECKING AIR INTAKE / LIQUID GAS (GPL) DISTRIBUTOR-ENGINE K7M828

PRODUCT OVERVIEW

The unit is manual and is designed for verifying the tightness of the air intake / GPL distributor for engine K7M828.
For tightness the piece are necessary 8 air seals and the base plate.

TECHNICAL FEATURES

- overall size : 785 x 1000 x 750 [mm];
- number of tightness surfaces: 18;
- electric supply: 220V; 50 Hz;
- pressure supply: min 5 bar;
- tightness test: ATEQ cell F520;
- work pressure: 4,5 bar;
- test pressure: 1 bar;
- admissible air loss: 15 cm^3/min.

APPLICABILITY

The machine verifies manually the tightness of the distributor for air intake / liquid gas for K7M828.

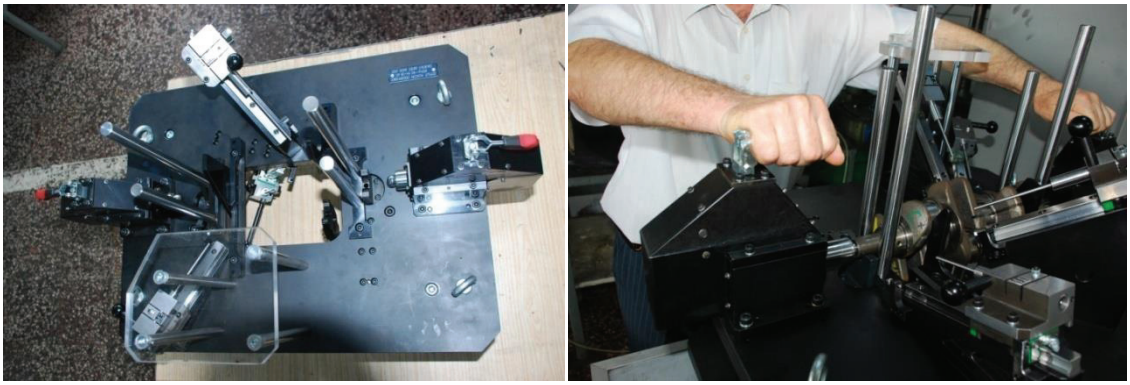
TECHNOLOGY TRANSFER

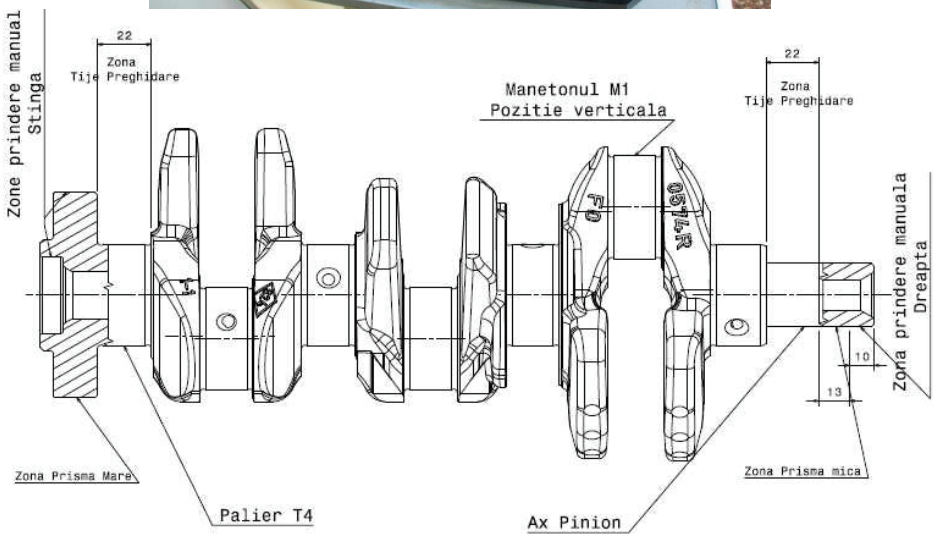
The product is put into service in the production line for K7M828 engine.

BENEFICIARY: S.C. Automobile DACIA Groupe Renault S.A

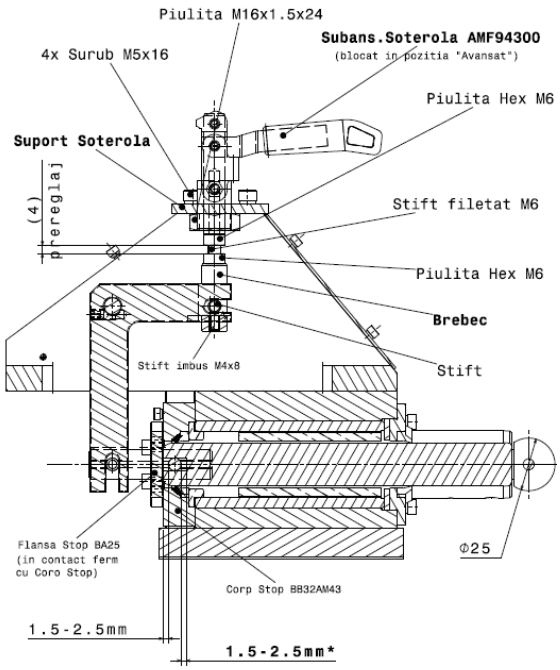
FURTHER INFORMATION: Mihai Hacman: laborator_tm1@yahoo.com

DEVICE FOR CHECKING POSITION OF LUBRICATING CRANKSHAFT HOLES H4BT TYPE, H4DA

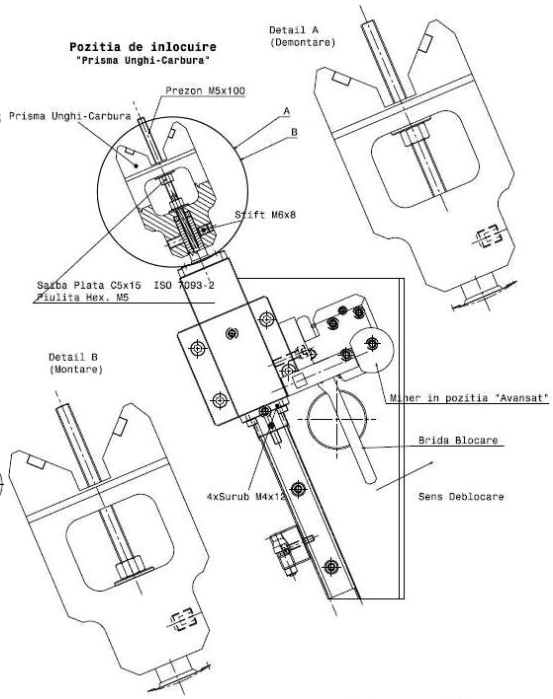




Placing of the crankshaft into the device



Snatch assembly adjustment / replacement



Carbideangleprismsubassembly replacement

OVERVIEW AND APPLICABILITY

Controlled piece / Device:
- H4Bt shaft/ Device code: D882474000
- H4Da shaft/ Device code: D882468900

Hole position checking:
-axle Ø4 (h6)
-method: type caliper passes/does not pass

Result: compliant / non-compliant

Sizes:
-D882474000 device: LxlxH = 839x563x626[mm]
-D882468900 device: LxlxH = 839x534x626[mm].

Note: Deviation from functionalrates ± 0,080 mm.

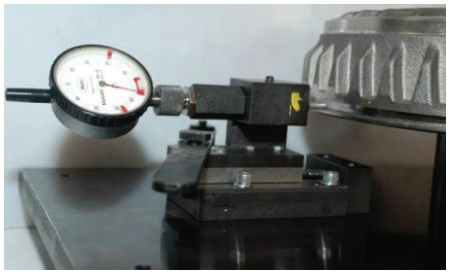
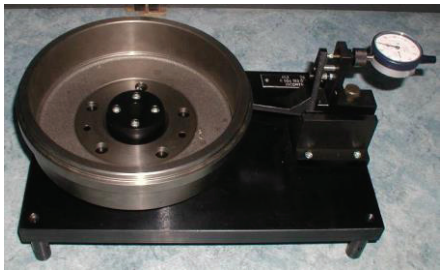
BENEFICIARY

SC.Automobile Dacia Groupe RENAULT SA - Mioveni

FURTHER INFORMATION:

Eng. Mihai Hacman, e-mail: laborator_tm1@yahoo.com

DEVICES FOR CHECKING QUOTAS FOR ALEEGE REEL T9 MARK

OVERVIEW AND APPLICABILITY

The products are used in checking quotas and conditions imposed by beneficiaries to Aleege reel T9 mark.

CAPITALIZATION AND TECHNOLOGY TRANSFER

The products are delivered and implemented in the fabrication line of Aleege reel T9 mark of SC. Automobile Dacia Groupe Renault SA Mioveni.

BENEFICIARY

SC.Automobile Dacia Groupe RENAULT SA - Mioveni

FURTHER INFORMATION:

Eng. Mihai Hacman,
e-mail: laborator_tm1@yahoo.com

DEVICES FOR CHEKING QUOTAS AND CONDITIONS FOR AXLE PIN BASE MARKS X52 AND H79

Device for thickness control of axle pin base arm

Device for checking position of axle pin base cone

Device for checking position of joining elements

T-NT caliper for axle pin base diameter

OVERVIEW AND APPLICABILITY

The products are used in checking quotas and conditions imposed by beneficiaries to front H79/X52 axle pin base marks.

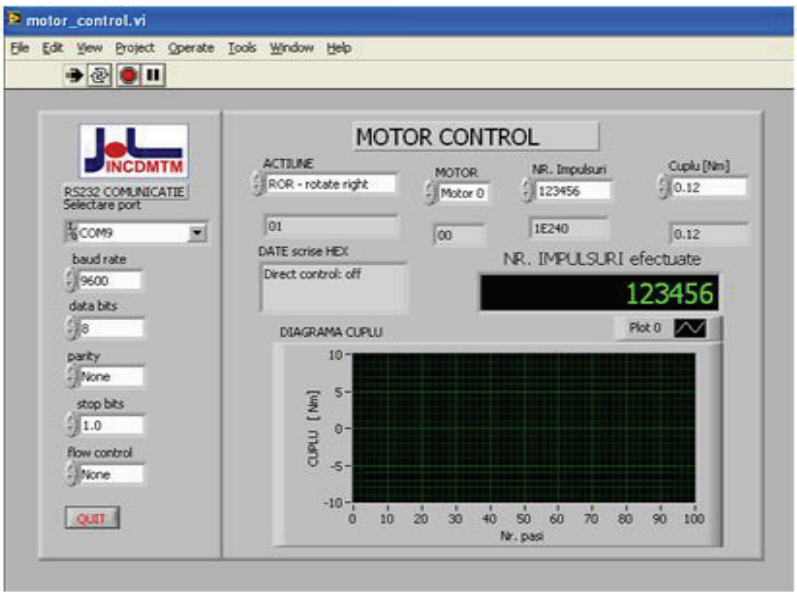
BENEFICIARY

SC.Automobile Dacia Groupe RENAULT SA - Mioveni

FURTHER INFORMATION:

Eng. Mihai Hacman,
e-mail: laborator_tm1@yahoo.com

STEPPER MOTOR MECHATRONIC SYSTEM - GEAR DRIVE



PRODUCT OVERVIEW

The system, based on a modern method which involve the use of specific sensors, specialized software with PC interfaces, mathematical modeling, allowing the optimizing of parameters of mechatronic systems type stepper motor driving - gear transmission and interdependence between them: optimal and critical control frequencies, critical and optimal inertia moments.

The system is made up of 3 individual components :

- 10 stands with gear transmissions from different materials
- Block electronic control stepper motors and pre-ordered number of pulses
- Specialized software interfaces with PC and mathematical model

TECHNICAL FEATURES

For gears :

- Modules used : 0.4; 0.5; 0.6; 0.8; 1.0 mm
- Gear report range : i = 40 ÷ 400
- Materials used : stainless steel for pinions; brass and platic for gears
- Possibility to obtain different inertia moments and total different total reports for gear transmission

For stepper motor and electronic control unit:

- Positioning precision : ± 5 % of angular pace
- Command impulses frequency : variable, to obtain different speeds of the stepper motor shaft
- PC display : frequency and number of impulses

APPLICABILITY

Stepper motor mechatronic systems– gear drive – are used in applications that require precise and controlled movement, due to the following advantages:

- Functioning in closed loop
- Univocity of the conversion of number of command impulses and incremental angular and liniar displacement
- Numerical command compatibility
- High positioning precision
- They allow starts, stops, and exchanging of displament direction without pace loss
- Easy integration in complex systems

Having a high lifecycle, the following applications are used :

- Medical devices
- Devices for recording physical quantities
- Displacements and positioning of optical systems
- 2D and 3D coordination positioning tables
- Devices for orientation and positioning in robotics
- Parts of military driving applications

TECHNOLOGY TRANSFER

Results of research:

- The compendium of parameter optimization of the mechatronic systems with stepper motors - gear transmissions - shall be transferred to specialized businesses
- Papers in specialized journals
- Presentation CD

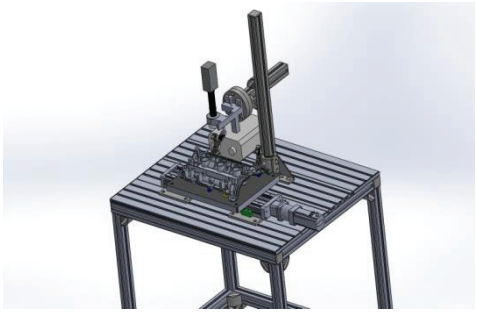
BENEFICIARY

Dedicated SMEs the presented areas.

FURTHER INFORMATION

INCDMTM can grant technical consultancy and assistance in the realization of products with embedded mechatronic systems with stepper motor – gear drive.

VISION-BASED MECHATRONIC SYSTEM FOR THE INSPECTION OF THE AUTOMOTIVE PARTS



PRODUCT OVERVIEW

In industrial production systems, vision inspection is increasingly taking the place of quality control using the human eye. The key advantages of image processing are reliability and consistently high inspection speeds, even for complex inspection tasks.

A vision-based mechatronic system can be integrated as top product in the activities of control and inspection of parts, sub-assemblies and products in the final stage of assembly.

The vision-based mechatronic systems has been designed as a modular system intended to assist the human operator in an assembling post on a production line characterized by : parts moving at a high rate, high diversity of parts to be assembled, high similarity between versions of the parts to be assembled, frequent changes of manufacturing series.

Practically, in the same assembling workstation, the human operator has to perform similar operations which involve different subsets for different versions of the manufactured product. Because of high rate and similarity of versions, error probability is very high, the operator may misplace a subset, which may prove inappropriate. Usually, the error is detected much later on the manufacturing line, or even during a later stage, which requires removing the product from the line, disassembling it, recalibrating and adjusting it and so on, with major consequences on manufacturing costs.

TECHNICAL FEATURES

- vision sensor choice: from low-cost smart sensors to high-performance camera
- flexibility - the possibility to choose between 'off the shelf' or 'customised' solutions
- easy integration with other devices through DI/O ports, Ethernet or serial interface - to connect to programmable logic controller (PLC), robot controller
- locating features, presence checking, morphological features
- image enhancing
- ease of use software , friendly interface

APPLICABILITY

The figure illustrates an application for controlling a motor shell on an automotive production line.

A high resolutions video camera is used to verify the morph-dimensional items on a motor shell. In this case, the processing software provides pass or fail verdicts and some dimensional results on the inspected part.

BENEFICIARY : Automotive parts manufacturers, car assemblers, etc.

FURTHER INFORMATION: Sorin Sorea , e-mail: sorinsorea@gmail.com

VERIFICATION DEVICE FOR FORCE CHECKING ON THE POINT MACHINES ELECTROMECHANISMS WITH DYNAMOMETER BOLT


PRODUCT OVERVIEW

The deviceis intended tocheckthe forces thatariseinthe shift way of the point machine, in the articulation pointofthehandlebar from the kinematicchain of the electro mechanism.

The device cancheck:

-Force required for actuating theswitchinboth directions;
-Maximum forcedeveloped by the electro mechanismswitch;
-Calibration forces of the point switch;
-Forcetrailingthe switch

Components: elastic bolt, attachment device, electronic digitalcomparator and computer (not a part of the device). The transducer used for measurementis anelasticboltthat is inserted intokinematicchain of the point machine instead of the connection pinof the handlebarandelectro mechanism,the device is providingthe blockingin measurement position; the elasticdeformationofelasticboltis directly proportionalwith the amount ofaction force size.Displacementis measuredwith anelectronic digitalcomparatordirectly orbyfoot pedal and directed to a computer equipped withspecificdata acquisitionsoftware.

TECHNICAL FEATURES:

- Maximum forcemeasured600daN;
- Maximumoverloadwithoutirreversibledeformation of the boltdynamometer: 200 daN;
- Operating class: 1, temperature range: -15°- + 40°C;
- Maximum drive frequency:1drive/minute;
- Measurement accuracy:±5%.

APPLICABILITY:

The product is intendedfor force control and force checkingat electro mechanisms of the point machinesin order to ensuremaintenanceand safetyrailraceway.

TECHNOLOGY TRANSFER :SC. SPIACT SA. Craiova

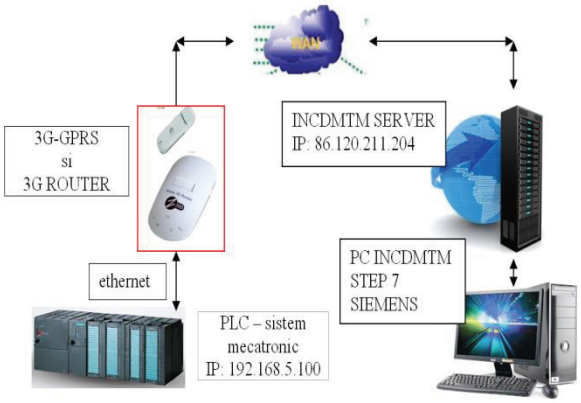
BENEFICIARY : SC. SPIACT SA. Craiova

FURTHER INFORMATION:

INCDMTM Bucuresti, tel. 021 252 30 68; fax 021 252 34 37; e-mail: incdmtm@incdmtm.ro
SC. SPIACT SA. Craiova, , tel. + 40. 251.418.392 , e-mail: office@spiact.ro

EQUIPMENT FOR PREDICTIVE TELEMENTENANCE AND TELESERVICE BASED SYSTEMS TO CONTROL REMOTE COMPLEX MECHATRONIC SYSTEM

CONTRACT NR. 5N / 2009, A.AD. NR. 1/2012; PROGRAM: NUCLEU



PRODUCT OVERVIEW

The Internet provides a low cost way to connect a computer anywhere in the world. Any computer that can connect to a local Internet Service Provider (ISP) can communicate with any other industrial equipment with access to the Internet. With the Internet proliferation, more and more facilities have to remote monitoring and telementenance control [2]. This came with the introduction of the networking administration and protocols. The use of these technologies for Predictive Maintenance professionals can be critical to the success of the program at an industrial plant.

To achieve secure connections over the Internet between the user and the machine, INCDMTM has developed a smart Web-based remote access technologies.

APPLICABILITY

Predictive maintenance tends to include direct measurement and interactions of the item. Example, mechatronic system for the measuring of the dimensional parameters while Preventive Maintenance includes the periodical evaluation of the transducers and calibration status. The manufacturing company is telling you that the life span of the transducers is 2 years and calibration procedure must be initiated every 7 days. So just before expiring 3 years you have decided to replace the transducers with a new and scheduled for maintenance every days for calibration [1]. This is called Preventive Maintenance. Business developments also led to the development of the maintenance technique. The beneficiaries organize the maintenance activities are aspects of location of the company, field of activity, characteristics of the means of production, etc. Systemic approach involves considering the following types of maintenance organization, which according to the resources and objectives are designed to ensure optimal availability of technical systems, see the figure 1:

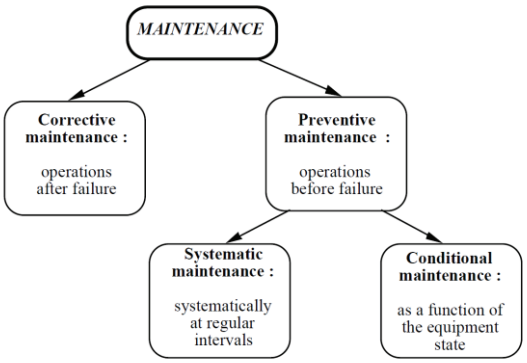


Figure 1-Systemic approach of maintenance [4]

TECHNOLOGY TRANSFERCOMPLEX MECHATRONIC SYSTEM FOR MEASURING REVERSE MODULE ON AUTOMOTIVE INDUSTRY

The current project use GPRS technology for communications.

The first advantage of GPRS communication is its price of remote assistance, which is based on the volume of data transmitted. In practice, there are some overhead costs because it is necessary to send “keep alive” data periodically in order to keep the remonte monitoring active. The number of keep-alive transmission cycles should be kept small. Accordingly, INCDMTM provides a smart text-messaging for the wake-up mechanism that allows the connection to be closed.

A second advantage is that in some countries GPRS communication networks are much better developed than PSTN networks. With GPRS communication, remote maintenance or “inaccessible” applications is thus more convenient than with landline communication. In addition, the bandwidth of UMTS, HSDPA or HSUPA is comparable to the bandwidth of wired DSL.

Finally, Using two GPRS module and change of web server application with custom INCDMTM monitoring software application guarantees machine builders and system integrators access to remote sites even when the IP addresses are not public or there is a firewall that blocks all incoming communication with SIEMENS PLC [3].

The transfer work refers to the modernization of existing complex measurement systems (see figure 2) in order to add functions and maintenance remote monitoring. Complex measurement system performs dimensional inspection and marking function for one subassembly of an automotive system.

The project proposes to examine existing technologies already implemented in the system and research aimed at identifying progress in the field, internationally and at home, and trends manifested in the design, evaluation and implementation of an annex for monitoring and remote control.

General block diagram of the equipment is shown in the following figure and it shows where the main functional modules and their relationship for a general characterization of how the achievement of key functions is done.

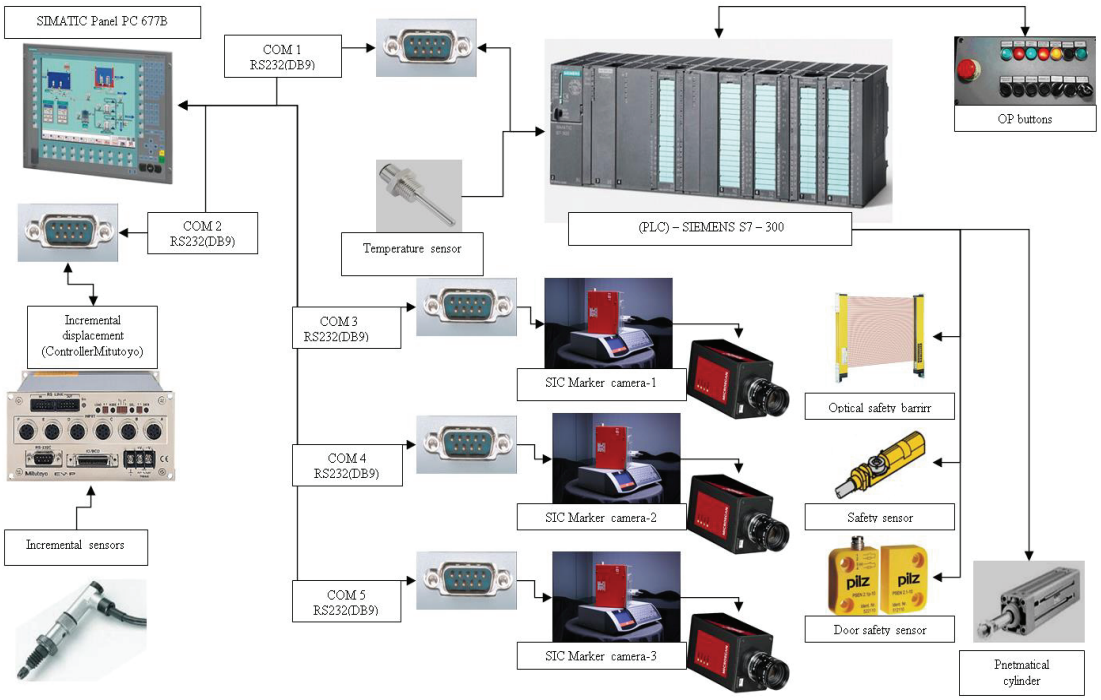


Figure 2 - The bloc diagram of the mechatronic system

Currently the telemaintenance systems are being developed and progressively installed on industrial sites. They are particularly interesting in the fields constituting some risks for the human beings, those fields where human intervention and/or the production stops are very expensive.

Many operational systems are also found in "intelligent" mechatronic systems and in large remonte telecontrolling mechatronic systems.

According to the competence and/or to the function of the operator at the production site, he may also have access to certain functions of the telemaintenance computing system, and may collaborate with the expert by telephone and a console (Figure 6.1). This last case is the subject of research. The operator who is on the production site is likely to perform some maintenance actions on the machine following expert instructions. Nevertheless, for certain repairs, the expert will probably need to go to the production site, or to send a specialist. It is obvious that the telemaintenance system is integrated into man-machine system in which the characteristics and the tasks of the telemaintenance expert will have a direct influence
on the successfully result of the project concerning the telemaintenance system design. The designer of such telemaintenance systems will need to consider such notions.

BENEFICIARY:RENAULT – DACIA S.A. – Mioveni, jud. Arges, Romania

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INTELLIGENT MECHATRONIC UNIT FOR TIGHTNESS CONTROL OF CARTER CYLINDER ASSEMBLED (SEMMELLE) MACHINED TYPE H4Bt49 & H4Bt SULEV

PRODUCT OVERVIEW

The testing unit is a complex, mono-block construction use in checking tightness of the pieces type Carter Cylinder Assembled. All the moving subassemblies are operated by pneumatic cylinders assisted by a lot of proximities sensors. The piece is tightening on all sides, including the tilt one.

The ATEQ-cell is provided with 2 circuits and realizes the measurement cycle after the fixation and tightening the piece.

TECHNICAL FEATURES

- electrical supply: 220 V ac/50 Hz;
- pressure supply: min. 6 bar;
- work pressure: 4,5 bar;
- tightness test pressure: 1 bar;
- admissible air loss:
  - 12 cm3 /min on Low-Pressure circuit;
  - 25 cm3/min on High-Pressure circuit ;
- work time / tour: ~ 83 sec/piece.
- tightness test: ATEQ F570 – 2 circuits cell;
- Automat: Siemens;
- operating panel: OP77;
- operating system: WINCC for OP77;

APPLICABILITY

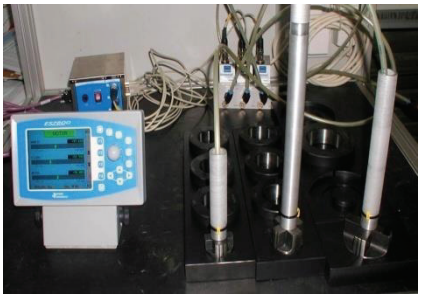
The unit verifies the tightness of the engine part – “Carter Cylinder Assembled” (machined), designed for H4Bt49° AND h4Bt Sulev types.

TECHNOLOGY TRANSFER

The product is put into service at S.C. Automobile Dacia Groupe Renault S.A. - Piteşti

BENEFICIARY : SC Automobile DACIA Group Renault SA Mioveni
FURTHER INFORMATION: Mihai Hacman; e-mail: laborator_tm1@yahoo.com

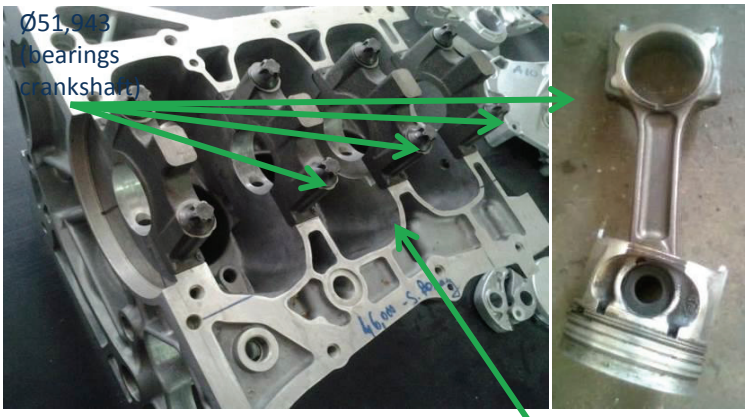
HOLES MEASURING SYSTEM WITH PNEUMATIC GAUGES AND INDUSTRIAL PROCESSOR ESZ800 ETAMIC FOR BLOCK ENGINE



PRODUCT OVERVIEW

The system is made by three pneumatic gauges for measuring three types of diameters from the block engine: bearings crankshaft, rods-crankpins and cylinders.
The control is necessary for mating parts.

Diameters:
Ø51,943
(bearings
crankshaft)



Diameters:
Ø47,619
(rods /crankpins)

Diameters:
Ø76,006
(cylinders)

TECHNICAL FEATURES

- Electrical supply: 220 V ac /50 Hz;
- Pressure supply: 5 bar;
- Measuring time: maximum 10 sec. per every hole of the part;
- Display resolution: 0,001 mm;
- Pneumatic-electronic transducers: TPE99/1;
- Filter regulator: FESTO
- Industrial processor : CMZ 800 ETAMIC Station;
- Mechanical device-Station's interface: SATELIT ETAMIC;
- Operating system: WinCC;

APPLICABILITY:

Pneumatic measurements for the control of the assembly "block-engine"-"rods"-"crankshaft".

TECHNOLOGY TRANSFER : Control of the assembly block engine at RTR.

BENEFICIARY: RTR-Renault Technologie Roumanie, Titu, Dambovita, Romania.

FURTHER INFORMATION: Mihai Hacman : laborator_tm1@yahoo.com

MECHATRONIC INTELLIGENT MACHINE FOR TIGHTNESS CHECKING (under vacuum) GEAR CASING JH3-MACHINED

PRODUCT OVERVIEW

The machine is designed for verifying the tightness of the part: JH3-Gear Casing, under vacuum.
Operation mode:

- The machine has an automatic work cycle;
- The intelligent measuring program is setting for the testing piece;
- The piece is set inside the machine, on the tightening plate;
- On press the START-Button;
- The piece is fixed on plate with the toggle-clamps;

- The carriage move the piece in the testing position;
- The pressure subassemblies push the piece on the tightening plate;
- The tapered and clamping subassemblies pressurize the bores of the piece;
- The ATEQ-cell introduces air in the obtained cavity of the piece (0,2 bar);
- The machine verifies the air loss (admissible air loss less than 0,15cm3 /s);
- If the piece is good it's automatically marked;
- The machine is protected with immaterial barriers against the intruders over the function, in the work space.

TECHNICAL FEATURES

- electrical supply: 220 V ac/50 Hz;
- pressure supply: 6 bar;
- work pressure: 5 bar;
- tightness test pressure: -0,5 bar;
- admissible air loss: 25 cm3 /min;
- accuracy: ± 0,02 cm3 /s;
- tightness test: ATEQ F510 cell;
- automat: Siemens;
- operating panel: OP77;
- operating system: WINCC for OP77
- work time/tour: ~ 40 sec/piece (time-log conformity)

APPLICABILITY

The machine verifies the tightness of the machined pieces (duralumin) Gear Casing type JH3 using vacuum.

TECHNOLOGY TRANSFER

The product is put into service in the production line for gear casing type JH3.

BENEFICIARY

S.C. Automobile DACIA Groupe Renault S.A

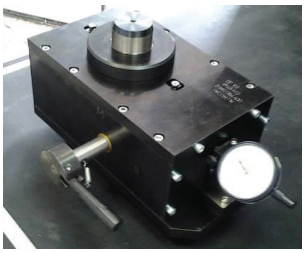
FURTHER INFORMATION:

Mihai Hacman : laborator_tm1@yahoo.com

CONTROL DEVICES FOR DIMENSIONS AND SPECIFIED CRITERIONS PIECE: FLYWHEEL ASSY-ENG. H4 / H5





PRODUCT OVERVIEW

The devices are made for verifying the dimensions and specified criterions for the FlyWheel Assy-Eng. H4 / H5.

TECHNICAL FEATURES

-specific to each operation and condition checked.

APPLICABILITY: The complex devices measure dimensions and conditions of flywheel type H4/H5.

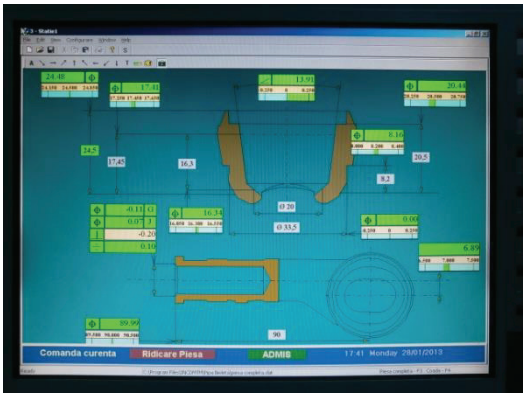
TECHNOLOGY TRANSFER

The devices are put into services on the production line for FlyWheel Assy_eng. H4/H5.

BENEFICIARY: SC Automobile Dacia SA Mioveni.

FURTHER INFORMATION: Mihai Hacman : laborator_tm1@yahoo.com

INTELLIGENT EQUIPMRNT FOR MULTIPARAMETRIC MEASUREMENT OF LEFT/RIGHT OUTER BALL JOINT



PRODUCT OVERVIEW

This equipment is designed to accurately dimensional control the left/right outer ball joint. It allows measurement of linear dimensions, angular dimensions, position deviations. The measurements are done with inductive transducers. Data are processed, stored, statisticaly analyzed and displayed on an industrial computer.

TECHNICAL FEATURES

- Operated mode: manual and automatic.
- Digital display
- Resolution: 0,001 mm
- Flexible construction that allows measurement of both types of outer ball joint (left and right)
- Pneumatic and electric drive
- Judgment criteria: validation/ invalidation part

APPLICABILITY

Automotive industry, for outer ball joint measurement

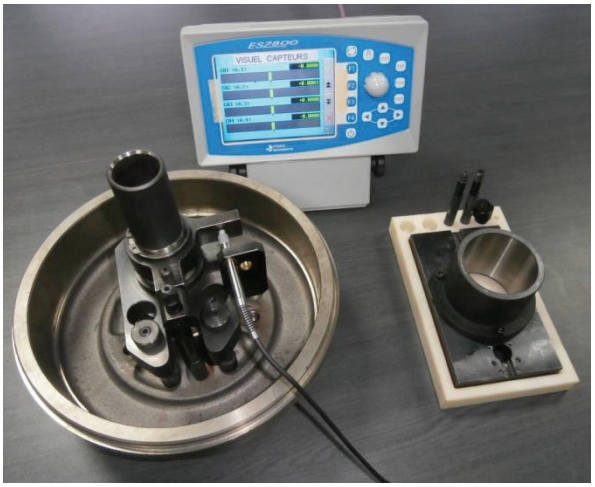
TECHNOLOGY TRANSFER

The product is put into service on S.C. Componente Auto SA Topoloveni, from 2013.

BENEFICIARY: Automotive industry

FURTHER INFORMATION: Phd. Eng. Aurel ABALARU, e-mail aurel.abalaru@gmail.com
Phd.Eng. Doina Cioboata, e-mail cioboatadoina@yahoo.com

DEVICE FOR MEASUREMENT THE SYMMETRY OF THE THREADED HOLES RELATED TO THE RIBS OF THE AUTO DRUMS



PRODUCT OVERVIEW

This equipment is designed to accurately measure the symmetry of the threaded holes related to the ribs of the auto drums. The measurement can be done with digital indicator or inductive transducer and Etamic industrial computer.

TECHNICAL FEATURES

- Manual measurement mode
- Digital display
- Resolution: 0,01 mm
- Flexible construction that allows measurement of all types of drums

APPLICABILITY

Automotive industry, for drums measurement

TECHNOLOGY TRANSFER

The product is put into service on S.C. Automobile Dacia Groupe Renault S.A., from 2013.

BENEFICIARY: Automotive industry

FURTHER INFORMATION:

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Phd. Eng. Aurel ABALARU, e-mail aurel.abalaru@gmail.com

MECHATRONIC EQUIPMENT FOR GEOMETRICAL CONTROL AND MARKING OF BRAKE DRUM

PRODUCT OVERVIEW

The mechatronic equipment consist of a rotary table for part, movable and stable measuring elements, an industrial PC and a customised software and an ink-jet printer. It allows combined internal and external measurements of the brake drums. The following geometrical sizes are measured:

- Out of roundness of braking track in three sections;
- Radial run-out of braking track in three sections;
- Flatness and perpendicularity of the drum rim with the bearing diameter;
- Concentricity of rim diameter with ABS diameter
- Perpendicularity ABS face and concentricity ABS diameter with the bearing diameter;

Customized software provides display and analysis of dynamic measurements and statistical analysis.

TECHNICAL FEATURES

- Measurement accuracy: ±0.002 mm
- Measuring resolution: 0.001 mm
- Ink-jet marking of good part;
- electrical supply : 230V ; 50Hz ;
- pressure supply : 4-6 bar ;
- engineering shop temperature : 18-38C; relative humidity : 40-70%;
- overall size : 1100x750x185 [mm] ;

APPLICABILITY : Dacia-Renault Group

TECHNOLOGY TRANSFER: The equipment is integrated into drum production line.
BENEFICIARY: Dacia Group Renault
FURTHER INFORMATION: Aurel Abalaru - aurel.abalaru@gmail.com
Danut Stanciu – danutstanciu@yahoo.com

DIFFERENTIAL CROWN MULTIDIMENSIONAL MEASURING SYSTEM

PRODUCT OVERVIEW

The system is destined to ensure both static and dynamic measurement of the parameters of the pressing bore of the differential crown. The measurement system is made of a basing mandrel on top of which there are 8 inductive transducers which constitue the measuring basis for accomplishing the functions needed to monitor the pressing diameter.

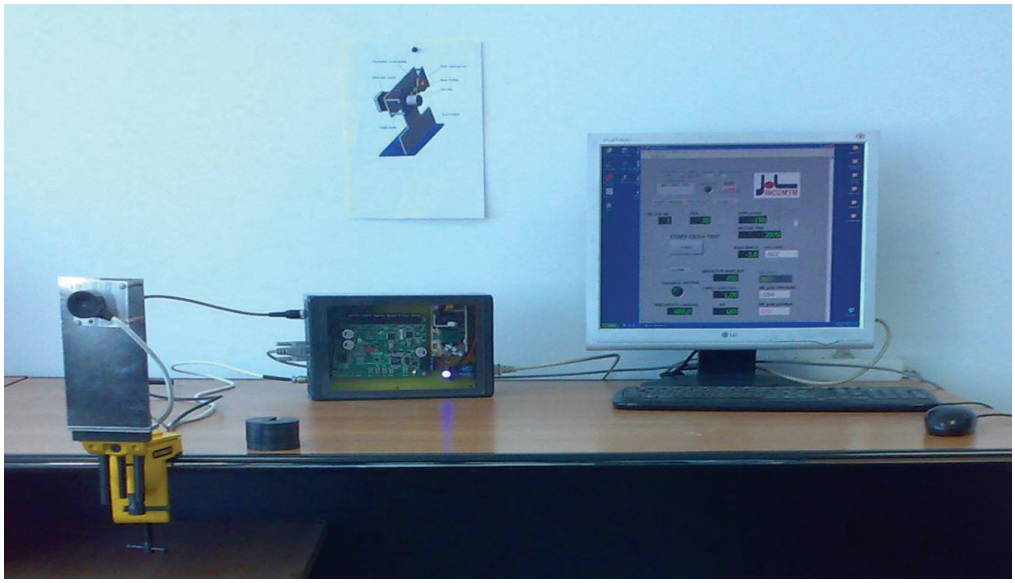
TECHNICAL FEATURES

- Measuring range: Ø140±0,4 mm
- Precision: ±1µm
- Resolution: 1µm
- No. of measured parameters: 18
- Measuring time/part: max. 10 sec.

APPLICABILITY : Precision measurements of bores in parts with similar configuration in the automotive construction industry.

TECHNOLOGY TRANSFER: The product can be used in automotive construction companies.
BENEFICIARY: “Nucleu” Programme
FURTHER INFORMATION: Eng. Popescu Mihail, Eng. Georgescu Valentin; e-mail: laborator_tm1@yahoo.com

STAND FOR DETERMINING THE PARAMETERS OF MECHATRONIC SYSTEMS - TRANSMISSION STEPPER MOTOR GEAR



PRODUCT OVERVIEW:

Stand for determining the parameters of mechatronic systems -transmission stepper motor gear used to achieve high performance products with high added value is multidisciplinary, and consists of:

- transmission gear coupled with stepper motor and encoder;
- electronic control and counting unit of stepper motor and pulses generated by the encoder;
- PC with RS232 port or Laptop for running a specialized programme made in Lab View

TECHNICAL FEATURES:

- transmission gear of total reports specific micromechanic transmission
- stepper motor with torque (0,2…0,4) N.m and angular step 1,8°
- encoder with 1000 imp/rot

APPLICABILITY:

Optimization of mechatronic system parameters: common optimal frequencies of control of optimal transmission reports; working couples, inertia system, will allow efficient products with high added value in the following areas:

- Medical and laboratory equipment
- Instrumentation
- Robotics and industrial automation

- Environmental control: monitoring and protection
- Airspace and defence

TECHNOLOGY TRANSFER:

For high - tech companies, CD tools, technical universities.

BENEFICIARY:

MINISTRY OF NATIONAL EDUCATION

FURTHER INFORMATION:

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e-mail: stefanvaduva2008@yahoo.com

ANGLE – COUPLE CONTROL MECHATRONIC EQUIPMENT FOR TIE ROD END

PRODUCT OVERVIEW:

Equipment verifies mobility of the ball stud after the end cap crimping, controlling pivoting angle and friction couple between ball stud and tie rod end body.
Equipment contains a measuring chain, leverage for blockage of tie rod end body, an actuating mechanism of pivoting lever, with two pneumatic cylinders, a clamping device of ball stud, and a mechanism of zeroing, actuated with pneumatic cylinder. Acquisition, processing and display of measuring results are assured by a PC and dedicated software.
Angles of minim ± 26.5° and maxim ± 3,5 Nm. are allowed

TECHNICAL FEATURES:

- Angle measuring domain: 0...28°
- Resolution: 0.2'

- Couple measuring domain: 1...5 Nm
- Resolution: 0.1 Nm

APPLICABILITY :
Automatic control integrated on the crimping machine of the end into tie rod end body.

TECHNOLOGY TRANSFER:

S.C. CA Topoloveni

BENEFICIARY:
S.C. CA Topoloveni

FURTHER INFORMATION:
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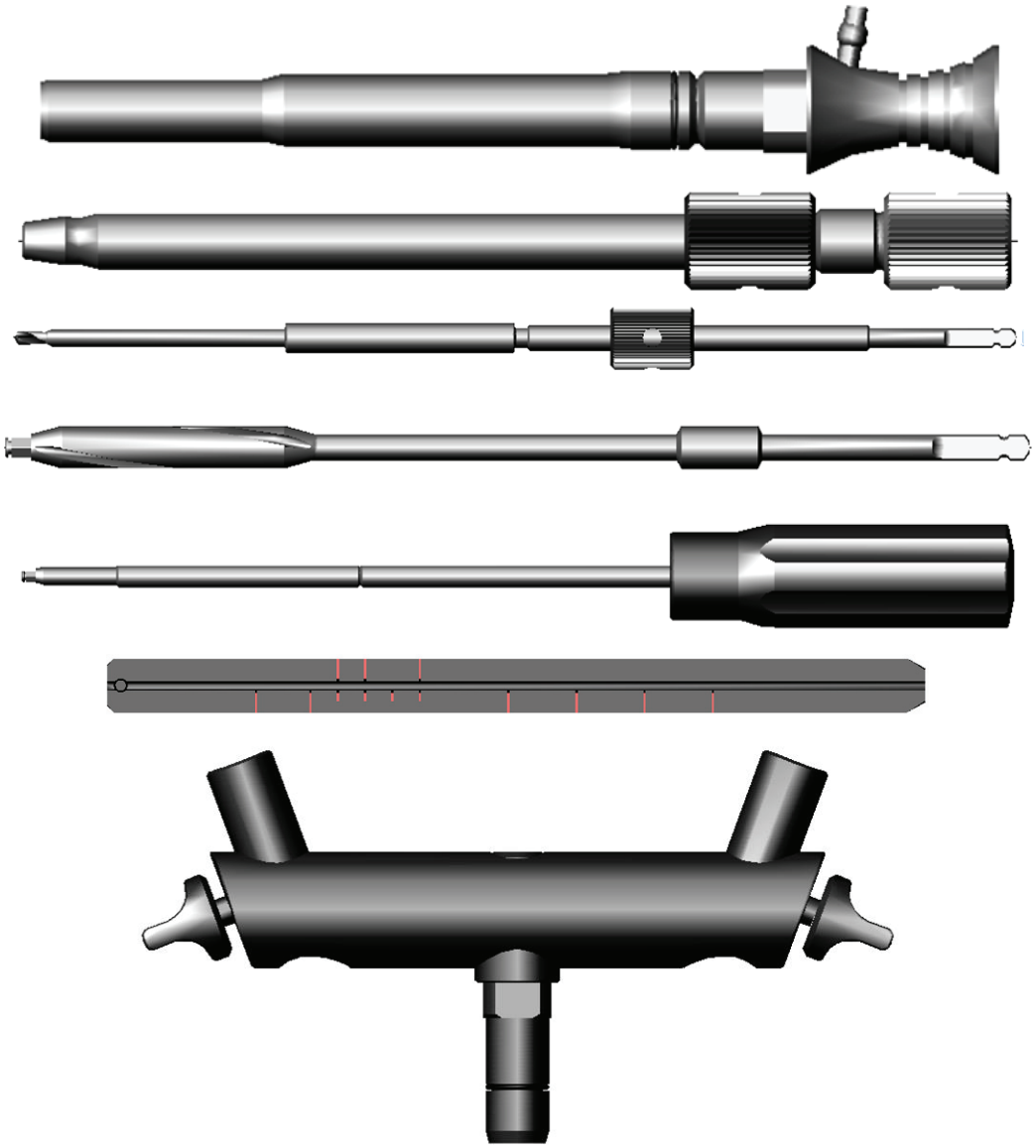
INNOVATIVE INSTRUMENTS FOR MINIMALLY INVASIVE SURGERY IN FEMUR FRACTURE REDUCTION

This work was supported by a grant of the Romanian National Authority for Scientific Research, CNDI – UEFISCDI, project number „PN-II-IN-CI-2012-1-0347”



PRODUCT OVERVIEW

The proposed instruments help the surgeon to perform the drills, insert the screws and Kirchner guiding wires for bone fragments fixation using implant plates and minimally invasive technique. The toolkit includes: cutting tools (self centering drills, cylindrical drills, taps, cutting

rods), guiding and alignment tools, measuring tools (rulers, angular measuring device, spacers), fixing tools (wrenches and adapters).

The instruments facilitates fixation of different implants produced by renowned companies so that they correspond to the anatomical landmarks required to obtain proper functionality. The innovative aspect of the project is based on developing of a set of tools to allow one- hand operation and achieve precise position, orientation and fixation of the implant plates, inserting Kirschner wires and realization of incisions, bone drilling and tightening screws. The guiding device can be used in orthopedic surgery, under X-ray visualization, for precise positioning of the trocar and of the drills. The precise positioning is needed to drill the holes in bone for insertion of dedicated cortical screws which will fix the implanted plate in intramedullary canal of the fractured bone.

TECHNICAL FEATURES

The set contain all necessary instruments for positioning and fixing of the plates implant using minimal invasive techniques in femoral fractures.

APPLICABILITY

The instruments are used in clinics for orthopaedy and traumatology.

TECHNOLOGY TRANSFER

The technical documentation is transferred to a small manufacturing unit SC CARMESIN SA which will manufacture and commercialize the products.

The product will contribute to improve the performances of medical act and to develop and improve quality of life. Making these devices increases quality of health care, reduces patient risks of diseases and may increase total turnover of the producer.

BENEFICIARY

- SC CARMESIN SA;
- Is intended for endowing the orthopedic clinics and emergency hospitals.

FURTHER INFORMATION

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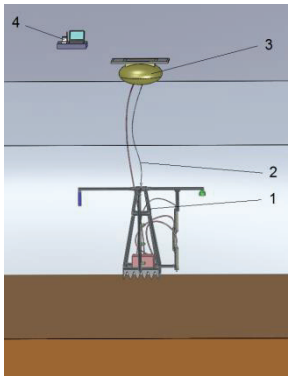
ULTRASONIC MEASURING SYSTEM FOR DEPOSITION OF SEDIMENTS IN RESERVOIRS - SEDCONTROL

PRODUCT OVERVIEW



SEDCONTROL system *Floating module*

The silting process affects the useful volume of the reservoirs, with important economic implications. The bathymetric maps of dam lakes are drawn measuring the water depth in x-y coordinates and show the dynamics of the silting process if they are updated periodically, but the accuracy of these determinations is related to the precision of the x-y coordinates. For a more accurate assessment of the deposition process, the SEDCONTROL system takes measurements in fixed points. It contains sensors of distance, turbidity, pressure, temperature and optional an array of ultrasonic sensors to detect the presence or absence of sediment. Also, it can be used as a mobile system.

TECHNICAL FEATURES

SYSTEM:

- Operating depth: 30 m
- Wireless range: 1 km

TURBIDITY SENSOR:

- Sediment range: Sensitive to grain sizes of less than 1 µm;
- Frequencies: Up to 4 frequencies, from 500 kHz to 5 MHz

ULTRASONIC SENSOR:

- Beam width: 9.5° ± 1°, Conical
- Depth range: 0.5-400m
- Resolution: 1cm

APPLICABILITY

The dynamics of the silting process presents interest to those who exploit reservoirs, which have

the following functions: power generation, flood control, water supply, discharge regulations, level regulations, fishing, navigation and recreation.

SEDCONTROL system has the following advantages:

* allows for direct measurements in a fixed measurement position;
* allows for real time information on changes in sediment layer;
* allows to perform transversal profiles for lakes or rivers.

TECHNOLOGY TRANSFER:

The acquired know-how will be transfered to production units and to SMEs with profile of precision mechanics and mechatronics.

BENEFICIARY:

Water management entities.

FURTHER INFORMATION:

Alexandru Moldovanu, smoldovanu@gmail.com

SELECTIVE LASER SINTERED COMPONENTS USED IN BIOMEDICAL RESEARCH WITH DIRECT APPLICABILITY ON SELECTED PATIENTS

PRODUCT OVERVIEW

Rapid Prototyping delivers tailor-made, flexible solutions for orthopaedics applications, with quick and cost-effective production.
They are designed in a large type and shapes to cover all kind of fractures and to assure a rapid healing.

TECHNICAL FEATURES

- Multiple form and shapes to cover all clinical situations;
- Made from biocompatible materials;
- Resistant at normal mechanical load which appears in designated implant place from human body;

APPLICABILITY

Implants must fit perfectly and be quickly tolerated by the body so they can bring about a long-term improvement in the patient's quality of life. Standard products are inadequate here. Instead, products must be tailor-fitted to the patient, with an added need for fast availability at a reasonable price.

TECHNOLOGY TRANSFER

Forhospitals,clinics andmedicaluniversities

BENEFICIARY

- The research results were implemented at:
  - SC NOVA-ORL SRL

- "FLOREASCA" Clinical Emergency Hospital
- SC TEHNOMED IMPEX CO SA
- "MS CURIE" Pediatric Clinical Emergency Hospital

FURTHER INFORMATION

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BRAND: «SMART MECHATRON: Competitiveness, performance and high quality through HIGH-TECH MECHATRONIC PRODUCTS »

"TERRITORIES OF RIVER ACTION PLANS - TRAP"
[Program INTERREG IVC]

PRODUCT OVERVIW:

TRAP deals with the challenge of integrated management of rivers & river territories. Its purpose is to build on and transfer good practices that embed aquatic & cultural heritage landscape protection in regional, sustainable growth solutions.

TRAP contributes to the implementation of the Water Framework Directive (WFD), the European Landscape Convention (ELC) and the Europe 2020 strategy.

The WFD establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater; good water status is to be achieved by 2015 throughout the EU.

The ELC stresses European identity & diversity through the protection, management & planning of European landscapes, living natural & cultural heritage, ordinary or outstanding, urban or rural, on land or in water.

Europe 2020 is the EU's growth strategy for the coming decade, aiming at smart, sustainable and inclusive growth. Reaching good water quality status, continuing the WFD implementation and addressing the ELC, require considerable resources & upscale development solutions. These relate to regional policy areas dealing with the resources & tools required to improve and sustain river basins' quality, stakeholder involvement & commitment in maintaining good water quality, as well as solutions & tools ensuring high quality, inclusive growth.

Thus, the overall objective of TRAP is to benefit from partners' good practices in these policy areas and improve accordingly regional policies & tools.

TRAP is an INTERREG IVC regional initiative project, that will run from 01.01.2012 to 31.12.2014 and has a budget of 1.371.586,00 €.

Description of the project:

TRAP is submitted under Priority 2 Environment and risk prevention and the sub-theme on Water management of the Interreg IV C Programme. Priority 2 is addressed from the point of view of river basin quality.

TRAP deals with tools that make the implementation of the WFD more effective and thus prevent risks and ensure water quality in the long run. However, TRAP goes one step further, since it also aims at making the river basin protection measures self-sustaining from the economic point of view.

Disseminating tools that combine growth with protection implies that ensuring river & river territory quality is not an external cost any more, it becomes a growth condition.

The necessity for integrated river resource management, bringing together is underpinned by three European policies: the Water Framework Directive (WFD-2000), the European Landscape Convention (ELC -2000) and the EU 2020 strategy (2009). The WFD is a response to the increasing importance of water as raw material, the threat of pollution and the demand from the public for cleaner rivers, lakes and beaches.

The WFD establishes targets for water quality, including rivers, lakes, estuaries, coastal waters and groundwater, and their dependent wildlife/habitats under one piece of environmental legislation. The deadline for reaching high quality water status is 2015. Partner regions share a high level of commitment to the WFD. At the same time, fulfilling the WFD is a challenging and potentially costly task. Authorities will have large penalties for non-compliance by the target date of 2015. Such potential penalties are a mind-concentrating factor. Not only do authorities want to comply, they will be subject to significant fines for non-compliance if they do not reach the WFD targets.

Objectives of the project:

The overall objective of TRAP is to analyze good practices and impact regional policies and regional policy tools dealing with integrated river and river territory management. In particular, TRAP addresses the Water Framework Directive (WFD) by supporting the regional river basin action plans, the European Landscape Convention (ELC) & the Europe 2020 strategy by impacting the regional development plans, the tourism & environment development plans, and liaising with Natura 2000. In addition, TRAP dedicates a part of its resources towards capitalizing the knowledge gained through the good practice transfer and jointly developing a transferable model embedding cultural/environmental protection into attractive regional growth. The overall objective is supported by sub-objectives as per Component of the project action plan:

CP1 OBJECTIVE: Smooth, timely, transparent, effective project management and achievement of the project objectives.

CP2 OBJECTIVE: Make known the results of the projects and share best practice on a wider basis to all regions in EU and liaise with relevant international organizations, such as the water network and ELC practitioners.

CP3 OBJECTIVE: Impact regional policy tools based on the analysis and transfer of good practices related to the implementation of the Water Framework Directive, the European Landscape convention and reflecting the Europe 2020 strategy.

PARTNERS:

TRAP Project involves 10 parteners from eight European regions:

- Lead partner: LP - Kainuun Etu ltd, Finland;
- Partner P2 - Shannon Development, Ireland;
- Partner P3 - Mid-West Regional Authority, Ireland;
- Partner P4 - Association of River Trusts (ART), UK;
- Partner P5 - Soca Valley Development Centre, Slovenia;
- Partner P6 - South-West Regional Authority, Ireland;
- Partner P7 - National Institute of Research & Development for Mechatronics and Measurement Technique – INCDMTM, Romania;
- Partner P8 - Regional Development Agency of Western Macedonia SA, Greece;
- Partner P9 - Zemgale Planning Region, Latvia;
- Partner P10 - Water board Noorderzijlvest, Netherlands;

TECHNICAL FEATURES:

The Good practice imported from partner P1 is GP1 - (Tematic area: Monitoring) - "*Surface water monitoring technology & operational aspects".*

The objective of the good practice is to ensure the 'good' status of river waters by 2015. The GP spans a long period of time – more than 50 years (1962 - 2012) and bridges surface water protection concerns & monitoring approaches to the implementation of the Water Framework Directive.

"Good surface water status" means according to WFD the status achieved by a surface water body when both its ecological status and its chemical status are at least 'good'. The general definition for ecological status 'good' in rivers:

The values of the biological quality elements for the surface water body type show low levels of distortion resulting from human activity, but deviate only slightly from those normally associated with the surface water body type under undisturbed conditions.

The quality elements for the classification of status of the rivers include as issued in the WFD:

Biological elements: Composition and abundance of aquatic flora, Composition and abundance of benthic invertebrate fauna, and Composition, abundance and age structure of fish fauna

Hydromorphological elements supporting the biological elements:

Hydrological regime: Quantity and dynamics of water flow, Connection to groundwater bodies, and River continuity;

Morphological conditions: River depth and width variation, Structure and substrate of the river bed, and Structure of the riparian zone

Chemical and physico-chemical elements supporting the biological elements:

General: Thermal conditions, Oxygenation conditions, Salinity, Acidification status, and Nutrient conditions;

Specific pollutants: Pollution by all priority substances identified as being discharged into the body of water, and Pollution by other substances identified as being discharged in significant quantities into the body of water.

The GP consists of issuing of permits required by the environmental legislation for operations (activities) having negative impact on the environment, monitoring programmes to ensure compliance with legislation and providing information of the effects of the emissions to water, water quality monitoring technology, and data bases used to store the data collected from monitoring programmes. This all leads to a case: implementing the WFD in Kainuu Region - Finland.

Web portal for the implementation management of transferred GP1 - *"Surface water monitoring technology & operational aspects"*

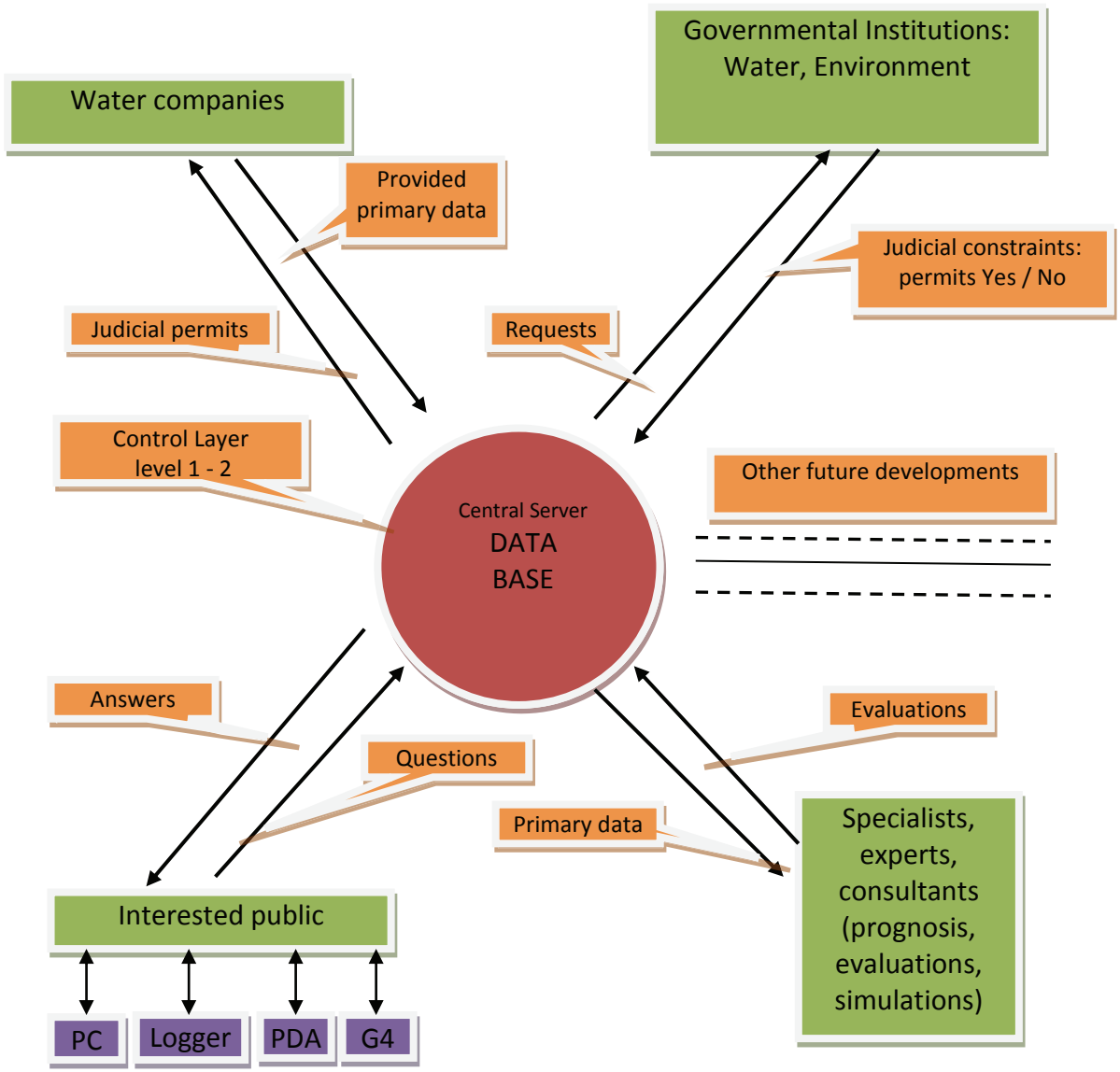
Quality management of water resources and factors of influence in the water territories are targets of public interest.

The objective of the good practice is to ensure the "good" status of the river waters by 2016. "Good surface water status" means according to the WFD (*Water Frame Directive*), the status achieved by a surface water body when both its ecological status and its chemical status are at least "good".

The management of data, documentation and approvals obtained periodically for the implementation region of GP1: the Arges River upstream of the dam lake Pitesti – Mărăcineni, represents a complex, interdisciplinary operation / activity and involves the cooperation with the local water companies, the Romanian Waters Administration - Arges - Vedea Department, economical agents, companies, municipalities, etc.

In this regard it is proposed to achieve a web portal capable of ensuring the collection, storage, evaluation and visualization of relevant information for the area of good practice implementation of GP1: "Surface water monitoring technology & operational aspects", transferred through the project no. 1006R4 / 16.02.2012: "Territories of Rivers Action Plans – TRAP", within the INTERREG IV C Programme.

Principle block diagram of the web portal for the managing the implementation of the good practice GP1, based on the Internet database.



APPLICABILITY:

The basic idea: intothe implementation region of the good practice GP1 there is a number of stakeholders / government institutions, water companies, and so on, which have their own ways to make publicly available the data generated by them. Through this web portal we want to centralize these data from all entities in the proposed area and using it, to generate a series of graphs and resulting measurements evolutions, from their bulletins, on an integrated graphics with a map that is easy to be used by potential visitors.

The web portal requires also a synchronization module: automatic, semi-automatic and import data from files, having a default template. The web portal content can be viewed without the registration / login as a visitor, but will also have a system for registration / logging dedicated to the data providers, who will have limited rights regarding the data administration and also to the system administrator, who will have full administration rights.

Also, there will be a user type who will have the rights for viewing and downloading the data. This user type is designated to companies and public institutions that will be able to download data from the portal. They will do with the experts' help: simulations, creating charts, histograms, generating PDFs for archiving, etc.

Also, the web portal should allow the graphical integrated visualization with Google Map of some relevant data (water level, flow, exceeded pollution level) that changes at a number of hours/ days in some locations from where there are measurements.

TECHNOLOGY TRANSFER

TRAP will contribute to the potential successful transfer of the good practices identified within each partner countries, as well as the improvement of innovation policies at national, regional and local levels. Identified good practices and policies would be selected and translated into partner languages, to be used in order to improve the activity of technology transfer and regional development.

BENEFICIARY:

National Administration "Roman Waters" and public authorities in the field (national, regional and local actors).

FURTHER INFORMATION:

Ing. Alexandru Moldovanu, e-mail: smoldovanu@gmail.com

DIVISION OF RESEARCH AND DEVELOPMENT FOR MECHATRONIC MICRO AND NANOTEHNOLOGIES

The DIVISION OF RESEARCH AND DEVELOPMENT FOR MECHATRONIC MICRO AND NANOTECHNOLOGIES offers professional solutions and services:

√ **Researches in the field of processes specific to chipping** (dynamics, kinematics, tribology):

- Special chipping tools and high productivity tools;
- Tools with the active part made up of tough materials (CMS, cermets, ceramic);
- Tools with the active part made up of extra-tough materials (NCB diamond, diamond poly-crystals):

√ **Mechatronics** technologies;

√ Design and execution for:

- Special chipping tools and high productivity tools;
- Tools and subassemblies of tools;
- Tools and subassemblies of tools and tool support assemblies for the extractive industry and the wood industry, the industry of civil engineering;

√ Tool support assemblies and dedicated accessories for motor vehicles – theme tools;

√ Matrices;

√ Complex laboratory devices;

√ Dedicated theme installations and tools used in precision mechanics and mechatronics;

√ Special micro technologies and nanotechnologies.

NACE 267

NACE 289

NACE 711

✓ **Subassemblies for laser devices**	**◄NACE 267►** **NACE 2670**
✓ **Special machines and equipments** ✓ **Industrial robots**	**◄NACE 289►** **NACE 2899**
✓ **Technical engineering and consultancy** ✓ **Technical testing and analysis**	**◄NACE 711►** **NACE 7111** **NACE 7120**

NANOTECHNOLOGICAL MEASURING SYSTEM

PRODUCT OVERVIEW

Nanotechnological measurement system is designed to calibrate devices and nanotechnology. Adaptive system is designed to be used both in the production of organized nanosystems as nanosensors and accurate transducers.
The system is equipped with two robots, displacement systems and precision laser measurement systems, opto-electronics and atomic force microscope.

TECHNICAL FEATURES:

- AFM resolution: 0.2 nm
- Laser measurement resolution: 1 nm
- Optoelectronic measurement resolution: 10 nm

APPLICABILITY:

The system can be used to calibrate the equipment and systems for nanotechnology production.

TECHNOLOGY TRANSFER:

Center of Excellence in Nanotechnology

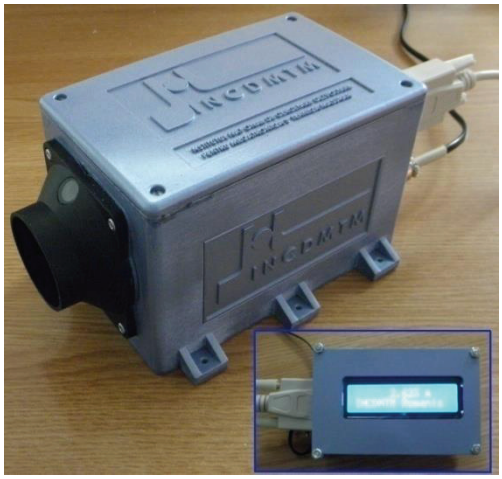
BENEFICIARY:

Innovative SMEs in the field of micro and nanotechnology

FURTHER INFORMATION:

PhD. Eng. Popan Gheorghe; e-mail:popangeorge@yahoo.com

DISTANCE LASER MEASUREMENT SYSTEM FOR NANOSATELLITES



PRODUCT OVERVIEW:
It is a laser distance measuring system up to 1000 m. Measurement system will be used as a component of the nanosattelites measurements system required to maintain flight formation.
The laser measuring system is based on time of flight method of a laser beam reflected on a target.

TECHNICAL FEATURES:
- Measuring domain: 0.066 m – 1000m
- Acuracy: ±3mm
- Resolution: 1mm
- Measuring rate:200 meas./sec.

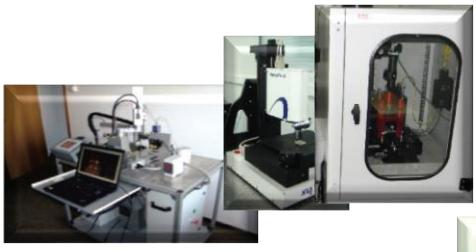
APPLICABILITY:
Highly precise measurements of distance

TECHNOLOGY TRANSFER:
The product is usable in companies producing high-tech products, R&D institutes, technical universities, including aerospatial domanin.

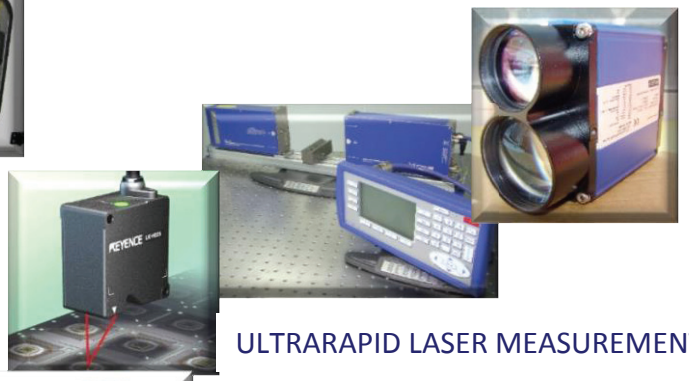
BENEFICIARY:
Institute of Space Science

FURTHER INFORMATION:
PhD. Eng. Popan Gheorghe, e-mail: popangeorge@yahoo.com

MECHATRONICS EQUIPMENTS FROM CERTIM LABORATORIES



NANOMETROLOGY FEATURES

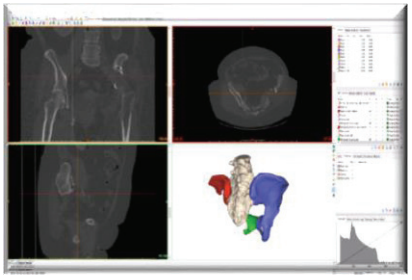


ULTRARAPID LASER MEASUREMENT

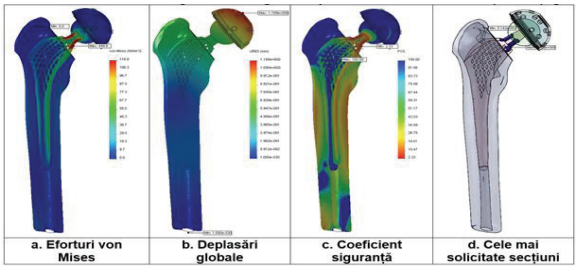
COMPLEX MEASUREMENT AND POSITIONING

FURTHER INFORMATION: PhD. Eng. Popan Gheorghe, e-mail: popangeorge@yahoo.com

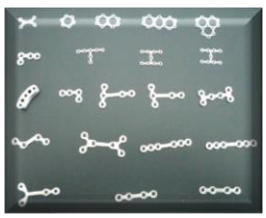
MECHATRONICS EQUIPMENTS FROM BIOMECATRONICA LABORATORIES



Program Graphical Interface

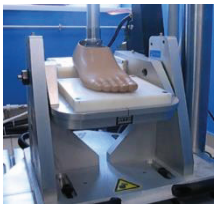


Advanced finite element analysis hip prosthesis



Mounting brackets
maxillo - facial

Dental implants fatigue testing



Test subassembly
"ankle-foot prosthesis
lower limb external"

FURTHER INFORMATION: PhD. Eng. Stanca Comșa, e-mailstanca_comsa@yahoo.com

FLEXIBLE POSITIONING MICROMECHATRONIC SYSTEM, INTEGRATED INTO TECHNOLOGICAL PLATFORMS

OVERVIEW:

The flexible positioning micromechatronic system is a modular construction and contains the following main parts:

- a worktable
- two electric linear axis model M403- 8PD of the Physik Instrumente company
- electric gripper LEHZ 32K2-22 and connections with controller
- industrial computer National Instruments PXI 8106
- electric panel
- temperature sensor
- inductive sensor
- optical barriers
- the positioning micromechatronic is electronically performed using linear gauges.

TECHNICAL FEATURES:

- worktable 1250x780x750 (mm)
- travel ranges from 0 to 200 mm on x and z axis
- carry up to 200 N and push/pull up to 50 N
- accuracy of the positioning: ± 0,00025 mm;
- electrical supply: 220 V.c.a./50 Hz; (15V- CC motors, 24V- gripper and controllers)
- automatic loading and downloading of the work piece;

APPLICABILITY:

- Highly precise position for measuring.

- Mecatronic innovative system characterization of surfaces in complex vector space size, temperature
- Intelligent mechatronic system for determining the measurement of global constants in optical systems with complex software algorithms.
- System calibration inductive displacement sensors and pneumo-electric sensors.

TECHNOLOGY TRANSFER:
The product is for companies producing high-tech products, R & D institutes, technical universities.

BENEFICIARY:
ANCS

FURTHER INFORMATION: Zapciu Aurel, e-mail: zapciua@yahoo.com

STRATEGY, DEVELOPMENT, MARKETING, CAPITALIZATION AND TECHNOLOGICAL TRANSFER DIVISION

✓ Software products realization; ✓ Informatic data processing;	◄NACE 5829►
✓ Database; Databank services;	◄NACE 6311►
✓ Research and development in engineering sciences;	◄NACE 7219►
✓ Market research; ✓ Strategic and operational marketing;	◄NACE 7320►
✓ Consultancy in management and in business; ✓ Technological Transfer;	◄NACE 7022►
✓ Direct marketing and Advertising;	◄NACE 7021 ►
✓ Editing activities;	◄NACE 5811; 5812; 5814;5819►

THE STRATEGY, DEVELOPMENT, MARKETING, CAPITALIZATION AND TECHNOLOGICAL TRANSFER DIVISION

develops

- STRATEGIES & DEVELOPMENT
- MODERN MANAGEMENT CONCEPTS
- MARKETING STRATEGIES
- CAPITALIZATION
- COST REDUCTIONS PROGRAMMES
- COMMERCIAL MANAGEMENT CONSULTANCY
- PROJECT MANAGEMENT CONSULTANCY
- ENGINEERING AND SPECIAL CONSULTANCY
- TECHNOLOGICAL TRANSFER
- INDUSTRY LINKS
- PUBLICATION

SUPPORT ACTIVITIES IN SUPERIOR LEARNING SYSTEM

The STRATEGY, DEVELOPMENT, MARKETING, CAPITALIZATION AND TECHNOLOGICAL TRANSFER DIVISION

in

THE NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT FOR MECHATRONICS AND MEASUREMENT TECHNIQUE

offers

for **TECHNOLOGICALTRANSFER**

the following researches in domain:

1. Researches regarding **developmentstrategy of domain and production** for precision mechanics and mechatronics, integronics and adaptronics, and Romanian industry impact in EU.
2. **Marketing researches regarding promotion of products and services** I.C.C.N Chisinau and INCDMTM Bucharest on the markets from Romania, Moldavia Republic and other countries in precision mechanics, integronics and adaptronics and mechatronics domains.
3. Researches for **restructuring strategy substantiation in precision mechanics industry,** integronics, adaptronics **and mechatronics domain**.
4. Researches regarding the **impact of integration in European Union** of precision mechanics, integronics, adaptronics and mechatronics industry.
5. Researches regarding **international collaboration possibilities** in investments domain for privates and state economical agents specialized in precision mechanics, integronics, adaptronics and mechatronics manufacturing in Romania, in order to align qualitatively and competitive to the same European industry.
6. Researches regarding the **tendency of European community industry** to develop Romanian markets on medium and long time in precision mechanics, integronics, adaptronics and mechatronics domain.
7. Researches regarding **connection and integration of databases** in national and European information network.
8. Researches regarding **developing of strategic marketing and modern management activities** to evaluate and innovate the European tendencies in precision mechanics (measurement technique and quality engineering, instrumentation engineering), integronics, adaptronics and mechatronics industrial domain.
9. Researches regarding growth and organization of infrastructure entities type „relay centre for transfer and consultancy", „interregional centre for innovation and transfer", etc

For transfer is provided **technical assistance and consultancy** by Strategy, Development, Marketing, Capitalization and Transfer Division based on CONTRACT.

KTFORCE – KNOWLEDGE TRANSFER JOINT FORCES FOR EFFICIENT INNOVATION POLICIES (Program INTERREG IVC)

PRODUCT OVERVIEW

KTForce is a project supported by INTERREG IV C, an inter-regional cooperation programme co-financed by the European Regional Development Fund (ERDF), which main objective is to improve the development of regional policies in the knowledge transfer and innovation area between universities and the industry, through the exchange of best practices between different European organizations.

Knowledge Transfer joint forces for efficient innovation policies – KTForce is an INTERREG IV C regional initiative project, that will run from 01.01.2012 to 30.06.2014 and has a budget of 1,428,222.73 €.

KTForce interregional project focuses on the exchange of experiences between 11 partners from 6 European regions, some from "Moderate and Modest innovator" countries and others from "Innovation follower and leader" countries, according to the 2010 Innovation Union Scoreboard.

KTForce aims to improve innovation policies in the partner regions by sharing the experience of the Knowledge Transfer offices. The focus of the project lies on triple helix based stakeholder involvement.

The KTForce partnership was created by getting involved 2 types of partners from each region: an operational partner, namely Knowledge Transfer offices, and a local or regional authority, responsible for the definition and implementation of potential policies resulting from the project.

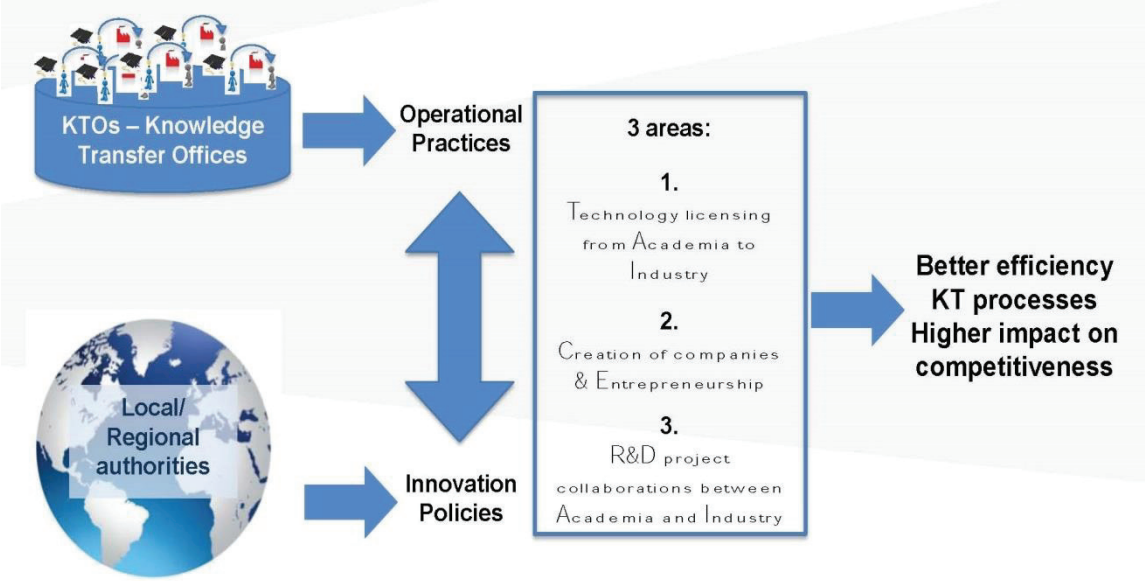
KTForce Project involves 11 partners from six European regions:

- Partner 1 – University of Porto (PT)
- Partner 2 – Innovation Agency (PT)
- Partner 3 – Waterford Institute of Technology (IE)
- Partner 4 – South-East Regional Authority (IE)
- Partner 5 – National Institute of Research and Development for Mechatronics and Measurement Technique (RO)
- Partner 6 – Executive Agency for Higher Education, Research, Development and Innovation Funding (RO)

- Partner 7 – University Joseph Fourier Grenoble 1 (FR)
- Partner 8 – City of Grenoble (FR)
- Partner 10 – Aufbauwerk Region Leipzig GmbH (DE)
- Partner 11 – Sunrise Valley (L)
- Partner 12 – Technical University of Dresden – CIMTT (DE)

TECHNICAL FEATURES:

The objective of the KTForce project is to identify, analyze and select KT practices and innovation policies, namely on its 3 key areas: Technology Licensing, Spin-off creation & Entrepreneurship, and University-Industry relations, that already showed effective results in some regions and on which KT should rely across Europe (fig. 1). It goes further the simple identification of practices and policies since it develops an assessment method that enables to measure the impact policies have on practices and vice-versa, so that the best innovation policies and measures can be selected by regions and recommendations for further implementation can be advanced.



APPLICABILITY

KTForce will contribute to the potential successful transfer of the KT practices identified within each partner countries, as well as the improvement of innovation policies at national, regional and local levels. This will be enabled through a series of activities:

1) Exchange of experience at interregional level: the partners will gather regularly in each different country to share the experiences on KT practices and innovation policies via:

- the organization of study visits, thematic seminars and workshops, gathering members of the Focus and Task Force Groups, ii) the organization of public conferences to increase the degree of interregional cooperation and awareness regarding the measures taken at political level.

2) Identification and analysis of the best KT practices and innovation policies and the efficiency relations between each other through the definition of metrics and the categorization of the variables from the policies in order to select which ones impact in KT.

3) Development of an interactive database webtool available via the KT Platform to gather the best practices and innovation policies of each region, and the implementation plans of some selected innovation policies in the partner regions;

4) Dissemination of the good practices and policies identified through the definition of an effective communication strategy plan in order to reach the main European stakeholders on Innovation and KT.

The main expected result is the improvement of local and regional innovation policies focusing KT, as well as the transfer of best practices, both at operational and political levels. Completed by the development of an implementation plan of selected policies in each partner region and presented via an interactive database webtool, the results planned by KTForce will have a strong impact on the definition of innovation policies focusing KT in Europe.

TECHNOLOGY TRANSFER

KTForce will contribute to the potential successful transfer of the KT practices identified within each partner countries, as well as the improvement of innovation policies at national, regional and local levels. Identified good practices and policies would be selected and translated into partner languages, to be used in order to improve the activity of technology transfer and regional development.

BENEFICIARY

At the partnership level, by involving actors at both operational and political levels, the identification of best practices (methodologies, procedures) on KT and the way they are linked with the identified innovation policies at political level will be of great benefit for both types of entities. Policy makers and deciders, through their involvement in the project, will strongly understand the importance of an intense collaboration with the operational actors to implement efficient policies in the Knowledge Transfer area and how this might contribute to increase the regional economy and competitiveness.

This awareness raising will increase national/regional and local authorities outside the consortium to take advantage of these results to implement some identified innovation policies in their own region. In addition to that, the quality and importance of the results to be reached by the project is so high that it will be easy to spread it among the partners' networks contacts, via the KT platform advertising and the distribution of edited booklets. In addition to the partners' involvement in the project and their commitment to use the project's results and to disseminate them among their contacts, KTForce will give an important value to the issemination activities during and after the end of the project, by establishing a project's communication plan.

Public authorities in the field (national, regional and local actors) will receive the relevant information (booklets of implementation plans of each regions, available both in English and

partner country language) produced within the project and will be encouraged to analyse and implement any relevant policies.

Finally, the involvement of the partners in various European and international networks on Innovation and Knowledge Transfer will enable to spread the results of the project to a wider audience via the use of the various networks' platforms and the participation in meetings and events regularly organized for the members.

FURTHER INFORMATION

By promoting the exchange of good practices on the KT area for improving innovation policies between 6 different EU regions, the KTForce fits perfectly the INTERREG IVC Capitalisation Programme. Finally, considering the role of KT as a booster for an innovative, competitive and dynamic Europe, it is clear that KT acts directly on the field of Innovation, Research and Technology development, which justifies the selection of sub-theme 1. Furthemore, sub-theme 2 "Entrepreneurship and SMEs" is partially addressed by the project, since Knowledge Transfer area also clearly focus on spin-off creation and entrepreneurship.

With a focus on interregional cooperation, the project aims to build a strong and wide network that answer regions' needs at the level of KT, through the identification, collection, analysis and exchange of experience and good practices, at both operational level (mostly in 3 KT areas: Technology Licensing, Spin-off Creation & Entrepreneurship, and University-Industry elations) and political level (innovation policies).

This will enable to identify a set of relation factors between innovation policies and KT practices, identifying both impediments and success elements towards successful KT processes between the stakeholders.

Ec. Octavia Caruntu, tel: 021,252,30,68 (361), e-mail:octavia.caruntu@incdmtm.ro,
Drd. Ing. Iulian Ilie, tel: 021,252,30,68 (361), e-mail: iuliancefin@yahoo.com

INCDMTM
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J40/1074/1997
C.I.F. RO 930

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NATIONAL AUTHORITY FOR SCIENTIFIC RESEARCH AND INNOVATION
NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT IN MECHATRONICS AND MEASUREMENT TECHNIQUE
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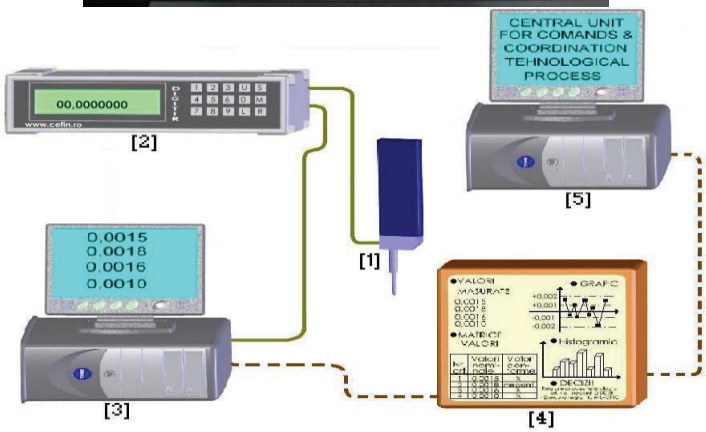
E-mail: incdmtm@incdmtm.ro; web: www.incdmtm.ro

INTELLIGENT MECATRONIC SYSTEM FOR HIGH PRECISION MEASUREMENT OF LINEAR MICRO-MOUVEMENTS IN INDUSTRIAL AND LABORATORY ENVIRONMENTS - DIGITIL

•Technology transfer•



PRODUCT OVERVIEW:

The intelligent micro-system – DIGITIL includes the following innovative components / modulus:

- Incremental photoelectric transducer (1) for measurement of micro-displacements -and incremental divider scale with detail of original incremental network ;
- Electronic subsystem digital unit for measurement and display (2) ;
- Informatics unit PC (3) – and the functional block diagram;
- LCD monitor (4);
- Central informatics unit PC (3);

DIGITIL has an original configuration of intelligent mechatronic micro-system for measurement in continue flux (Original solution for the construction of the intelligent transducer; Original solution for the linear incremental photoelectrical network divisor kind / vernier kind and the incremental network of zero; Original solution for the construction of the electronic unit for measurement, display and transfer; Original software for the process of measurement, comparison, representation and transfer; Original system for the electronic pitch of impulses; Lower energetic consumption for the entire micro – system; Lower ambiance noise, network noise and other electromagnetic noises; Compensation of the amplifiers offset), quick measurement in real time, micron precision of measurement per measurement interval, Efficient control of data measured (that are acquisitioned and storage).

The intelligent system – DIGITIL includes the following innovative components / module:

[1] Photoelectric incremental transducer for measurement of linear micro-movements
[2] Electronic unit for digital measurement/display
[3] Informatic unit PC
[4] Electronic unit for registration and representation
[5] Central unit for commands and coordination

TECHNICAL FEATURES

Dimensions (L x l x h – in mm): 600 x 550 x 880.

- **Measurement interval**: 10mm; (and 30; 50; 80;100mm for product development);
- **Resolution (R) :** 0,001mm ;(and 0,0001mm; 0,00001mm for product development)
- **Accuracy** : ±0,001 mm ±0,0001 mm for product development);
- **Display capacity:** 8 decade +1 decade for sign;
- **Supply IRED**: +(5±0,25)V;
- **Supply for electronic unit**: 220V; 50 Hz ± 2%;
- **Electronic sub-partitions:** logical(2,4,6) and analogical(5,10,20);
- **Counting error:** ± bit; **Accuracy error**: max. ± R/8;
- **Electrical impulses frequency**: 0÷100 Hz;
- **Impulses filling factor**: a/p = 0,5 ± 0,1;
- **Shift of impulses**: A and B : b/p = 0,25 ÷ 0,05;
- **Signals output**: TTL and with free collector.

APPLICABILITY

The product is used in very accurate linear measurements in static and dynamic, very precise linear positioning in static and dynamic, equipped as CN and CNC system on machine tools and other equipment; equipped as CN and CNC system on industrial and control robots / micro robots; equipped as intelligent mechatronic systems for measurement and control, or complex instruments / devices and equipments for control and measuring in 1D, 2D and 3D.

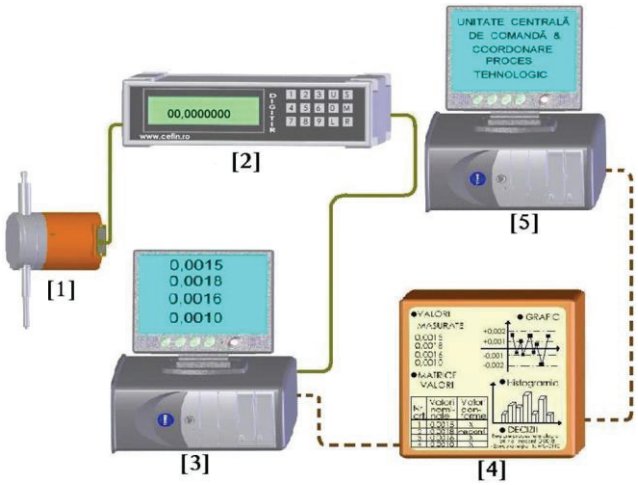
TECHNOLOGY TRANSFER: This technology / product were transferred to S.C. QUATRO PRODCOM S.R.L.
BENEFICIARY: S.C. QUATRO PRODCOM S.R.L., Dr. Eng. Ghiorghe Stoica
FURTHER INFORMATION: Professor PhD.EurEng Gh. Ion GHEORGHE / Tel. 021.252.30.68/69, Fax. 021.252.34.37, e-mail: geo@cefin.ro ; geocefin@yahoo.com

INCDMTM
Nr. Reg. Comertului:
J40/1074/1997
C.I.F. RO 930

MINISTRY OF NATIONAL EDUCATION AND SCIENTIFIC RESEARCH
NATIONAL AUTHORITY FOR SCIENTIFIC RESEARCH AND INNOVATION
NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT IN MECHATRONICS AND MEASUREMENT TECHNIQUE
6-8 Pantelimon Road, 2nd District, 021631, Bucharest, ROMANIA
Phone: +4021.252.30.68/69; Fax: +4021.252.34.37
E-mail: incdmtm@incdmtm.ro; web: www.incdmtm.ro

INTELLIGENT MECATRONIC MICRO-SYSTEM FOR DIMENSIONAL MEASUREMENT FOR HIGH PRECISION MEANT TO DEVELOPMENT OF INSTRUMENTATION ENGINEERING IN INDUSTRIAL AND LABORATORY ENVIRONMENTS - DIGITRIL

•Technology transfer•



PRODUCT OVERVIEW:

The intelligent micro-system – DIGITRIL includes the following innovative components / modulus:

[1] Photoelectric incremental transducer for measurement of linear micro-movements
[2] Electronic unit for digital measurement/display
[3] Informatic unit PC
[4] Electronic unit for registration and representation
[5] Central unit for commands and coordination

DIGITRIL is designed for positioning / micro positioning and, equipment of technical and technological installation MECHATRONICS equipment as a - CN and / or CNC system mechatronic.

The claimed novelties are: original solution for the construction of the intelligent transducer; original solution for the linear incremental photoelectrical network divisor kind / vernier kind and the incremental network of zero, original solution for the construction of the electronic unit for measurement, display and transfer; original software for the process of measurement, comparison, representation and transfer; original system for the electronic pitch of impulses; lower energetic consumption for the entire micro system; lower ambiance noise, network noise and other electromagnetic noises; compensation of the amplifiers offset; quick measurement, in real time; micron precision of measurement per measurement interval; efficient control of data measured (that are acquisitioned and storage); original dedicated software which signalize promptly with audio and video messages(included a hold on of the measurement process) when a measured product is no conform (it is not in the tolerated field established at the start of the process).

TECHNICAL FEATURES

Dimensions (L x l x h – in mm): 600 x 550 x 880.

- **Measurement interval**: 10mm; (and 30; 50; 80;100mm for product development);
- **Resolution (R) :** 0,001mm ;(and 0,0001mm; 0,00001mm for product development)
- **Accuracy** : ±0,001 mm ±0,0001 mm for product development);
- **Display capacity:** 8 decade +1 decade for sign;
- **Supply IRED**: +(5±0,25)V;
- **Supply for electronic unit**: 220V; 50 Hz ± 2%;
- **Electronic sub-partitions:** logical(2,4,6) and analogical(5,10,20);
- **Counting error:** ± bit; **Accuracy error**: max. ± R/8;
- **Electrical impulses frequency**: 0÷100 Hz;
- **Impulses filling factor**: a/p = 0,5 ± 0,1;
- **Shift of impulses**: A and B : b/p = 0,25 ÷ 0,05;
- **Signals output**: TTL and with free collector.

APPLICABILITY

The product is used in very accurate linear measurements in static and dynamic, very precise linear positioning in static and dynamic, equipped as CN and CNC system on machine tools and other equipment; equipped as CN and CNC system on industrial and control robots / micro robots; equipped as intelligent mechatronic systems for measurement and control, or complex instruments / devices and equipments for control and measuring in 1D, 2D and 3D.

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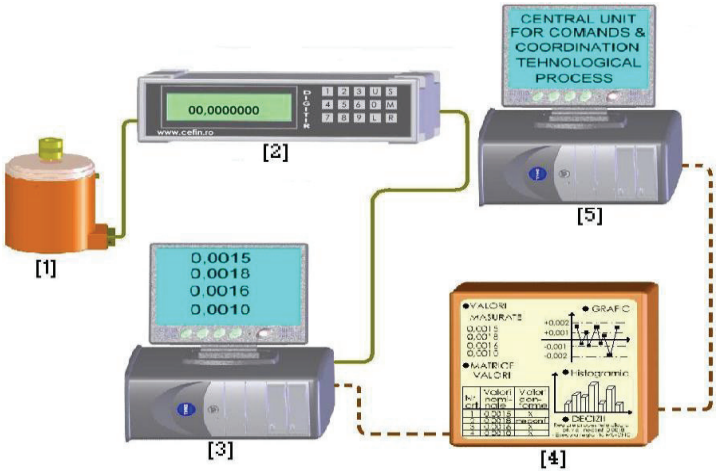
INTELLIGENT SYSTEM WITH PHOTOELECTRIC TRANSDUCER WITH INCREMENTAL DISCS FOR MEASUREMENT OF ANGULARS MOTIONS - DIGITIR

•Technology transfer•



PRODUCT OVERVIEW

The intelligent system with incremental disks photoelectric transducer for dimensional and angular displacements measurement in industrial environment is intended for positioning / micro-positioning, direct measurements, angular displacements / micro-displacements and equipping as NC and/or CNC system, technical and technological installations and equipments.

The intelligent system, converts an analogical quantity (angular displacement) in a digital quantity (number of impulses).

The intelligent system, by photoelectric transducer subsystem supplies at exit four rectangular signals in quadrature and zero signals.

An adequate processing of those signals in electronic subsystem for measurement and digital display, allows electronic sub-partitions with 2, 4, 8 (in case of analogical exits can be made sub-partitions with 2, 4, 5, 10, 20) and detection of angular displacement orientation.

The intelligent system – DIGITIR includes the following innovative components / modulus:

[1] Photoelectric incremental transducer for rotation
[2] Electronic unit for digital measurement / display
[3] Informatic unit PC
[4] Electronic unit for registration and representation
[5] Central unit for commands and coordination

Based on binding heights, the beneficiary can built different assembling systems of photoelectric transducer subsystem, adequate to various applications, with condition of respecting subsystem characteristics. Axis of rotation is made of non-corrosive steel hardened / tempering. Mechanical coupling is made through precision elastic systems.

TECHNICAL FEATURES: Dimensions (L x l x h – in mm): 600 x 550 x 880.

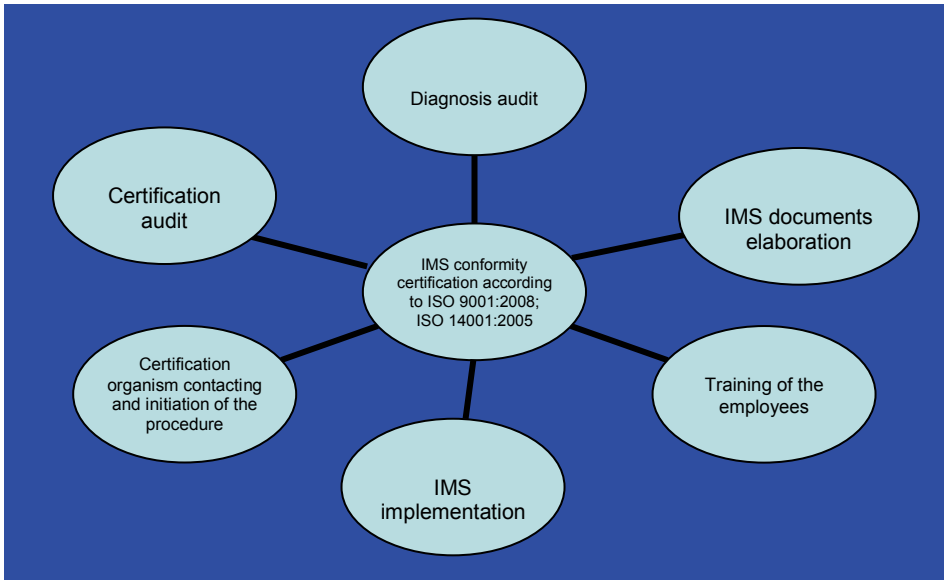
- **Measurement domain:** infinite; **rotation angle** is ∞; **measurementinterval** $0^0 \div n \cdot 360^0$;
- **Resolution :** R= $\frac{360^0}{N}$,[^{0},', "] ; where :N = number of impulses / rotation;
- **Accuracy** (correctness error): max. ± R/4;
- **Hysteresis value**: max. ± R/7;
- **Accuracy error**: max. ± R/8;
- **Null impulse width**: max. R;
- **Electrical impulses frequency**: 0÷100 Hz;
- **Null impulse (**reference): one at 360^0;
- **Impulses filling factor**: a/p = 0,5 ± 0,1;
- **Shift of impulses:** A and B : b/p = 0,25 ÷ 0,05;
- **Signals output** : TTL and with free collector
- **Photoelectric transducer subsystem weight**: max. 0,5 kg
- **Overall size** (photoelectric transducer subsystem: max. Ø 58 x 95 mm;
- **MTBF** : 1500 hours;
- **R (550 h):** 0,9 ;
- **R (950 h):** 0,76 ;
- **Z (550 h):** $2,8 \cdot 10^4$ h^{-1} ;
- **Z (950 h):** $4,4 \cdot 10^4$ h^{-1} ;

APPLICABILITY: The product is used in very accurate linear measurements in static and dynamic, very precise linear positioning in static and dynamic, equipped as CN and CNC system on machine tools and other equipment; equipped as CN and CNC system on industrial and control robots / micro robots;
TECHNOLOGY TRANSFER: S.C. QUATRO PRODCOM S.R.L.

BENEFICIARY: S.C. QUATRO PRODCOM S.R.L., Dr. Eng. Ghiorghe Stoica
FURTHER INFORMATION: Professor PhD.EurEng Gh. Ion GHEORGHE / Tel. 021.252.30.68/69, Fax. 021.252.34.37, e-mail: geo@cefin.ro ; geocefin@yahoo.com

INTEGRATED MANAGEMENT DIVISION

INTEGRATED MANAGEMENT SYSTEM (IMS) CERTIFICATION IN FIVE STEPS



TECHNICAL AND FUCTIONAL FEATURES:

- ◊ Duration until obtaining the certification – 5 months
- ◊ Assistance during the certification audit
- ◊ Internal audit services and assistance during availability of the certificates
- ◊ National and international recognition of certificates

APPLICABILITY:

- ◊ **Competitive advantage:**certified firms confirm the development of new businesses.
- ◊ **Increase in the demand by clients:** certified firms report an increase in the demand from clients, and, automatically an increase in business.
- ◊ **Business protection:** firms that are not certified have declared that they have lost clients who have preferred certified organizations. They have found out when loosing contracts is already too late.
- ◊ **Cost reduction:** trough efficiency, continuous improvement, loss diminishing, key control of processes.
- ◊ **The competition is certifying:** in many fields, concurrent are certified or are being certified. The more you wait before doing it, the bigger will the competition advantage be.
- ◊ **New prospects:** certified firms want to have certified business partners.
- ◊ **You will be qualified for the participation in public acquisitions.**
- ◊ **Increase in credibility:** Your businesses can increase dramatically, taking into account that many firms only work with certified firms.

CAPITALIZATION AND TECHNOLOGY TRANSFER:

Seng. Carmen Finat; carmen.finat@cefin.ro

THE RESEARCH IN INTEGRATED MANAGEMENT DEPARTMENT HAS AS PRIMARY FIELDS OF EXPERTISE:

- **Execution of research – development projects focused on quality management and environment issues;**
- **Methodological coordination of the certified laboratories of INCDMTM;**
- **Development and implementing of quality management or integrated systems** for: organizations, trial labs, management systems certifying entities, product certifying entities, inspection entities;
- **Internal and external audits of the quality management system;**

Standardization, standard development, attending in Technical Standardization Committees;

Research objectives of the CCMI personnel:

- attending participation in competitions through project C – D proposals;
- execution of C – D projects
- elaboration and editing of technical and scientific materials designed for presentation and informing purposes.
- Participation in development of scientific standards for the departments tied of expertise.

The CCMI personnel abilities for**:**

- The completion of all activities assigned to CCMI, with the regard for the specific conditions and terms subsequent from the procedure which documents the quality manage system;
- Identifying and registering any and all problems concerning processes, products and for the integrated quality management system;
- Annual management analysis;
- Initialization and conduction on Internal Audit Programs;
- Identifying of professional training needs inside the CCMI ;
- Follow up of the training activities and training evaluation participation in INCDMTM;
- Participation in the analysis of bids, orders and contracts;
- Involvement in the assessment and selection activity of subcontractors;
- Timely elaboration at a scientific level of all the works assigned to CCMI;
- Projects elaboration concerning the main activity field of CCMI and the department's personnel.

The concerning domains of CCMI are part of the interest domain set of INCDMTM and are based on the following fundamental management principles:

- Clients explicit and implicit needs satisfaction;
- Quality level assessment opposed to the degree of correspondence with the client's needs;
- Prevention, as an economic solution for the improvement of the integrated quality management system;
- Planning of the activities / processes of INCDMTM;
- Perfecting internal communication in INCDMTM;
- Promoting a quality based value system.

The main objectives of CCMI are:

- **Continuous improvement of the integrated quality management system implemented in INCDMTM and keeping conformity with the referred standard SR EN ISO 9001: 2008 and SR EN ISO 14001: 2005 ;**
- **Project proposals participation** at the National and International Research – Development Innovation Programs;
- **Maintaining the certifications of the laboratories placed under the legal authority oh INCDMTM according to the conditions of the referral SR EN ISO / CEI 17025**

CCMI is enabled and competent to deal with the development of the following third party works:

Ensuring a high level of competiveness for the organizations / trial labs by giving assistance with the integrated quality management system for:

- technical and administrative assessment, identification of processes / sub processes of the organization, development of the establishment based on the processes existing in the lab / organization, by taking into consideration of all the conditions and norms concerning quality and quality management;
- ensuring the good functioning of the organization's processes according to the requested standard conditions of document elaboration;
- ensuring the success of developing integrated quality management system through an appropriate documentation of the processes from the organizations/labs, through the development of quality management system / integrated management system;
- development of an adequate management system documentation of the processes / sub processes and activities that take place in the organization, in accordance with the organizational culture, with its objectives the services / products it provides, with the referral standards and / or other legal / normative requirements.
- ensuring the success of quality management system, implementation, maintenance and continuous, improvement inside organizations / trial labs by providing consulting and / or technical assistance.

Main areas of interest of the CCMI in the standardization domain

In full accordance with the national policy of standardization, CCMI participates at the assimilation of European standard process by assigning a representative of CCMI in the Technical Standardization Committee.

Also from the standardization point of view, CCMI has responsibilities in ensuring a human interface with the consequent department of ASRO and in maintaining a standardization data base in INCDMTM.


INDUSTRY LINKS OFFICE
•INCDMTM •
BUCHAREST

ACTIVITY CONTROL
IN INDUSTRY LINKS OFFICE

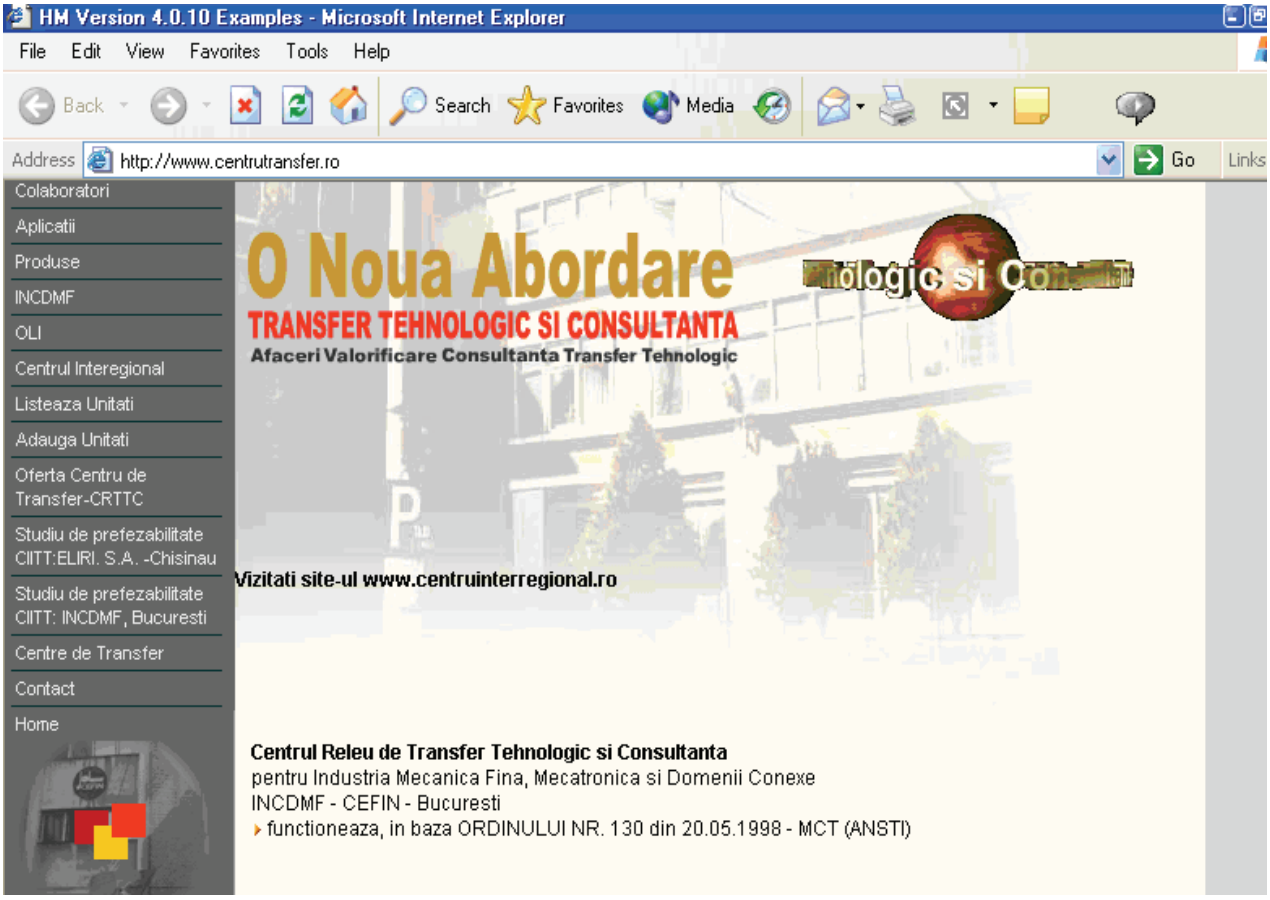
- **constituting a database with potential internal and external product/ technology/ service purveyors – OFFER and with participants at technological transfer – DEMAND from precision mechanics, mechatronics and connected domains;**
- **facilitation of information transfer to the partners;**
- **participation at negotiation of technology transfer;**
- **promotion, by various ways, of current and perspective necessities of economical agents;**
- **rational maintenance with some other technological transfer centers from different domains;**
- **consultancy and assistance regarding the participation in RD projects launched by the European Union.**

THE RELAY CENTRE FOR TECHNOLOGY TRANSFER AND CONSULTANCY
• CRTTC – INCDMTM •

Relay Centre for Technology Transfer and Consultancy

www.centrutransfer.ro

- **Authorized, MEN**
- **Accredited ISO 9001/ 2001**



INMA-CERTSC
ORGANISM DE CERTIFICARE
A SISTEMELOR DE MANAGEMENT AL CALITĂȚII

CERTIFICARE

SR EN 45012:2000
CERTIFICAT DE ACREDITARE
Nr.040-C/ 15.03.2004

CERTIFICAT

NR. 5 - SMC / 15.04.2004

INMA-CERTSC certifică conformitatea
sistemului de management al calității organizației:

CENTRUL RELEU
DE TRANSFER TEHNOLOGIC SI CONSULTANȚĂ
CRTTC – INCDMF
București, sector 2, şoseaua Pantelimon nr.6-8

cu cerințele din documentul de referință:

SR EN ISO 9001 :2001

pentru următoarele activități:

• **Cercetare-dezvoltare în ştiinţe fizice şi naturale (ştiinţe tehnice)**	**clasa 7310**
• **Activităţi de studiere a pieţei şi de sondaj**	**clasa 7413**
• **Activităţi de consultanţă pentru afaceri si management (transfer tehnologic în domeniul mecanică fina, optică, mecatronică şi alte domenii conexe şi interdisciplinare)**	**clasa 7414**
• **Alte activităţi de servicii prestate în special Întreprinderilor (activităţi ale organizatorilor de târguri, expozitii si congrese)**	**clasa 7487**

Data certificării:	**24.12.2003**
Data reînnoirii certificării:	-
Prezentul certificat este valabil până la:	**24.12.2006**

PREŞEDINTE INMA-CERTSC,
Ing. Miu Cosmina

DIRECTOR GENERAL INMA,
Dr. ing.Gângu Vergil

Menținerea certificării se realizează în condițiile respectării Contractului de Certificare

ROMÂNIA
MINISTERUL EDUCAȚIEI, CERCETĂRII, TINERETULUI ȘI SPORTULUI
AUTORITATEA NAȚIONALĂ PENTRU CERCETARE ȘTIINȚIFICĂ

CERTIFICAT

În conformitate cu Decizia Președintelui nr. 9048 din 06.03.2012, se acordă titlul de „centru de transfer tehnologic", entității CENTRUL DE TRANSFER TEHNOLOGIC – CTT- CRTTC constituită fără personalitate juridică în cadrul Institutului Național de Cercetare - Dezvoltare pentru Mecatronică și Tehnica Măsurării, cu sediul în Municipiul București, Sos. Pantelimon, nr.6-8, sector 2, Cod Unic de Înregistrare 930 din data de 10.12.1992.

Titlul de entitate a infrastructurii de inovare și transfer tehnologic se acordă pentru o perioadă de 5 ani, începând cu data de 01.04.2012.

PREȘEDINTE
DRAGOS MIHAEL GIUPARU

Nr. 60
București, 08.03.2012

- **CERTIFICATE OF AUTHORIZATION – MECI, NR. 14/2004**
- **CERTIFICATE OF ACCREDITATION ISO 9001/2001, NO. 5-3MC/2004**

RELAY CENTER OF TECHNOLOGICAL TRANSFER AND CONSULTANCY •CRTTC•

THE FUNDAMENTAL OBJECTIVE AND THE OPTIONS OF STRATEGY

RELEVANT THROUGH Relay Center of Technological Transfer and Consultancy – CRTTC –

[A] **The fundamental objective in the medium term:**

(1) creation by TECHNOLOGICAL TRANSFER of some sub-sectors of fine mechanics, optics and mechatronics for a functioning market, compatible with the EU principles, rules, mechanisms, institutions and policies;

(2) shaping the convergence of technological transfer activities, based both on evaluation of resources and opportunities, and on national and international context;

(3) support the imperative to conclude the transition of TECHNOLOGICAL TRANSFER to market economy in the field of industrial fine mechanics, optics and mechatronics as well as preparation of the accession of industries Fine mechanics, optics and mechatronics in industrial fields related EU;

[B] **Options of the corresponding strategy of basic objective options aim to create conditions for:**

(1) providing specific industry sectors increased proportion of fine mechanics, optics and mechatronics based on technology transfer and increase investment rate, both through a significant participation of national capital and by attracting external resources;

(2) further measures to stabilize the specific sub-industry of fine mechanics, optics and mechatronics through support for technology transfer for the domain and policies to ensure the budget deficits incurred and the dynamic quasi-fiscal deficit reduction in the specific industry;

(3) the promotion and integration of technology transfer and coherent policies are compatible with EU mechanisms, aimed at "adjusting" fine structural mechanic, optics and mechatronics, development and modernization of specific sub-area, revitalization and upgrading of sub-sectors and that some businesses related sub, supporting implementation of information technology in the automation industry and specifically by his computerization of other industrial sectors of developing the national strategy;

(4) providing an optimal environment TRANSFER OF TECHNOLOGY AND BUSINESS, specific market area based on the development of market competition, by reducing costs and easing the tax burden and promoting specific measures to stimulate small and medium enterprises;

(5) modernization and development of technology transfer and industrial services and other specific fields to best meet the needs and requirements of the internal market (and external), and approaching the standards the EU countries;

(6) increasing technology transfer and the remodelling of the structure of industrial production capacity and the related field of fine mechanics, optics and mechatronics, including the development and fostering cooperation with EU partners, including entities related to technology transfer infrastructure, amid consolidation operation market economy, it real infrastructure of a competitive environment and the renewal of SMEs with potential competitiveness;

(7) sequence selection process for resizing and operators in the field of fine mechanics, optics and mechatronics, engaged in restructuring and economic recovery by absorption of the most effective technology transfer of R & D results;

(8) developing the technology transfer consultancy and training, entrepreneurial training and business in centre field-specific relay transfer of fine mechanics, optics and mechatronics, which facilitates the provision of useful services for SMEs;

(9) improving project management research and development-innovation and technology transfer and capacity development to generate scientific and technological knowledge in the field of fine mechanics, optics and mechatronics, in order to reduce disparities in technology, information infrastructure development, application of standard procedures for assessing of operations and personnel, developing the capacity to disseminate scientific knowledge and technology infrastructure transfer extension and marketing services, industry liaison offices, business centres and centres of excellence;

(10) developing capacity of the innovation in the economic environment, by developing the field of fine mechanics, optics and mechatronics, and that the technological transfer of results in this priority area.

- **MISSION:**
  1. **Awareness of companies in the industry, the necessity and importance of technology transfer;**
  2. **Constant involvement Relay Technology Transfer Center and Consultants share the results of RDI technology transfer.**

FURTHER INFORMATION: Drd. Eng. Iulian Ilie, Manager
Phone:: +4021.252.30.68/361
e-mail: iuliancefin@yahoo.com

INTER-REGIONAL CENTER OF INNOVATION AND TECHNOLOGY TRANSFER CHISINAU –IASI – BUCHAREST

R. MOLDOVA
C I T T
ROMÂNIA

INTER-REGIONAL CENTER OF INNOVATION AND TECHNOLOGY TRANSFER CHISINAU –IASI –BUCHAREST

WHO ARE WE?

✓ **CIITT is** "aninter-regional centre of innovation and technology transfer**"**associated with applied research institutions, universities and academic environment in Moldova and Romania;

✓ **CIITT** is an official collaborator of the Ministry of Education, Research, Education and Youth and the Ministry of Economy, Commerce and Business Environment, for disseminating information and promoting technology transfer and research results;

✓ **CIITT** is a partner in economic institutions and units from different industries in Romania and Moldova, for support and the process of technology transfer and consultancy;

FIELDS OF COMPETENCE:

- Information sharing
- **Consulting**
- Industrial Services, Commercial
- Technology Transfer for Products / Technologies / Services
- **Management and marketing**
- **Database**
- Information Products

MANAGEMENT & MARKETING:

- Human Resource Management
- Project Management
- Management of SME
- Information Management
- Management of Research
- Industrial Marketing
- Market research (product / technology / services)

STRATEGY & DEVELOPMENT:

Development strategy for the following industries:

- Precision Mechanics & Mechatronics& Integronics and Adaptronics;
- Electronics and Electrical engineering;
- Construction machinery
- Strategy & Development of SMEs in industrial and economic environments mentioned;
- Medium and long term strategy of the areas mentioned in light of EU accession.

CLUSTER
INCDMTM

THE NATIONAL SCIENTIFIC CLUSTER «MICRONANOMECATRONICA»

NATIONAL SCIENTIFIC CLUSTER
"MICRO-NANO-MECHATRONICA"

OVERVIEW:

Beginning with the INITIATION PROTOCOL/1058 & 167/30.08.2007 for NATIONAL SCIENTIFIC CLUSTER MICRO-/NANO TECHNOLOGIES for MECHATRONICS, SENSORS AND ROBOTS performed between INCDMTM-Bucharest and the UNIVERSITY "POLITEHNICA" - RESEARCH AND DEVELOPMENT CENTER FOR MECHATRONICS, that put the basis of excellence scientific researches in the HIGH-TECH field of micro-nano-technologies for mechatronics, sensors and robots for an advanced and sustainable consideration of this domain for reaching EU levels of performances and compatibility - European area of research and also regarding The LISBON strategy.

THE NATIONAL SCIENTIFIC CLUSTER "MICRO-NANO-MECHATRONICA"

- is responsible and coordinates at national level, advanced scientific researches for micro-nano-technologies for mechatronics, sensors and robots:

- development of new products micro-/nano-/mechatronics: micro-/nano-/sensors, micro-/nano-/actuators, mini-/micro-/nano-/robots;
- development of new micro-/nano-/intelligent systems: for new HIGH-TECH domains of microelectronics and electrotechnics, aerospace, micro-/nano-/mechatronics, for new domains MID-HIGH-TECH and LOW-HIGH-TECH;
- development of new advanced systems for integrated manufacturing processes:
  (a) off-process: ultra-precise systems for integrated control and monitoring for different industrial environments;
  (b) on-process: high accurate intelligent systems for interface control and quality evaluation for industrial issues;
- development of new principles, methods and high performances techniques: optical-electronic, laser, ultrasonic, piezoelectric etc.;
- development of micro-/nano-/technologies:
  (a) litho-photography;
  (b) chemical corrosion;
  (c) micro lasers;
  (d) thin layers;
  (e) LIGA;
  (f) physical/ chemical;
  (g) micro-machinery;
- development of frictional technological system researches:
  (a) frictional systems specific to cuttings and micro-cuttings;
  (b) frictional systems specific to friction torques;
  (c) characterization of micro-/nano-/ covering structures;
  (d) dynamic testing with or without lubrication;
- development of new intelligent materials:
  (a) hard and extra-tough materials;

(b) composite materials;
(c) ceramics materials;
(d) direction properties materials;
(e) processing and characterization materials;

- development of equipments and techniques for analysis and environmental control;
- development of intelligent medical techniques:
  (a) virtual with guiding through neuro-images for microsurgery and neurosurgery;
  (b) therapy with implant-prosthesis for controlled bone regeneration;
  (c) connections for securing techniques of data given by clinical and laboratories devices;
  (d) new joint generating techniques;
- is responsible and coordinates at national level of research-development infrastructure achievement using WHITE-CHAMBERS for micro-/nanotechnologies for mechatronics, sensors and robots;
- is responsible and coordinates of research-development infrastructure achievement i.e. "Pole of excellence for Mechatronics" within the project belonging to – IMPACT-STRUCTURAL FUNDS:
  (a) building-located nearby Mechatronic and Precision Mechanics Department in Polytechnic University Bucharest;
  (b) technical and technological environment specific to WHITE CHAMBERS;
- participates and elaboration Inventing Developing Research projects within National and European Programs, at their open competitions, as a coordinator and/or partner;
- participates and initializing and organizing National Technology Platforms on certain domains, similar to European ones, developing research activities, projects elaboration, information disseminating, marketing, training etc.;
- is responsible for the elaboration and application of developing strategy in the adequate domains;
- participate at dissemination and capitalization by technological transfer of the Inventing Developing Research of industry, economy and society;
- participate at the organizing of technical-scientific events and manifestations, elaborates scientific works for symposium, conferences/ scientific national and international congress;
- develops contact/contracts with institutions/ associations for research similar in EU.;
- it could be extended by attracting other research institutions, universities etc.;
- it functions based on its own Regulations, commonly established with CLUSTER entities.

FURTHER INFORMATION: Professor PhD.EurEng Gh. Ion GHEORGHE / Phone: 021.252.30.68/69, Fax:021.252.34.37, e-mail: geo@cefin.ro ; geocefin@yahoo.com

MECHATREC
MECHATRONICS
INTEGRONICS
ADAPTRONICS

THE REGIONAL INNOVATIVE CLUSTER BUCHAREST-ILFOV IN THE FIELD OF MECHATRONICS, INTEGRONICS & ADAPTRONICS «MECHATREC»

«MECHATREC» REGIONAL INNOVATIVE CLUSTER

• Purpose of MECHATRECRegional Cluster

Regional Cluster MECHATREC goal is the implementation and development, during preliminary time of its own strategy, by:

• Presenting, promoting, supporting and defending the economic, technical, scientific, social and legal aspects of cluster members;

•Increasingeconomic competitiveness domestically and internationally through:

- ➢Supporting a policy of cooperation within the cluster and with other external organizations;
- ➢ Promoting and supporting innovation in structural entities;
- ➢ Developing a common framework for the transfer, valorisation and implementation of advanced know-how;
- ➢ Cooperation between cluster members in research, product development and new technologies;

• Coordination in defining common strategic objectives: the design and implementation of measures and actions needed to achieve them;

• Participation in various forms of association and cooperation with other national and international organizations aiming at establishing projects of common interest;

• Development of activities covered by the nomenclature.

Activities in the European Community (NACE) implemented internally in the National Classification of Economic Activities (NACE - Rev.2):

a) Implementing activities for the following divisions / groups:

..25/255, 256, 257;

..26/262, 265, 266, 267;

..28/281, 284, 289;

..32/325;

..33/331, 332.

b)Research - development: NACE division 72/group 721;

c)Technical testing and analysis activities: NACE division 71/group 712;

d)Other professional, scientific and technical activities: NACE division 74/groups: 741, 749;

e)Activities advertising and market research activities: NACE division 73;

f) Membership organization activities: NACE division 94/group 941;

g) Publishing activities: NACE Division 58;

h) Extraterritorial organizations and bodies activities: NACE division 99;

i) Commerce activities: NACE division 46/groups: 461, 464, 465, 466 and division 47/groups: 471, 474, 477.

The goal of establishing the Regional Cluster MECHATREC is to develop the following strategic technical and technological directions:

- the field of intelligent advanced mechatronic, integronic and adaptronic equipments, multi-structural, technological, and informational features for decision-making, measurement, control, integrative adaptive control;
- the field of high-tech mechatronic systems for industrial and commercial applications;
- the field of intelligent special medical and biomedical devices;
- the field of intelligent and hyper-intelligent mechatronic integronic adaptronic micro-nano-technologies;
- the field of intelligent new materials with micro-nanometric structures and special features new processing technologies and usage;
- the field of innovative and customized modular systems in industry and economy;
- the field of advanced electromechanical mechatronic micro-nano-systems and systems;
- the field of intelligent micro-robotics and nano-robotics;
- the field of intelligent measurement technique, calibration, testing, calibration and functional tests and measurements;
- the field of micro-nano techniques and micro-nano-tribology;
- the field of logistics and support services;
- the field of human resource development and specialization in the field;

- The Regional MECHATREC Cluster structure is based upon economic units and sub-units required to achieve the set objectives and purpose, including:
  - economic production, trade and services – type SME, with or without RDI activities;
  - businesses having as main activity object – Research, Development and Innovation: national institutes, specialized institutes and centres;
  - secondary schools and universities;
  - testing laboratories and specialized testing laboratories;
  - chambers of commerce and industry, operating at central / regional / local level;
  - scientific organizations and professional associations and employers;
  - federations and confederations;
  - regional development agencies;
  - and so on.

In brief, the cluster structure is:

- 33 SMEs;
- 8 research institutes (INCD, IC);
- 3 universities;
- 3 administrative bodies;
- 2 chambers of commerce and industry;
- 3 centres of training, assessment and valuation;

- 3 experts.

•The need for forming MECHATREC Cluster is based upon national and European programming documents:

National Reform Plan - Business Environment and Industrial Policy Chapter;

- Mechatronics - Integronics - Adaptronics Development Strategy, as mix integrative scientific field with economically proven potential, but poorly supported at regional level;
- cluster development program coordinated by MECMA - Romania;
- Europe 2020 and 2030 Strategies;
- Document Cluster Association in Romania, CLUSTERO;
- Documents of the European Cluster Alliance;

- Examples of good practices and successful actions of MECHATREC Cluster:
  - Partnerships with other clusters and competitiveness poles (eg EL - including INDAGRO, ALL ELECTRIC, etc.).
  - Collaboration between structural entities (eg INCDMTM - UPB - CCDM - HESPER - CCIB, UMF - Orthopaedics Clinic - Floreasca Emergency Hospital - INCDMTM, INFOSIT - INCDMTM - High School of Mechatronics, etc.)
  - Collaboration with personalities from the field (lectures in the field, supported by: prof. Stiharu Ion, Ph D - Concordia University, Montreal - Canada, Professor. Alexandru Ivan - University Besancon - France Prof Rajshree Mootanah, PhD - University of Oxford England, etc.).
  - Cluster development database (members, designs, manufacturing, etc.).
  - Developing business opportunities between cluster members and joint projects;
  - Amplification and intensification of cooperation between and inter-clusters in high-tech strategic areas;
  - Achievements of mechatronic, integronic and high-tech adaptronic products:

- **Clusterdevelopment perspective**

TheMECHATRECclusterdevelopment perspective includes the following:

- ✓ Attracting new members;
- ✓ Membershipinthe CLUSTERONational AssociationandtheInternational Alliance of Europeanclusters;
- ✓ Enhancingpartnerships, collaborations and relationshipsto optimizevalue chains, productsandintelligentmanufacturing.

FURTHER INFORMATION:

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«INDMECATRON»

INCDMTM

THE STRATEGIC COMPETITIVENESS POLE IN THE FIELD OF MECHATRONICS, INTEGRONICS & ADAPTRONICS «INDMECATRON»

«INDMECATRON»COMPETITIVENESS POLE

Scope of the INDMECATRON Pole

The scope of the INDMECATRON Pole is to value, develop and implement its own strategies, according to time schedules designed and monitored to achieve the overall and specific objectives, such as:

• Representing, supporting and harmonizing the interests of all economic entities in its own structure;

• Objective and joint activities projecting, in strategic development areas, developed on the basis of their market research, marketing, valuation, feasibility, technology transfer, and so on,

• Creation, development and commercialization of innovative and intelligent mechatronic and adaptronic products, technologies and services;

• Working on a partnership between the states and the pole and its external entities to promote national and international research - development - innovation projects in common fields based on reciprocity, especially project management and formation of consortia for project development in the value chain matrix of high-tech intelligent mechatronic products;

• Working to address funding for European projects and international tenders and proposals promoting projects of common interest by promoting mutual international consortia formation, able to achieve mutual proposed projects and ensuring their management and coordination;

• Intelligent economical competitiveness through tangible and intangible investments financed from its own resources of national, community, international funds raised, etc.

The Pole specific objectives are listed, as follows:

• Economic competitiveness and national and international visibility techniques and tools:

➢ Policies supporting collaboration within the Pole and other entities outside it;

➢ Promoting and supporting innovation in all entities in the pole structure;

➢ Development of a common framework for the transfer, capitalisation and implementation of advanced know-how;

➢ Cooperation among members, research - development - innovation of products, technologies and services for participation in joint projects at national and international R & D programmes;

➢ Coordination in defining common strategic objectives: the design and implementation of measures and actions needed to achieve them;

➢Development of new facilities and infrastructure in the new entity or entities within the innovative Pole;

➢ International communication networking with other European or international competitiveness poles;

➢ Development with public authorities at local, regional, national, and international level, aimed at achieving sustainable development.

The structure of the INDMECATRON Competitiveness Pole consists of economic entities with legal personality, Romanian and / or foreign individuals, as founding members and associate (recruited) members, as follows:

- Productive economic agents, trade and service agents type SME and large enterprises with or without research - development – innovation focus.
- Economic entities, whose principal activity is Research - Development - Innovation:
  - National research and development institutes (INCD);
  - Research institutes - (ICD);
  - Research-development centres (CCD);
  - And others.
- Tertiary and secondary technical education;
- Testing laboratories and specialized testing and nationally accredited laboratories;
- Chambers of commerce and industry, operating at central / regional / local level;
- Scientific organizations and professional associations and employers;
- Central / regional / local entities;
- Employers' associations / federations and confederations;
- Individuals / experts.

In brief, INDMECATRON pole structure comprises:

- 54 SMEs;
- 7 Economic Development Agency;
- 11 National Institutes of RDI;
- 9 institutes of RDI;
- 7 chambers of commerce and industry;
- 11 central government / regional / local units;
- 9 universities;
- 7 federations / confederations;
- 7 specialized high schools;
- 6 research centres;
- 5 centres for training / evaluation / transfer;
- 9 testing accredited and specialized testing laboratories;
- 5 organizations and professional associations and employers associations;
- 9 individuals / experts.

Examples of good practices and successful practices of INDMECHATRON Pole of Competitiveness

➢ **Good practices:**

- Forming partnerships based on mutual interest and specialized subfields;
- Collaboration with other poles of competitiveness, according to the direct / related activities in their fields;
- Generation of product / technology and / or high-tech services, developing innovative SMEs in different regions and geographies.

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«BENCHMARKING»
INCDMTM

BENCHMARKING NETWORK

BENCHMARKING NETWORK FOR USING PERFORMANT, ON LINE, STRATEGIC BENCHMARKING FOR SUPPORTING ECONOMICAL REFORMATION AND TRADE for SMALL and AVERAGE COMPANIES

OVERVIEW:

Benchmarking is a continues and systematic measuring and comparing process of the activity of certain organization to one of the leaders, no matter in which place of the world, in order to obtain information to be used in improving performances.

GENERAL OBJECTIVES:

- The increase of the Romanian RDI system capacity of gathering knowledge and first rank results and experience in top scientific and technological domains, and transferring them towards social and economical internal environments for increasing their competitiveness.
- Supporting the creation, development, integration and consolidation in specific domains of certain research networks which activity reaches the level of excellence, recognized by international regulations;
- Acceleration of the lining up and technological integration process of the economic agents according to requirements and regulations of European Union;
- Integration and consolidation of research and development agents in the specific domains, and also lining up to Module 1 objectives “Complex research-development projects”'
- The increase of competitiveness of national economy;
- The achievement of certain integrated technological networks according to European level;
- Development of activities and research-development infrastructures at regional level with social and economic impact.

It is first time when CENTRES OF BENCHMARKING were organized in Romania on European areas the concerns are relatively recent as we could see on Oct 9th 1996 communication “Benchmarking and European industry competitiveness”, but it has been a spectacular evolution nowadays.

The complexity of the project is given both by complexity of the problems themselves and the complexity of relationship among partners, among benchmarking organizations and also within the network/ associations.

The multi-subject character of the activities in the project (identification of critical points, competition analysis, Total Quality Management, utilization and analysis of the data etc.) emphasizes the complexity of the project.

The main working means for the work are first of all, informatics (data base, internet and intranet networks etc.).

So, in the first place, benchmarking centres will be created a top organ (network) and finally it will be performed the lining up to the networks.

There have been identified and defined the main problems and future actions, as follows:

- Acceptance of the frame and model;
- Acceptance of a new National Behaving Code;

- The desire expressed in consolidating expert group activity for developing the initiative;
- The requirement of developing the network of interested operators;
- The suggestion of creating local centres of promotion, dissemination and making ease of the benchmarking implementation to national degree.

RESULTS:

1. Study concerning methods and techniques used in benchmarking;
2. Five benchmarking organizations;
3. Status, logical diaphragm, personnel list, regulations for functioning for the five organizations;
4. Benchmarking network, constitution report, status, logical diaphragm, regulations of functioning;
5. Nine communications and one article.

APPLICATION AREA:

At micro and macro-economical scale the effects of project implementation are:

- Providing to economic agents to government and non-governmental institutions services and means which make possible the identification the opportunity of permanent improvement of performances.
- Connecting to the existent European and international tendencies and means, by possibility lining up Romanian organizations to the existing benchmarking clubs and networks.
- Improvement of performances economic organizations and partner ships.
- Promotion of concept, techniques and instruments of benchmarking in Romania.
- Creating specialists in domain.
- Offering to Small and average enterprises and other governmental and nongovernmental organizations – a new service, the service of benchmarking.
- The creation of permanent improving of performances by identifying and implementing of the best methods which are present on worldwide.
- Capitalization of technical and scientific potential and research development organizations and also the universities by creating benchmarking organizations.
- Creating new jobs.
- Increasing of competitiveness of organizations to which benchmarking is applied.

BENEFICIARY:

- Small and medium enterprises, Inventing Research-Development units, education units, public organizations.

The users of benchmarking projects can be national and international organizations.

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«CEF-MECATRON»
INCDMTM

•"CE–MECATRON" -CENTRE FOR PROFESSIONAL COMPETENCES IN MECHATRONICS EVALUATION
• "CF–MECATRON" CENTRE FOR PROFESSIONAL TRAINIG IN MECHATRONICS

"CE–MECATRON"- CENTRE FOR PROFESSIONAL COMPETENCES IN MECHATRONICS EVALUATION

[With National Authorization from CNFPA]

➲ Organizes evaluation for:

MECHATRONICS:
- technician
- engineer

➲ Ensures for the candidates the proper PROFESSIONAL COMPETENCES EVALUATION and the access to their Specific Resources.
➲ Issues CERTIFICATES/ DIPLOMAS recognised nationally
- ○TARGET GROUP: any person of minimum 18 years of age, with experience in the field
- ○REQUIREMENTS FOR THE TARGET GROUP REPRESENTATIVES: graduates from high school with / without high school diploma and / or vocational school graduation diploma

"CF–MECATRON" - CENTRE FOR PROFESSIONAL TRAINING IN MECHATRONICS

[With National Authorization from CNFPA with the following series: BNR-0004768]

- Organizes training for:
  MECHATRONICS:
  - technician
  - engineer
- Ensures for the candidates the proper PROFESSIONAL TRAINING and the access to their Specific Resources
- The PROFESSIONAL TRAINING courses ensure:

✓ Labour redistribution
✓ Acquiring new skills for:
- people seeking employment
- persons employed in the entities and organizations
- People interested in the labour market

✓ Review of training programs in accordance with the law
- The TRAINER course ensures:

✓ Becoming TRAINER, for:

• persons who have acquired skills of informal trainer (by self-study, at work,, from introductory or short courses) and want official certification
• persons interested in obtaining the status of qualified Trainer
Target group requirements: people with higher education or equivalent

FURTHER INFORMATION: Professor PhD.EurEng Gh. Ion GHEORGHE / Phone: 021.252.30.68/69, Fax:021.252.34.37, e-mail: geo@cefin.ro ; geocefin@yahoo.com

LABORATORIES

INCDMTM

MEASURING AND TESTING LABORATORIES IN VARIOUS FIELDS

LENGTH TESTING LABORATORY - LIL

OVERVIEW:

The Length Testing Laboratory is a laboratory accredited by RENAR according to SR EN ISO/CEI 17025:2005 (accreditation certificate no. LI 783) for the following tests:

- Dimensional and shape errors determination of the limitative plain cylindrical gauges;
- Callipers indication errors determination;
- Micrometers indication errors determination;
- Analogical and digital dial gauges indication errors determination;
- Pneumatic comparators indication errors determination;
- Linear and angular, shape and position dimensional errors determination;
- Vickers hardness test

For these tests, the Length Testing Laboratory uses performing measurement equipments:

TECHNICAL FEATURES:

- **3D measuring machine with CNC, type LEITZ-REFERENCE 600**

Technical features:

- Accuracy: 0,9 +L/350 µm,

L = measuring length (mm)

- Measurement range X/Y/Z: 1000/700/560 mm
- Resolution: 0.05 µm

Applications: linear and angular measurements, geometrical tolerances control

- **Universal measuring microscope with digital display, type STARRETT GALILEO QC-5000**

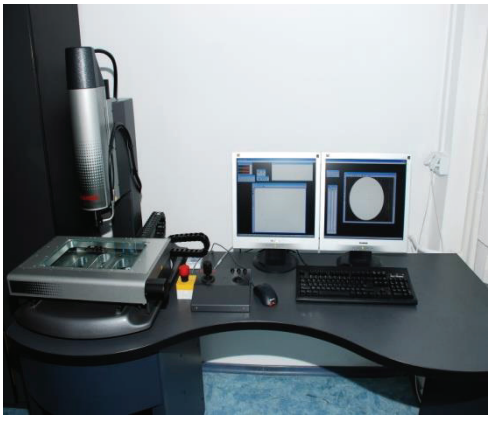
***Technical features*:**

- Accuracy: X,Y : (1.9 + 5L/1000) µm;

Z: (2.5 + 5L/1000) µm; L = measuring length (mm)

- Measurement range: X/Y/Z: 300 / 150 / 140 mm
- Resolution: 0.1 µm
- CNC system and VISIO unit

Applications:linear and angular measurements, surfaces positional tolerances control



CNC surface and contour tester RONCORDER EC 2500-KOSAKA

Technical features:

- Rotational accuracy**:**

0,02 µm + 0.0003µm/ mm

- Rotary table with automatic centring and tilting
- Resolution: 0.001 µm

Applications:control of surfaces form

CNC surface roughness tester IND 120-Taylor Hobson

Technical features:

- Resolution (Z):16nm/1mm;

3 nm/0.2 mm;

- Accuracy X, Z: 0.5µm

Applications:measurements of surface roughness and contour

Universal Length Measuring Machine DMS –680

Technical features:

Resolution: 0.1 µm
Accuracy: 0.5 µm
Measurement range: absolute 100mm; differential: 680 mm

Applications: dimensional and shape errors determination of the limitative plain cylindrical gauges, micrometers and dial gauges indication errors determination.

Measurement and calibration laser interferometer system RENISHAW XL- 80

Technical features:

Linear measurement:

- Resolution: 0.001 µm
- Accuracy : 0.5 ppm
- Linear measurement range: 0-80 m

Flatness:

- Resolution: 0.01 µm
- Accuracy: 0.6% of calculated flatness
- Flatness measurement range: 1.5 mm

Angular measurement:

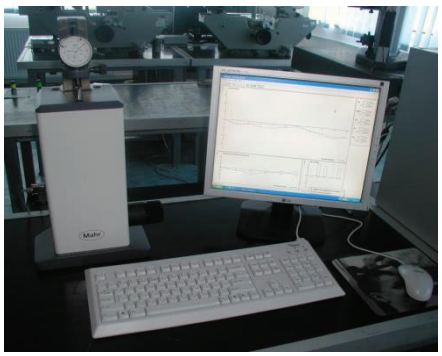
- Resolution: 0.1 µm/m (0.01 arc sec.)
- Accuracy: 0.2% of calculated angle
- Angular measurement range: 10

Straightness:

- Resolution: Short range: 0.01 µm;
  Long range: 0.1 µm
- Accuracy:
  Short range: 0.5% of displayed value
  Long range: 2.5% of displayed value
- Straightness measurement range: 2.5 mm

Squareness:

- Resolution: 0,01 µm/m
- Accuracy: 0.5% of displayed value
- Measurement range: 3/M mm/m, M= measurement distance in meters of the longest axis



Applications: 3D measuring machines and length measuring machines calibration, high level direct measurements

OPTIMAR 100 Test Instrument

Technical features:

- Resolution: 0.02 µm
- Accuracy: 0.2 + L/100 µm; L = measuring length (mm)
- Measurement range: 100 mm

Applications:dial gauges and inductive probes calibration

Height Gauge MICRO-HITE 350

Technical features:

- Resolution: 1 µm
- Accuracy: 2 +3 L/1000 µm
- Measurement range: 350 mm

Applications:dimensional errors determination for terminal sizes, height and length calibers and standards

Hardness Tester 251VRSA-AFFRI

Technical features:

- Resolution: 0.1 HV-HB-HR
- Digital display
- Automatic conversion different scales: Rockwell, Brinel, Vickers

Applications:Rockwell, Brinel, Vickers hardness measurement

CAPITALIZATION AND TECHNOLOGICAL TRANSFER:

- Measurements within some research projects or on contract basis with beneficiaries from the automotive industry, aeronautics, etc.

BENEFICIARIES:

- SC Autochassis International
- SC Automobile Dacia
- SC Renault Mecanique Roumanie
- Research institutes and universities laboratories
- SC Gruppo Italiano Imballage SRL
- SC Plastic Legno Romania SRL

FURTHER INFORMATION:

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Phone:: 021-252.30.68/331, 323; E-mail: laborator_tm1@yahoo.com

METROLOGICAL TESTING, TRIAL AND CHECKING UP LABORATORY-PRESSURE

OVERVIEW:

The laboratory is authorized by BRML (the Romanian Bureau of Legal Metrology) for executing pressure tests and checking (BRML authorization no. B - 28/1-07) and accredited by RENAR (the Romanian Accreditation Association) according to SR EN ISO 17025:2005 for carrying out pressure stamping activities (RENAR authorization no. LE 009).

TECHNICAL AND FUNCTIONAL CHARACTERISTICS:

Pressure calibration:

1. Pressure to tension or electricity transducers and transmittersfor -1 up to 600 Bars intervals, with a precision ≥ 0.1;
2. Digital and analogical display manometers, mano-vacuumeters and vacuum meters, for -1 up to 600 Bars intervals, with a precision ≥ 0.01;
3. Elastic element manometers and mano-vacuummeters for -1 up to 1200 Bars intervals, with a precision ≥ 0.05;
4. Pressure transducers for 0.8 up to 1.2 Bars, with a precision ≥ 0.1;
5. Barometers, for 0.8 up to 1.2 Bars intervals, with a tolerable error of ±1 mbar.

Pressure checking:

1. Gas and liquid pressure manometers for -1 up to 1200 Bars measuring intervals, with a 1 to 4 precision scale;
2. Auto-vehicle tire pressure manometers for 0 to 4; 0 to 10 or to 20 Bars interval, with a precision ≥ 1,6;
3. Mechanic devices for blood pressure for -0 up to 300 mmHg measuring intervals, with Et =±4 mmHg.

APPLICABILITY AREAS :

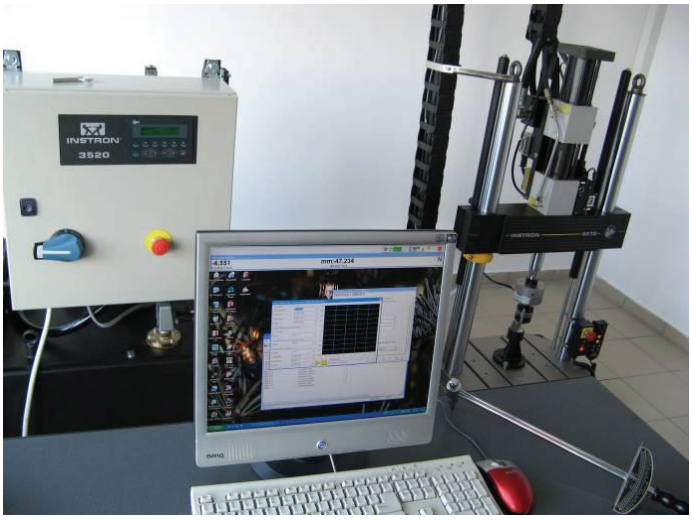
Calibrating pressure measuring devices from the endowment laboratories of the research units and production units.

CAPITALIZATION AND TECHNOLOGY TRANSFER:

Executing internal calibrations and for third parties.

BENEFICIARIES : Laboratory MMI 6 – INCDMTM Bucharest; Eng. Vlad Dumitru

TESTING LABORATORY FOR MEDICAL DEVICES - LIDM



OVERVIEW:

Development of a testing laboratory by achievement of technology, equipment and devices with high performance, needed to expand the range of static test for implantable and non implantable medical devices and to attempt to endurance of femoral component for total hip prosthesis in order to ensure services in assessment of conformity in accordance with Directive 93/42/EEC and associated harmonized European standards, needed both to public authorities in the supervision of the market, as well as to domestic manufacturers of medical devices, to fulfil their obligations derived from the directive and national legislation.

List of tests:

(1) Tensile testing procedure: LIDM - PI-01 and SR EN 10002-1: 2002;
(2) Compression test procedure: LIDM-PI-02 and STAS 1552: 78;
(3) Bending test procedure: LIDM-PI-03 and STAS 1660:1980;
(4) Endurance test procedure: LIDM-PI-04, ISO 7206-4 and ISO 7206-8.

TECHNICAL SPECIFICATIONS:

HOUSFIELD equipment for static tests

- Speed work / approach: from 0.001 mm / min up to 500 mm / min, with increments of 0.01 mm / min;
- Work force: from 0.1 N to 10,000 N, with increments of 0.1 N;
- Speed of return to original position: from 0.001 mm / min up to 500 mm / min;

- Maximum vertical travel: 1100 mm, without specimen and mounted fixtures;
- Distance between columns: 400 mm;
- readily interchangeable force Cells: 250 N and 10000N;
- Accuracy of force: 0.5% of the applied force;
- Force reading rate of 200 times / sec;
- vertical movement precision: ± 0.0001 mm;
- Travel speed accuracy: 0.005%.

Universal testing equipment INSTRON 8872

- Loading Force from 2N ± up to 10KN;
- Working speed: from 0.005 up to 60 000 mm / min;
- Working temperature: from -70 ° C to 250 ° C;
- Maximum working frequency: 1 kHz;
- Rest pressure: 24 bar;
- Working pressure 207 bar.

APPLICABILITY:

- Implantable medical devices for orthopaedic surgery
- Device and application instruments for use in orthopaedic surgery for spine pathology
- Medical device and application instruments for skull-jaw-face surgery
- Instruments for surgical technique to implant endoprosthesis
- Femoral components for total hip prostheses

CAPITALIZATION AND TECHNOLOGICAL TRANSFER :

Developing conformity assessment of capacity in Romania and participation to inter-laboratory comparisons by implementing and accrediting of a management system according to SR EN ISO / IEC 17025:2005 and to ensure trained staff for test specimens in accordance with the European directives requirements and standards for medical devices.

BENEFICIARY:

Manufacturers and importers for implantable and non implantable medical devices in Romania and abroad.

FURTHER INFORMATION: PhD.eng. Stanca COMSA e-mail: stanca_comsa@yahoo.com

VIBROACOUSTIC TESTING LABORATORY - LIVA

PRESENTATION

The vibroacoustic testing laboratory has a special room for noise testing over a reverberating plan. This room offers an efficient protection against exterior noise and vibrations, meeting to the requirements of SREN ISO 3744. The lab is equipped with the latest Bruel&Kjaer equipments.

The sound level meters:

Hand-held Analyzer Type 2250; microphone and preamplifiers, sound calibrator type 4231; sound dosimeter type 4445; reference sound Source type 4204; Pulse Analyzer 3560-B-010; Sound Intensity Probe Kit type 3599; Sound Intensity Calibrator type 4297

Vibration Meters:

Human Vibration Analyzer Type 4447; accelerometers; Vibration Calibrator type 4294; Equipment for stroboscopic balancing vibration measurement

TECHNICAL AND FUNCTIONAL CHARACTERISTICS:

- Noise sources measured in the acoustical room:
- 6 db greater than the background noise, when corrections are applied
- 15 db greater than the background noise, when corrections are not applied
- Average Level of the Background Noise in acoustical testing room: 19 dB

Types of Tests:

Acoustical Tests: the Noise emitted by domestic appliances, fans and other similar noise sources; the acoustic power of the noise sources evaluated by measurements of the acoustic pressure in several points; power, pressure, and acoustic intensity generated by installations and equipments;
Vibration Tests: the evaluation of the human exposure to potentially harmful vibration transmitted to the hand, by manually driven machines, vibration parts, determination of the rotating shaft imbalance**;**

APPLICATIONS

- Measurements of the acoustic pressure, acoustic intensity and vibrations in the industrial and civil environment
- Tests are carried out in the acoustic room or on site.

CAPITALIZATION AND TECHNOLOGY TRANSFER:

- Measurements for specific research projects or for customers coming from the industrial environment

BENEFICIARY:

Commercial societies from industrial and civil environment.

FURTHER INFORMATION:

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PNEUMATIC PORTABLE MACHINES TESTING LABORATORY
- LIMP -

OVERVIEW:

The Pneumatic Portable Machines Testing Laboratory, from INCDMTM Bucharest, has the possibility of carry out testing portable pneumatic rotary machines with power up to 0.45 kW and torque up to 10 Nm. Thus, it can be checked: portable pneumatic grinding machines, portable pneumatic drilling machines, portable pneumatic threading machines, portable pneumatic screw drivers with or without adjustable coupling, impact hydraulic impulse/ratchet pneumatic portable wrenches, gear motors and other pneumatic rotary machines. It can also check electric machines, with the same technical characteristics.

Measuring air consumption idling

The laboratory is equipped with:

- A checking equipment for power of portable pneumatic machines for general use;
- A flow meter;
- A dynamic torque transducers;
- Static torque transducers;
- Digital display devices for signal processing from torque transducers;
- An electronic speedometer;
- A sound level meter;
- A pressure gauge;
- A thermometer;
- A measuring and control equipment: callipers, micrometer, comparator with support etc.
- A work bench

Measuring speed idling

TECHNICAL AND FUNCTIONAL FEATURES:

(1) measure mass of pneumatic machines
(2) tests of compliance with security requirements
(3) dimensional measurement and radial deviation
(4) speed measuring - idle and under load
(5) measurement of compressed air consumption at idle and under wear
(6) measurement of power
(7) torque measurement
(8) measurement of noise

Measurement of power

Measuring air consumption in duty

APPLICABILITY:

Portable Pneumatic rotary machines with power up to 0.45 kW, Maximum torque 10 Nm.

CAPITALIZATION AND TECHNOLOGY TRANSFER:

Making laboratory came to support market needs being tested Portable Pneumatic rotary machines with power up to 0.45 kW, Maximum torque 10 Nm.

BENEFICIARY: INCDMTM BUCHAREST

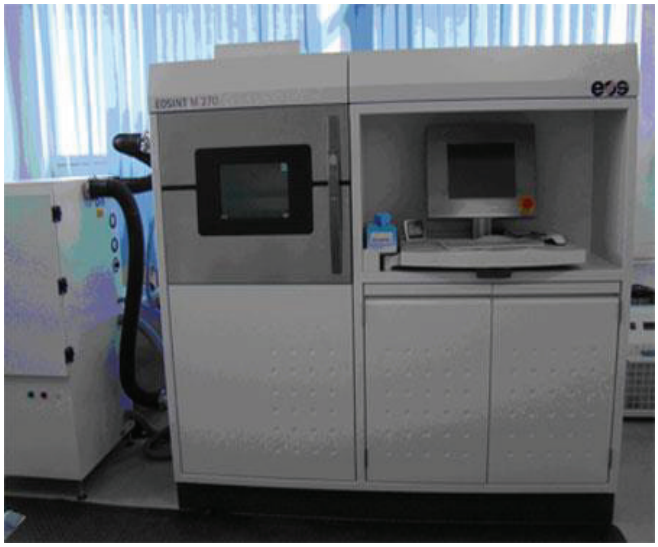
FURTHER INFORMATION:

Eng. Ileana TĂCUTU – Phone:. +40212523068 / 356, e-mail: ileana.tacutu@incdmtm.ro

THE RAPID PROTOTYPING LABORATORY

OVERVIEW:

The Rapid prototypingLaboratory is unique in Romania. The laboratory is based on"High-tech EOS M 270 - Laser sintering system for metal powder", that works basing on the principle of carrying-out parts made up of sintered metallic powders (toughened by local melting) with the aid of a laser beam. The geometry of the parts can be of very complex nature, created directly into 3D CAD data systems, the soft of the equipment allowing their materialization by adding several powder layers (18 microns thin), sintered afterwards. This is a modelling process for high quality and resolution part generation, with great surface finishing and mechanical features similar to those obtained by applying conventional infusion proceedings.

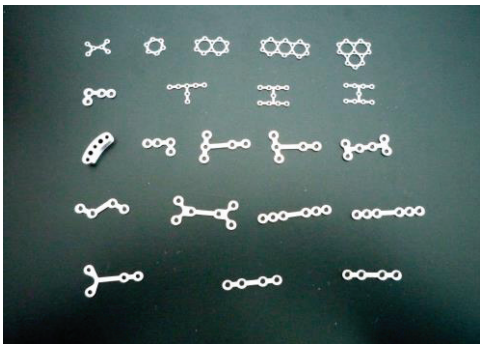


TECHNICAL AND FUNCTIONAL FEATURES:

Real construction volume (including the supporting pad: 250 mmx250mmx215 mm

- Construction speed (depending on the material): 2 - 20 mm3/s
- Layer thickness (depending on the material): 20 - 100 µm (0.001 - 0.004 in.)
- Laser type: Yb-fiber laser, 200W
- Precision optics: F-theta-lens, high-speed scanner
- Scanning speed : < 7.0 m/s
- Focus diameter variation : 100 -500 µm
- Absorbed electricity: 32 A
- Used powder: max. 5.5 kw
- Nitrogen generator: standard
- Compressed air supplying: 7.000 hPa; 20 m^3/h
- Dimensions (B x D x H)
- System: 2 000mm x 1 050mm x 1940
- Recommended installation area: approx. 3.5m x 3.6m x 2.5m
- Weight: approx. 1 130 kg
- Data processing
- PC OS: Windows
- Software: EOS RP Tools; Magics RP (Materialise)
- CAD Interface : STL

- Network: Ethernet
- Certifications : CE, NFPA
- Design in form and shapes to cover all clinical situations;
- Made from biocompatible materials;
- Resistant at normal mechanical load which appears in designated implant place from human body;
- Easy to apply and to assembly;
- The mini implantable fixing system permit to distraction and extension bone of small bone pieces;



APPLICABILITY:

The applications of the device are linked mainly to the type of metallic powders used:medical stainless steel metallic powders(EU taxonomy: 1.2709 and 1.4542), Co Cr Mo and Ti 64 metallic powders. Hence, the main destinations of the output components will be prostheses, bone extraction and synthesis systems, and respectively special destination products.

CAPITALIZATION AND TECHNOLOGY TRANSFER:

It can be obtained any shape from CAD CAM applications.

BENEFICIARY:

The beneficiary can be any company that wishes to verify the design of their products before putting in fabrication or manufacture of prototypes.

FURTHER INFORMATION:

Eng. DAN CIOBOTA, e-mail: incdmtm@incdmtm.ro

TESTING LABORATORY OF WEIGHING APPARATUS WITH NON-AUTOMATIC FUNCTIONING (LIAC)

OVERVIEW:

Testing laboratory of weighing apparatus with non-automatic functioning (LIAC) supports research in measuring domain of the masses.

TECHNICAL AND FUNCTIONAL FEATURES:

LIAC may issue test reports for weighing apparatus with non-automatic functioning (scales) with the following technical characteristics:

- electronic apparatus ;
- numerical indication ;
- Max : 30 kg ;
- class of accuracy: III, IIII ;
- divisions of verification, max : 3000 ;
- with one or more weighing ranges ;
- with automatic or semi-automatic update or maintain zero;
- with or without automatic tare ;
- with one or more indicator devices ;
- temperature range of use: -10…+40°C ;

APPLICABILITY:

LIAC performs conformity assessment for weighing apparatus with non-automatic functioning described above, in accordance with Law 608/2001 and HG 617/2003, and for these evaluations LIAC may perform the following tests:

▪ Zero control	▪ Getting to zero before loading
▪ The determination of weighing performance	▪ The test of apparatus with multiple indicative devices
▪ Test with tare	▪ Test of eccentricity
▪ Test for mobility	▪ Test of fidelity
▪ Creep test	▪ Trying to return to zero
▪ Test of the stability of equilibrium	▪ Trying to tilt
▪ Test of the heating time	▪ Test at the temperature;
▪ Test of voltage variations	▪ Test Endurance
▪ Test of gradient stability.	

CAPITALIZATION AND TECHNOLOGY TRANSFER:

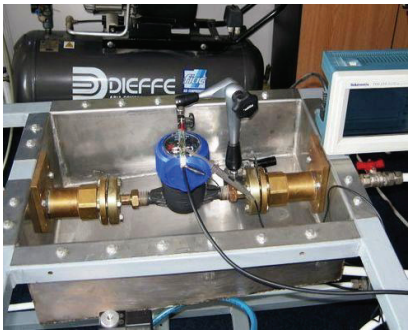
Making LIAC came to support research in the field of electronic scales and hence the mass measurement.

BENEFICIARY:INCDMTM Bucharest

FURTHER INFORMATION: Eng. Ana MAIER, Phone:: +4021.252.30.68/int.356;

email : maier.ana@incdmtm.ro

FLOW METER LABORATORY FOR CONFORMITY TESTS OF SOME SPECIFIC TYPES OF DEVICES WITHIN THE FIELD



OVERVIEW:

The Flow meter Laboratory within INCDMTM Bucharest is certified starting with 2007, according de Accreditation Certificate no. 481-L by the Romanian Accreditation Association – RENAR for tests on determination of the indication relative errors of the cold water counter/meter DN15.

The test method used according the referential CS 108/2005 and the test procedure LD-PL-01 is the volumetric method with standard tube.

Tests are made on a standard stand with a pneumonia hydraulic cylinder and piston having the standard certificate no. 06.02 – 328/2005, issued by BRML – INM Bucharest.

TECHNICAL FEATURES:

In accredited regime the tests are done on the testing stand with the measurement uncertainty extended of ± 0,32 %

In not accredited regime in the laboratory may be made the following tests:

- determination of the relative errors of indication of the volume transducers and of the flow meters with the nominal diameters less than 15 mm for liquids others than the water, on this purpose the stand uses as working flow water with glycol, volumetric concentration 20%;
- determination of the pressure loss on the test device during the interval 0 ÷ 500 mbar.

APPLICABILITY:

Industrial flow meter, companies producing such devices, economic agents providing service activities in the field, units with RD activity not having the necessary equipments for conformity evaluation, for providing the free movement of products and services.

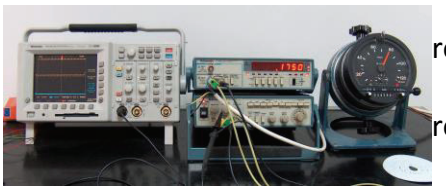
PRACTICAL APPLICATION / TECHNOLOGY TRANSFER:

The laboratory realization and accreditation supports the internal market, thus is interdicted to commercialize and use certain low quality devices specific for the industrial flow meter field.

BENEFICIARY:INCDMTM Bucharest

FURTHER INFORMATION: Eng. Codrut Darie, Phone:: 021.252.30.68 / 352,
e-mail: codrutdarie@yahoo.com

LABORATORY FOR CHRONOTACOGRAPHIC TESTS – LIC



OVERVIEW:

The laboratory tests for the chronotacographs fixed or not on auto vehicles:

- Verifies the tolerated error both for run distance indication and registration
- Verifies the tolerated error both for speed indication and registration
- Verifies the tolerated error both for time indication and registration
- Verifies the hysteretic error both for time indication and registration

TECHNICAL FEATURES:

Equipments for realizing the above mentioned tests are:

- function generator – type TECTRONIX
- oscilloscope with 2 channels – type TECTRONIX
- stabilized source - type TECTRONIX
- frequency meter/counts the impulses - type TECTRONIX
- stand for visualizing the impulses shape
- microscope for measurement
- installation for acclimatization

APPLICABILITY:

The laboratory is destined to test chronotahographs fixed on auto vehicle for goods and persons transport and for those which are not fixed on auto vehicle (in laboratory conditions).

PRACTICAL APPLICATION / TECHNOLOGY TRANSFER:

The capitalization was made by obtaining the Accreditation certificate from RENAR.

BENEFICIARY:INCDMTM Bucharest

FURTHER INFORMATION: Eng. Ştefan Văduva Phone:: 021.252.30.68 / 352,
e-mail: stefanvaduva2008@yahoo.com

LABORATORY OF LASER APPLICATIONS

OVERVIEW:

Laser applications testing laboratory using a high power laser suchROFIN SINAR LASER Gmbh/Germany – 2200W and may be used to accomplish different welding, debiting, thermal treatment operations, in fabrication processes providing important advantages such as material flexibility, geometry and processing. Welding with laser is rapid, ecological, providing a high processing quality seldom needing post processing. An important application is the diamonded parts welding on the steel disks.

The advantages are doubtless and proven in the current practice as compared to classic industrial equipment, such as: increased flexibility, the possibility to produce miniaturized components, consistency and the repeatability of results, the possibility to process very hard materials, easy automations. The mechanical and technical requirements imposed by the materials when using these technologies are minimal obtaining a high-quality welding seam and increased productivity.

Fig.1 - MACROLASER CENTER

MACROLASER CENTER (fig 1) consists in

a. mechanical component:

-*the layer* and *the PC fixing table*

- *the displacement module on the Xaxis* – a precise construction configured with the help of the following mechanisms: the screw-nut mechanism driven by a stepper engine, ball cages for reducing friction;

- *the module for positioning and fixing of the diamonded segments* is configured for manual fixing of the segments, a diamond blade size corresponding for each module.

lectronic component – information system for shift and control

- *HARDWARE component* consisting in:

-*SOFTWAREPROGRAM* – LabVIEW VI developed by NATIONAL INSTRUMENT

- *the module for fixing the flat tools* – the support structure in a solid construction of soft alloy, meant to sustain the broach in order to fix the flat tools and the module for fixing segments.

-*the broach for fixing flat tools* - designed to obtain the rotation movement necessary for the positioning of every segment in front of the laser beam.

Joint parts couple

Debiting disks comprises from the structural point of view of a steel disk support on which periphery are fixed the segments according to a preliminary geometry and an active part – circular segments. The support has the configuration showed in fig.3.

TECHNICAL AND FUNCTIONAL CHARACTERISTICS :

laser type **RS 2000 SM**

Fasciclecharacteristics:
Wavelength: 10,6 µm
Electric current c.c.
Issue power :
Guaranteed power : 2000 W (nominal power)
Timing interval: 200-2200W (maximum power)
Stability: +/- 2% (temperature of cooling water
Δ= +/- 0,5 ^{0}C)
Quality of laser beam:
Diameter : approximately 19 mm
Divergence : ≤1,5 mrad, entire angle (in the aisle just at 10 m)
Stability to fix: ≤ 0,15 mrad
Structure : TEM 01* linear just at 45^0
Impulse characteristics :
Impulses frequency : 0 – 1 khz
Pulses length : 100 µs – continuous
Laser gases:
Input : He 60 nl/h whiteness 4,6
N2 32 nl/h whiteness 4,6
CO_2 3 nl/h whiteness 4,5
Dimension:
Laser head :(L) 2050mm; (l) 800 mm; (h) 1370 mm
Press command:(L) 620mm;(l) 840mm;(h) 1955 mm
Electrical connect:
Voltage: 400 V + 6 % / -10 % ; 50 / 60 Hz; 3 phases; with zero protection; 22 kva – at nominal power
Used up power : 25 kva – la maxim power
Used up current : Max. 36 A
Fuses: 50 A

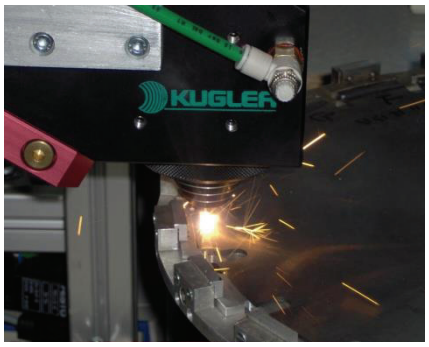


Fig.2

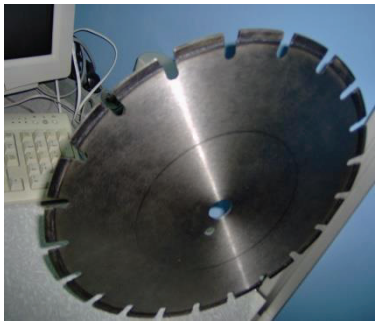


Fig.3

APPLICATION AREAS :

With Macolaser Center have made researches and experiments of the type:

- experiments for verifying the balance cooling functioning of the pump type Roots and the automation box/panel ;
- tests over the electric circuits from the general panel and the achievement of their functions;
- researches on the answering capacity of the laser source, having as the result a fascicle with the equivalent power with the one included in the execution documentation (0÷ 2200W) ;
- the corresponding set up of the laser source in horizontal plane; tests on the control panel functioning and on the software program (firstly on instantaneous trigger of each operation before forming the laser fascicle, among these the most important are: the current source supply, vacuum pump action for evacuation and the refreshment of the laser gases joint, supply with gases, etc.);
- set up the laser fascicle parameters taking into consideration the influencing factors and the

materials compatibility for welding;

- researches on the alignment of the transport system of the laser fascicle
- positioning of each component on the supporting frame, resulting there design of certain parts;
- adapting the software program for the disk – diamonded segment ensemble positioning in front of the laser fascicle;
- continuous improvement of the laser fascicle quality by modifying the functional parameters (power, cooling speed, protection gas flow, peripheral displacement speed of the port-segments disk in front of the fascicle and the minim/maxim distance between the welding aria and the fascicle);
- researches on obtaining a correct position of the deflection prisms on the whole laser fascicle flow, for its alignments according the X, Y and Z and to the others components modules;
- modifications over the constructive shape of the disk support, to allow the fascicle to penetrate and to achieve a welding on all the segment thickness;.

CAPITALIZATION AND TECHNOLOGY TRANSFER:

The application of laser welding *of the diamonded segments on the* metal discs production is the implementation of a multifunctional and flexible manufacturing process, approved by several interested businesses to benefit from research results. These discs are extremely domestic required to process the following types of materials: limestone, red marble, conglomerate, sandstone, hard rock, volcanic tuff, travertine, quartz, slate, gneiss, marble compact, white marble, granite, Dion, andesite , basalt, Pedestrian, Siena, fire brick, cement, asphalt, concrete, reinforced concrete. In Romania, so far producing companies DIAMOND TOOLS FOR brazing technologies for permanent joining of the diamond segments on the body of the tool steel.

Transfer results can be achieved through activities such as: identifying and promoting innovation offers the area - of interest, applications of technology, maintaining links between research - education - industry, information and technical advice by: magazine ISIM Bulletin " , information bulletin "ISIM - News, guides to good practice, technical hot-line services, conferences, seminars, workshops, symposium with international participation" INDLAS.

In Romania is aiming to create a network of technology transfer in the weld, a Balkan regional networks with the main partners welding associations of Bulgaria and Serbia-Montenegro, whose work will contribute to the development of flexible cell made in this project.

BENEFICIARIES :

Users can be companies with a tradition of manufacturing high-tech products such as: SC ALPHA DIARUL SA Bucharest, SC Diamond TECHNOLOGY SA Bucharest, SC DIATECH SA Bucharest.

FURTHER INFORMATION:Dr. Eng. Iulian Munteanu, e-mail: iuli_sm@yahoo.com

N G O s

PROFESSIONAL ASSOCIATION OF THE ROMANIAN PATRONATE OF PRECISION MECHANICS, OPTICS AND MECHATRONICS– APROMECA

OVERVIEW:

APROMECA is a professional association, a non-governmental, a-political and non-profit organization made up of registered juridical and authorized physical persons activating in the field of Precision Mechanics, Optics and Mechatronics. The association reunites **20 affiliated members:** RDI national institutes/ RDI institutes, SROMECA Association – The Romanian Mechatronics Society as well as economical agents/producers (SMEs).

- **INCDMTM - Bucharest**
- **The National Institute for Research and Development in Electrical Engineering ICPE – CA**
- **THE RESEARCH INSTITUTE FOR HIDRAULICS AND PNEUMATICS INOE 2000 – IHP Bucharest**
- **THE ROMANIAN ECONOMICAL AND SOCIAL STUDIES – IRECSON – Bucharest**
- **UPB – RESEARCH AND DEVELOPMENT CENTER FOR MECHATRONICS – CCDM**
- **SC. PRO OPTICA SA Bucharest**
- **SC. OPTOELECTRONICA 2001 SA Bucharest**
- **SC. ITM – AMIRO SA Bucharest**
- **SC. ROMFLUID SA Bucharest**
- **SC. CARMESIN SA Bucharest**
- **SC. CONTOR GROUP SA Arad**
- **SC. BADOTHERM AMC SA Vaslui**
- **The Romanian Mechatronics Society – SROMECA**
- **SC. TEHNOROM Bucharest 1990 SRL**
- **C.I.T. Automations**
- **SC. QUATRO PROD COM SRL Bucharest**
- **SC. GENERAL FLUID SA Bucharest**
- **SC. HESPER SA Bucharest**
- **Etc .**

APROMECA unfolds the following activities:

- *industrial marketing;*
- *information exchange and access on the evolution of the activity field at an international scale;*
- *promotional activities;*
- *Intercessions on the training of specialized experts ;*
- *specialized fairs and exhibitions both in Romania and outside the country;*
- *European qualification actions,* inclusively the harmonization of the Romanian legislation to the normative dispositions of the European Union;
- *representing the members in the social dialogue* without affecting their independence; *negotiating and enclosing the collective work contract in the branch, participating in other agreements with the public authorities and the syndicates,* as well as participating in management and social dialogue;
- *forwarding to the proper Public Authorities in charge of proposals for laws;*

Accessing financing as subventions, donations, subscriptions, contributions, sponsorships.

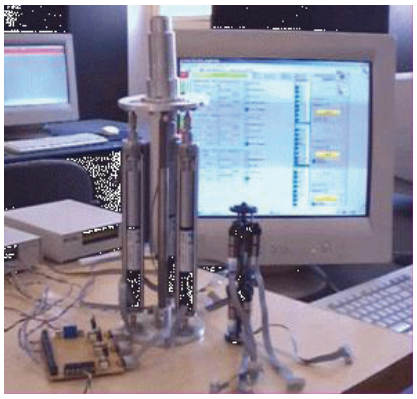
APPLICABILITY:

Promoting research, development, innovation, marketing and knowledge dissemination activities in the field of mechatronics, advanced micro- and nano-processing micro-technologies in the field of mechatronics, micro-technologies.

TECHNOLOGICAL TRANSFER:

Capitalizing the applicative researches in the fields of precision mechanics, optics, mechatronics are found in the profile SMEs productions, as: technological and production systems, remote-control systems, bio-medical systems, slate and tools made of c.m.s, instrumental tools used in implanthology, cold, hot and branch-type meters, opto-electronic equipments for industrial applications, medical and military applications as well as micro-optical and nano-optical technologies.

Advanced micro-technology and equipment for micro- and nano-processings with laser beam by sintering - INCDMTM



Robotic module 3 DOF
UPB-CCDM Bucharest

robotic cu 3 DO

Cold and hot meters, of branch-type Contour Group Arad

Pressure differential transducers
INOE 2000 – IHP Bucharest

BENEFICIARY:

SMEs in the field of precision mechanics, optics, mechatronics, micro-optical and nano-optical measuring and control measuring technologies.

The project: "Better future by practice"
[POSDRU]

Project overview:

Professional Association of the Romanian Patronage of the Precision Mechanics, Optics and Mechatronics Industry - APROMECA, along with the National Institute for Research and Development in Mechatronics and Measurement Technique - INCDMTM Bucharest and Polytechnic University of Bucharest - Faculty of Mechanical Engineering and Mechatronics and Lumina Foundation (University Europe Southeast Light), runs from 25 April 2014, the project " Better future by practice ", ID 141251.

The project is co-financed by the European Union through the European Social Fund and the national budget within the Sectoral Operational Programme Human Resources Development under Priority Axis 2, DMI 2.1. The project is implemented in Bucharest for a period of 18 months.

Overall objective

The overall objective of the project is to develop work skills in advanced engineering and improving labor market insertion of 400 students from Bucharest Ilfov Region in a 18-month period.

Specific objectives

O1 - Information on opportunities for professional career development for 400 people;
O2 - advice and guidance to 400 people for choosing appropriate career path;
O3 - organization of eight study visits to support the work of professional counseling for 200 people;
O4 - facilitating the transition from school to work by organizing practical training courses for 400 people

Target group

The target group consists of 400 students. The target group will be registered in the national education system, will be a student of an educational institution in the Bucharest Ilfov region, from urban area and is student of a school with technical profile, that is Bachelor / Master (mechatronics, integronics, adaptronics, robotics, mechanics, optometry, etc..) information

technology, international relations and European studies.

Project activities

Project activities dedicated to target group are:

✓ **Development of guidance and counseling activities**. The activity aims to recruit and maintain the target group, developing materials to support the work, conducting information campaigns, counseling and guidance for students, organizing study visits in order to facilitate the transition from school to work, shaping a decision on the professional route for the target group and the creation of an IT tool to support further work to monitor participation in project activities, target group.

- Recruitment and maintain target group
- Elaboration of materials
- Conducting information campaigns
- Organize and conduct information sessions and counseling;
- Organizing study visits
- Creating an IT support tool.

✓ **Development of practical training sessions**. The activity aims at organizing and conducting practical training sessions, including determining the list of economic operators, concluding conventions of practice, preparation and distribution of support materials in order to improve their insertion in the labor market. Also in this activity will be organized and carry out competitions in order to validate knowledge acquired in the course of their internships

- Organization of practical training sessions;
- Develop and distribute support materials;
- Conduct practical training;
- Planning, organizing and conducting competitions;

Partnership

Solicitant: Professional Association of the Romanian Patronage of the Precision Mechanics, Optics and Mechatronics Industry - APROMECA
Partner 1: National Institute for Research and Development in Mechatronics and Measurement Technique - I.N.C.D.M.T.M. Bucharest
Partner 2: Polytechnic University of Bucharest - Faculty of Mechanical Engineering and Mechatronics
Partner 3: Lumina Foundation (University Europe Southeast Light)

The project: "Regional Cluster Bucharest - Ilfov – MECHATREC - Integrator Vector for Competitiveness, Eco-efficiency and Innovation, for High-Tech Mechatronics Industry"

[POSCCE]

Project overview:

"Regional Cluster Bucharest - Ilfov MECHATREC - Integrator Vector for Competitiveness, Eco-efficiency and Innovation, for High-Tech Mechatronics Industry" project is cofinanced from the European Regional Development Fund through the Sectoral Operational Programme "Increase of Economic Competitiveness".

Overall objective

The overall objective is to develop institutional capacity and improve competitiveness of MECHATREC cluster and also for its member SMEs at national and international level.

Specific objectives

The specific objectives are:

- O1 - Increase in investments made by cluster companies with over 15%;
- O2 - Increasing exports by productive/high-tech knowledge-intensive services SMEs of the cluster by 20%;
- O3 - Over 15% increase in labor productivity of member companies of the cluster;
- O4 - Increase the number of jobs in the cluster with more than 25%;
- O5 - Increasing trade relations between cluster members with over 25%;
- O6-Attracting and involving 22 new SMEs productive / services area of high-tech knowledge-intensive in the cluster;
- O7-Creating a brand and improve the cluster image through promotional activities at national and international level;
- O8 Improving employee skills for cluster members involved in the project for 80 participants in training sessions;
- O9 - Creating 6new SMEs in the cluster;
- O10 - Increased planning and management capacity of the cluster.

Project activities and results:

The project contributes to the objectives of consolidation and sustainable development of Romanian productive system and creating a favorable environment for business growth. By developing institutional capacity for planning and management of the cluster improves market

access for members businesses in accordance with the principles of sustainable development, increase competitiveness and entrepreneurial businesses. The project develops an environment for the development of enterprises members of the cluster by promoting achieved in particular through participation in fairs in the country and abroad and to facilitate the exchange of experience events.

Also the project will gain new competences by EMC's employees and SMEs members guaranteeing the prospect of a favorable environment in which businesses create synergies, develop and become more competitive.

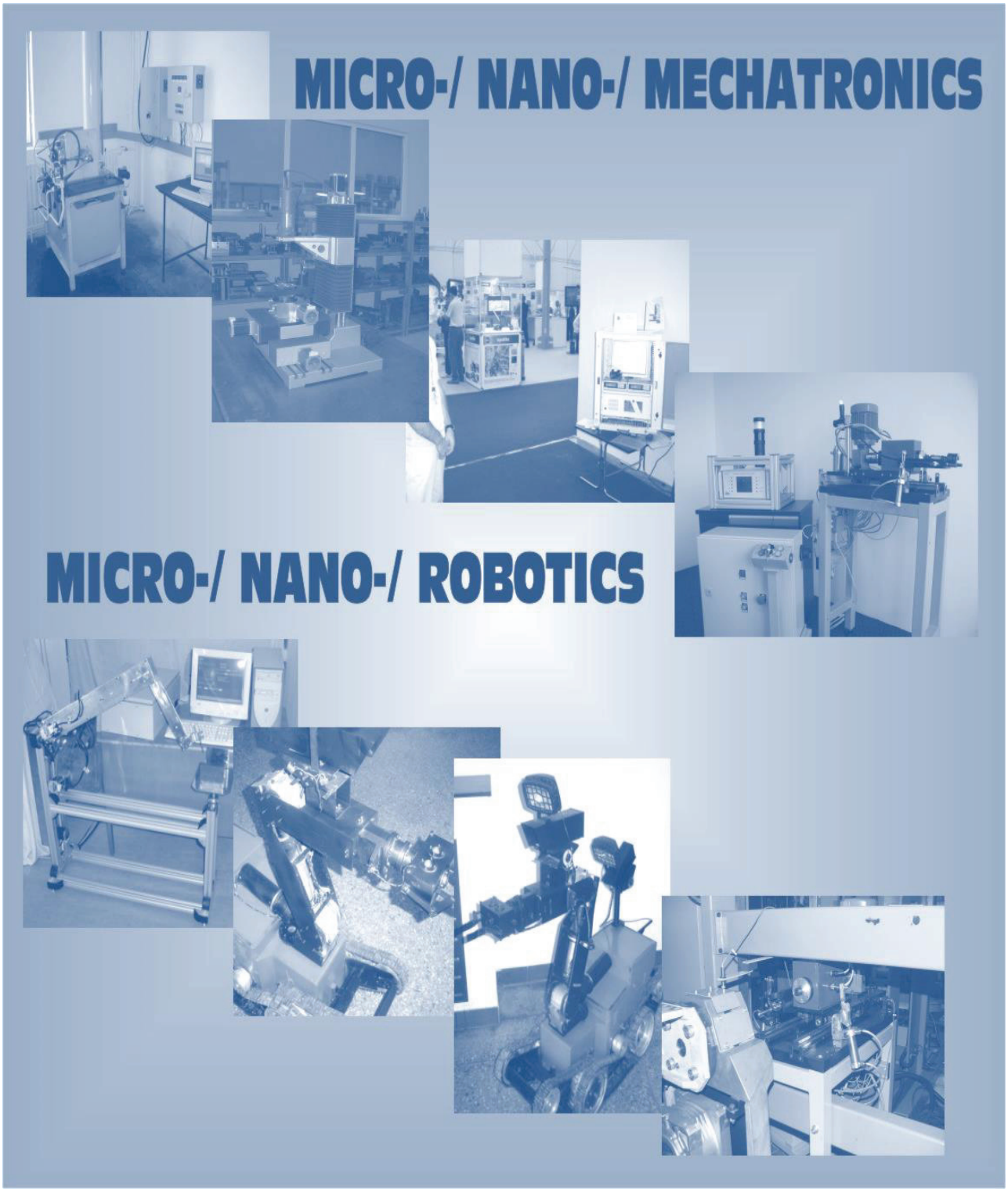
The project is a component of a complex operations being an integrated project in the current development plan, which will entail other projects and initiatives to build institutional capacity for MECHATREC cluster and improve competitiveness for member SMEs at national and international level.

The added value of the project will be a series of benefits that can be felt at local, regional and national levels:

- Provide a model of good practice;
- Increase in investment by companies in the cluster;
- Increasing exports by productive SMEs / in the service of high-tech based on use of knowledge from cluster;
- Labor productivity growth of member companies of the cluster;
- Increase the number of jobs in the cluster;
- Increasing trade relations between cluster members;
- Attract and involve new productive SMEs / in the service of high-tech based on use of knowledge from cluster;
- Creating a brand and image improve of the cluster through promotional activities at national and international level;
- Improving cluster members employee skills involved in the project;
- Creating new SMEs in the cluster;
- Increasing the management and planning capacity of the cluster;
- Improve national and international visibility of the cluster;
- Strengthening market position.

The project contributes to the achievement of cluster objectives that are in line with the Europe 2020 Strategy and the Lisbon Strategy principles (revised) for growth and new jobs, which includes three major objectives: smart, sustainable and inclusive growth. These strategies are a priority in the short term in fighting the crisis and on long-term for facilitation and creation of new jobs, increase living standards and allow the European Union to be on the top in international classifications.

FURTHER INFORMATION: Univ. Professor PhD Eng. EurIng, e-mail: geocefin@yahoo.com


MICRO-/ NANO-/ MECHATRONICS
MICRO-/ NANO-/ ROBOTICS

Nr. Reg. Comertului:
J40/1074/1997
C.I.F. RO 930

MINISTRY OF NATIONAL EDUCATION AND SCIENTIFIC RESEARCH
NATIONAL AUTHORITY FOR SCIENTIFIC RESEARCH AND INNOVATION
NATIONAL INSTITUTE OF RESEARCH AND DEVELOPMENT
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E-mail: incdmtm@incdmtm.ro; web: www.incdmtm.ro

SCIENTIFIC PRODUCTION 2015

Research Projects 2015

RESEARCH PROJECTS			
• NATIONAL/ INTERNATIONAL PROJECTS 2015			
Contract No.	**Project name**	**Manager**	**Beneficiary:**
„NUCLEU”			
PN 09.05.01.05	Intelligent mechatronic system for temperature compensation in dimensional control of parts used in the automotive construction industry	Georgescu Valeriu	NASRI
PN 09.05.01.12	Research on intelligent techniques for separating and processing errors and sprocket surface defects by harmonic analysis using the methods of engagement type "single flank" and "double flank"	Cioboată Daniela	NASRI
PN 09.05.01.13	Developing a comprehensive system for measuring and tracking long distance, position and velocity of bodies by using mechatronic systems for measuring based on three-dimensional laser	Popan Gheorghe	NASRI
PN 09.05.01.14	Methods and systems of high precision measurement and control of level of technical fluid	Pascu Constantin	NASRI
PN 09.05.01.18	Modelling, control and testing of robotic pick and place type systems used in industry	Rolea Ana Maria Eulampia	NASRI
PN 09.05.01.21	Intelligent Mechatronic Systems for automatic verification of tightness wall castings with complex shapes.	Badea Sorin Ionuţ	NASRI
PN 09.05.02.03	Trends in the development of transducers to measure forces and moments	Laţa Ioan	NASRI
PN 09.05.02.09	Modular optoelectronic computerized systems used in transport logistics automated industrial production streams	Atanasescu Anca	NASRI
PN 09.05.02.11	Research on development of new flexible mechatronic systems for HIGH-TECH linear measurement with high resolution for very long, independent / fully automatic dimensional control stations	Logofătu Cristian	NASRI
PN 09.05.03.04	Mechatronic methods for evaluating and controlling indicators of abrasive micro-chipping processes aligned with EU requirements	Vieru Anton	NASRI
PN 09.05.03.05	Surface characterization of micro and nano structures covered by Intelligent Mechatronic methods designed for biomedical applications	Bădiţă Liliana	NASRI
PN 09.05.04.07	Multidisciplinary Research for the development of implants dedicated to the treatment of congenital malformations of the skeleton in children	Comşa Stanca	NASRI
PN 09.05.04.09	Studies on family characterization of advanced biocompatible metallic materials for achieving personalized prosthetic elements	Isvoranu Florin	NASRI
PN 09.05.05.09	Study on cluster development strategy of "MECHATREC" and its role in the development and sustainability of SME entities in the areas of advanced technological transfer and / or know-how	Ilie Iulian	NASRI
PN 09.05.05.10	Prospective study on the development and implementation of high tech "Adaptronics" as part of the key technology for the future by synergistically combining Intelligent Mechatronics and Integronics	Gheorghe Gheorghe	NASRI
PN 09.05.05.12	Research on reducing risks and consequences associated with the principles of social business by implementing integrated systems to ensure ethical management practices	Finat Carmen	NASRI

SECTORAL PLAN PROGRAMME			
10 S	Developing the ability to transfer and commercialization of research results into the applied research institutes and centres in Romania - implementation of a pilot model for specialized departments.	Badea Diana Mura	UPB

PROGRAMME: "PARTNERSHIP IN PRIORITY AREAS"			
179	Irrigation technology with rainwater collectors for individual vines in the early years of vegetation	Palade Doru Dumitru	UEFISCDI
268	Innovative mechatronic control system for the control of bearing rings on CNC machines as a factor in optimizing the quality	Cioboată Daniela	UEFISCDI
221	Ligament reconstruction using advanced structured materials based on natural and synthetic polymers	Comşa Stanca	UMF Carol Davila
224	Model experimental for detection and diagnosis of changes in vibratory processes using advanced techniques of model-based measurement and analysis	Cioboată Daniela	„Dunarea de Jos" University
249	Electro-dynamic and electromagnetic actuators processed with LIGA technology	Sergiu Dumitru	UPB
250	Mechatronic system for measuring wheel profiles of railway vehicles in order to optimize reshaping on CNC machine tools and increase traffic safety	Savu Lucian	UPB-CNCPST OPTIMUM
279	Kelvin probe with Harmonic Potential for Space Applications	Mărgăritescu Mihai	Space Sciences Institute
Structural Funds - SOP HRD (Human Resources Development Operational Programme)			
POSDRU / ID 141251	Better future by practice	Gh Ion Gheorghe	MLFSP
Structural Funds - Sectoral Operational Programme "INCREASE OF ECONOMIC COMPETITIVENESS"			
437	Research Centre for Measurement Technique/acronym: CERTIM	Gh Ion Gheorghe	NASRI
643	Bio-mechatronics laboratory development	Stanca Comsa	NASRI
PART. - PN II - STAR			
8	Sub-systems for nano-satellites	Popan Gh.	Institute of Space Science / INCDFLPR – STAR subsidiary
SEVENTH FRAMEWORK PROGRAMME – FP 7			
FP7-SME-2013-605802-WIDESENS	Water network senors for widespread use	Badea Diana Mura	Wellness Telecom SL - Spin
FP7-SME-2013-605777-WI-SHOE	A novel Wireless, wearable Shoe-based system for real time monitoring of Energy Expenditure and Gait parameters for Sport and Medical Applications	Mărgăritescu Mihai	CNE Research and Innovation Centre – Cyprus

EVENTS & LITERATURE			
25M	MECAHITECH'15 International Conference	Gh Ion Gheorghe	NASRI
2L	Scientific Literature	Gh Ion Gheorghe	NASRI

• PROJECTS WITH THIRD PARTIES - 2015

BENEFICIARY	PROJECT	COMMAND FROM BENEFICIARY
283	Calibration	CMD SYSTEMS
4202298341	Spare parts	DACIA
4202444204	Spare parts	DACIA
4502104129	Spare parts	DACIA
4502187637	Spare parts	DACIA
4202222705	Spare parts	DACIA
4202252155	Spare parts	DACIA
4202269997	Spare parts	DACIA
4202274174	Spare parts	DACIA
4202277973	Spare parts	DACIA
4202284759	Spare parts	DACIA
4202293166	Spare parts	DACIA
4202298341	Spare parts	DACIA
4202308719	Spare parts	DACIA
4202319476	Oscillator kit - ZANASI Z4500	DACIA
4202313492	Periodical review - Z4500	DACIA
4202314148	Spare parts	DACIA
4202323987	Spare parts	DACIA
4202331618	Spare parts	DACIA
4202353102	Spare parts	DACIA
4202365080	Spare parts	DACIA
4202365986	Spare parts	DACIA
4202370400	Spare parts	DACIA
4202377646	Spare parts	DACIA
4202380869	Spare parts	DACIA
4202381665	Spare parts	DACIA
4202383721	Spare parts	DACIA
4202388044	Solvent vial – 0.5 linx	DACIA
4202388079	Spare parts	DACIA
4202396068	Spare parts	DACIA
4202402059	Filters	DACIA
4202403293	Proximity sensor	DACIA
4202403297	Proximity sensor	DACIA
4202404780	Spare parts	DACIA

4202405157	Assembled parallelogram - ACAMEK	DACIA
4202408467	Hard soft key type 1	DACIA
4202408475	Hard soft key type 2	DACIA
4202408882	Spare parts	DACIA
4202411121	Spare parts	DACIA
4202412743	Spare parts	DACIA
4202415994	Spare parts	DACIA
4202419464	Spare parts	DACIA
4202423347	Spare parts	DACIA
4202424459	Spare parts	DACIA
4202430996	Spare parts	DACIA
4202434319	Spare parts	DACIA
4202439540	Spare parts	DACIA
4202439839	Spare parts	DACIA
4202468400	Vial - LINX	DACIA
4202469149	Oil dipstick plug position 3	DACIA
4202469216	Service for: LINX PAP, DISCK	DACIA
4202469572	Adapting pap system	DACIA
4202471054	Emergency service for LINX PAP	DACIA
4501968627	Spare parts	DACIA
4502032577	Spare parts	DACIA
4502049249	Spare parts	DACIA
4502062326	Spare parts	DACIA
4502070068	Spare parts	DACIA
4502080432	Spare parts	DACIA
4502080638	Spare parts	DACIA
4502087009	Spare parts	DACIA
4502092821	Spare parts	DACIA
4502093023	Spare parts	DACIA
4502095770	Spare parts	DACIA
4502096857	Spare parts	DACIA
4502097429	Spare parts	DACIA
4502098482	Spare parts	DACIA
4502099164	Spare parts	DACIA
4502109813	Spare parts	DACIA
4502111688	Spare parts	DACIA
4502113499	Spare parts	DACIA
4502115867	Spare parts	DACIA
4502118989	Spare parts	DACIA
4502119631	Spare parts	DACIA
4502121106	Spare parts	DACIA

4502123523	Spare parts	DACIA
4502125691	Spare parts	DACIA
4502127668	Spare parts	DACIA
4502128595	Spare parts	DACIA
4502128596	Spare parts	DACIA
4502129528	Spare parts	DACIA
4502131272	Spare parts	DACIA
4502133371	Spare parts	DACIA
4502138283	Spare parts	DACIA
4502138284	Spare parts	DACIA
4502140200	Spare parts	DACIA
4502143196	Spare parts	DACIA
4502143197	Spare parts	DACIA
4502145220	Spare parts	DACIA
4502146076	Spare parts	DACIA
4502147115	Spare parts	DACIA
4502148128	Spare parts	DACIA
4502151898	Spare parts	DACIA
4502153128	Spare parts	DACIA
4502153935	Spare parts	DACIA
4502158654	Spare parts	DACIA
4502162595	Spare parts	DACIA
4502162596	Spare parts	DACIA
4502166474	Spare parts	DACIA
4502167332	Spare parts	DACIA
4502168193	Spare parts	DACIA
4502169273	Spare parts	DACIA
4502170557	Spare parts	DACIA
4502170558	Spare parts	DACIA
4502172171	Spare parts	DACIA
4502173265	Spare parts	DACIA
4502174228	Spare parts	DACIA
4502175088	Spare parts	DACIA
4502175089	Spare parts	DACIA
4502176933	Spare parts	DACIA
4502178504	Spare parts	DACIA
4502178796	Spare parts	DACIA
4502179787	Spare parts	DACIA
4502180340	Spare parts	DACIA
4502181622	Spare parts	DACIA
4502186523	Spare parts	DACIA
4502189515	Spare parts	DACIA
4502190496	Spare parts	DACIA

4502192160	Spare parts	DACIA
4502192729	Spare parts	DACIA
4502193399	Spare parts	DACIA
4502194703	Spare parts	DACIA
4502194704	Spare parts	DACIA
4502195522	Spare parts	DACIA
4502196371	Spare parts	DACIA
4502196372	Spare parts	DACIA
4502201068	Spare parts	DACIA
4502201183	Spare parts	DACIA
4502202227	Spare parts	DACIA
4502203053	Spare parts	DACIA
4502204853	Spare parts	DACIA
4502205742	Spare parts	DACIA
4502210591	Spare parts	DACIA
4502210593	Spare parts	DACIA
4502211934	Spare parts	DACIA
4502216450	Spare parts	DACIA
4502217546	Spare parts	DACIA
4502218384	Spare parts	DACIA
4502220235	Spare parts	DACIA
4502220236	Spare parts	DACIA
4502221173	Spare parts	DACIA
4502221349	Spare parts	DACIA
4502221483	Spare parts	DACIA
4502221484	Spare parts	DACIA
4502225074	Spare parts	DACIA
4502225075	Spare parts	DACIA
4502225883	Spare parts	DACIA
4502225884	Spare parts	DACIA
4502226893	Spare parts	DACIA
4502229605	Spare parts	DACIA
4502229606	Spare parts	DACIA
4502231322	Spare parts	DACIA
4502231323	Spare parts	DACIA
4502233776	Spare parts	DACIA
4502234883	Spare parts	DACIA
4502236446	Spare parts	DACIA
4502237487	Spare parts	DACIA
4502237488	Spare parts	DACIA
4502238395	Spare parts	DACIA
4502239484	Spare parts	DACIA

4502239485	Spare parts	DACIA
4502240574	Spare parts	DACIA
4502243994	Spare parts	DACIA
4502243995	Spare parts	DACIA
4502244812	Spare parts	DACIA
4502246348	Spare parts	DACIA
4502247170	Spare parts	DACIA
4502248154	Spare parts	DACIA
4502248155	Spare parts	DACIA
4502248944	Spare parts	DACIA
4502249789	Spare parts	DACIA
4502252873	Spare parts	DACIA
4502254002	Spare parts	DACIA
4502264616	Spare parts	DACIA
4502264617	Spare parts	DACIA
4502264995	Spare parts	DACIA
4502265706	Spare parts	DACIA
4502268133	Spare parts	DACIA
4502268134	Spare parts	DACIA
4502269600	Spare parts	DACIA
4502270577	Spare parts	DACIA
4502274411	Spare parts	DACIA
4502277100	Spare parts	DACIA
4800235662	Control device for crank shaft	DACIA
4800243974	Distribution preparation post	DACIA
4800252478	Control post adaptation	DACIA
4800255431	Core measurement calipre set	DACIA
4800256845	Spare parts	DACIA
4800258871	Control table L 1500	DACIA
4800260430	Presenter	DACIA
4800260699	Control - BAV HHA	DACIA
4800261525	1 D Control change	DACIA
4800261526	1D PF Control assembly	DACIA
4800263185	Tightness control device	DACIA
4800268535	Tightness control post adaptation	DACIA
4800268742	Turning control post	DACIA
4800268750	Engine line assembly	DACIA
4202323987	Spare parts	DACIA
4202343236	Spare parts	DACIA
4202359652	Spare parts	DACIA
4202375945	Washing pump - ZANASI	DACIA

4202404780	Spare parts	DACIA
4502172170	Spare parts	DACIA
4502180341	Spare parts	DACIA
4502182922	Spare parts	DACIA
4502183540	Spare parts	DACIA
4502187638	Spare parts	DACIA
4800260430	3D control presenter	DACIA
4800262352	Spare parts	DACIA
4	Dosing parts execution	DANY & RODY IMPEX
34	Dosing parts execution	DANY & RODY IMPEX
2	Calibration	ICECON SA
40	Nanometres calibration	ISPE
2138	Calibration	LAB Central CCF
215	Calibration	PLAFORA IMPEX SRL
2354	Calibration	POPA MARIAN
1259	Aberration determination	LABORATOR PTM
4202436685	TL4 Control device	RMR
4800240126	CED TS Introduction	RMR
4800240129	CED TL8 Introduction	RMR
4800245049	Clutch carter control post	RMR
4800250460	Differential crown control post	RMR
4800250470	Tightness control post adaptation	RMR
4800259355	Control machine change	RMR
4800263194	Differential box grabbing device	RMR
4800268790	First endowment wear parts set	RMR
4800250460	Crown control post	RMR
2222266329	Bearing bushes verification stand	RTR
2222272412	Parts	RTR
2222272557	Positioning elements set	RTR
2222272882	Centring ring	RTR
2222273248	Setting parts, aluminium plate	RTR
2222273252	AAC Mounting device	RTR
2222273254	Silica piece deposition set	RTR
2222273846	Caliper	RTR
2222274394	Caliper	RTR
2222277955	Control devices for: calipre, control plate	RTR
2222280314	Caliper, Slide, Ring	RTR
2222285900	Drilling and tapping	RTR
418	Manometers calibrations	SC AVERSA
241	Calibration	SC AVERSA MANUFACTURING
1081	Screw volume control system	SC COMPONENT AUTO TOPOLOV.
332	Tipping coupling control equipment	SC COMPONENT AUTO TOPOLOV.

542	Calibration	SC FEPA SA
32	Squareness control device	SC LIXLAND SRL
103	T/NT Clout	SC LIXLAND SRL
319	Length checking device execution	SC LIXLAND SRL
186	Calibration	SC METROLOGIC BUSINESS
00008E	Indication errors determinations	SC OMNIA PLAST SRL
273	Calibration	SC REVICOM OIL
186	Calibration	SC TECNOSERVICE
23144	Components printing	SC TOTAL GAZ
31	Calibration	SC VALROM
1600	Calibration	SC WAPO SERVICE SRL
9	Calibration	VALROM INDUSTRIE
2222289820	Mounting and control devices H4MK Engine	SC Renault Techonologie Roumanie SRL
2222290404; 2222290405	Counterweights and volumetric cups	SC Renault Techonologie Roumanie SRL
1081/444	Diameter position control system and torx hole depth	SC Componente Auto SA Topoloveni
4800267453	Harsh turning control device 23C.	SC Automobile Dacia SA

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Besnea Daniel, Donţu Octavian, Doina Cioboata, Ciobanu Robert, Soare Anamaria Catalina, “Advanced Methods For Use Of Numerical Control Computer Aided For Optimization Of Bearing Rings Surface Processing”, The Romanian Review Precision Mechanics, Optics & Mechatronics, 2015, Issue 47, indexed by Scopus, EBSCO and ProQuest

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Diana Mura Badea, Florin Teodor Tănăsescu, Alexandu Marin, Gheorghe Stefănescu, Gabriel- Cătălin Vlădut, Daniela Bucur, Bogdan Ciocanel, Ion Ivan, "Capitalisation of Scientific Knowledge and Technology Transfer Between Public Research Institutions and the Economic Environment", The Romanian Review Precision Mechanics, Optics & Mechatronics, 2015, Issue 48, indexed by Scopus, EBSCO and ProQuest

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V. Despa, Gh. I. Gheorghe, Liliana Badita, „Aspects Regarding Surface Quality Obtained Through the Selective Laser Sintering Technology", The 13th National Symposium of Mechatronics and Mechanical Engineering, Microtechnologies and New Materials– MIM-MMN, 26 June 2015, Targoviste, Romania;

Gheorghe Ion Gheorghe, „Education in Adaptative Adaptronics – support of advances research on telemonitoring, teleservice, teleconfiguration, telemaintanance and telecontrol of intelligent technical and technological equipment for integrated control", The 13th National Symposium of Mechatronics and Mechanical Engineering, Microtechnologies and New Materials– MIM-MMN, 26 June 2015, Targoviste, Romania

Nastase-Dan Ciobota, Gheorghe Ion Gheorghe, „3D Engineering applications for human skeleton tailored implants build on selective laser sintering systems", The 13th National Symposium of Mechatronics and Mechanical Engineering, Microtechnologies and New Materials– MIM-MMN, 26 June 2015, Targoviste, Romania

Iulian ILIE, Gheorghe I. Gheorghe, „New MEMS & NEMS solutions for intelligent mechatronics microsystems used for ultraprecise measurements", The 13th National Symposium of Mechatronics and Mechanical Engineering, Microtechnologies and New Materials– MIM-MMN, 26 June 2015, Targoviste, Romania;

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Gheorghe Ion Gheorghe, „Regional Cluster Bucharest – Ilfov MECHATREC – Integrated Vector of Competitiveness, Eco-Efficiency and Innovation, for High-Tech Mechatronics Industry"; The 13th edition of „International Saloon of Research, Innovation and Inventions - "PRO INVENT", 25-27 March 2015, Cluj-Napoca, Romania

TECHNICAL BOOKS - 2015	
1	**Mecatronica & Sistemele Cyber – Mecatronice,** author: Gheorghe I. Gheorghe, ISBN 978-606-8261-22-5, CEFIN Publishing House, 2015

SCIENTIFIC JOURNALS - 2015	
1	**ROMANIAN REVIEW PRECISION MECHANICS, OPTICS & MECHATRONICS**, 2015, ISSUE. 47, ISSN 1584-5982, QUOTED B+ IN EBSCO , ProQuest and SCOPUS BDI
2	**ROMANIAN REVIEW PRECISION MECHANICS, OPTICS & MECHATRONICS**, 2015, ISSUE. 48, ISSN 1584-5982, QUOTED B+ IN EBSCO, ProQuest and SCOPUS BDI

GRANTED PATENTS - 2015		
No.	**INVENTION**	**INVENTOR**
Patent no.: 27553/2015, according to OSIM Decision no. 4-23 / 2015	Mechatronic Equipment for Calibration of Nanotechnology Products	Popan Gh.; Lung Ioan ; Boga Ioan; Serban Gh.; Budu Gica
Patent undergoing release according to Decision no. 4/163 from 30.06.2015	Method for measuring the symmetry deviation of two transversal holes in a pap-type piece	Hacman Maihai, Ionita Gheorghe
Patent undergoing release according to Decision no. 4/164 from 30.06.2015	Multiple head for measuring cogwheel teeth	Hacman Maihai, Ionita Gheorghe
Patent undergoing release according to Decision no.6/88 from 30.06.2015	Underwater ultrasonic sealing receiver module with a common body	Moldovanu Alexandru ; Margaritescu Mihai, Lung Ioan; Vlad Vaduva ;

INVENTIONS WITH AWARDS				
No	**NAME OF SCIENTIFIC EVENTS**	**AWARD**	**NAME OF THE INVENTION WHICH WAS AWARDED THE PRIZE**	**INVENTORS**
1.	National Saloon of Inventions **"PRO INVENT"** 13th Edition , 09-04-2015 CLUJ – NAPOCA ROMANIA	GOLDEN MEDAL & SPECIAL MENTION	HIGH PRECISION INTELLIGENT MECHATRONIC SYSTEM FOR MEASURING LINEAR MICRO DISPLACEMENTS - DIGITRIL	Gheorghe I.Gheorghe Beca Paul Mocanu Neculai Ancuta Paul Olaru Mircea Ilie Iulian Sorin Munteanu

2.	National Saloon of Inventions **"PRO INVENT"** 13th Edition , 09-04-2015 CLUJ – NAPOCA ROMANIA	GOLDEN MEDAL	ULTRASONIC MEASURING SYSTEM FOR DEPOSITION OF SEDIMENTS IN THE RESERVOIRS	Mihai Margaritescu Alexandru Moldovanu Vlad Vaduva Cristian Draghescu Florin Isvoranu
3.	National Saloon of Inventions **"PRO INVENT"** 13th Edition , 09-04-2015 CLUJ – NAPOCA ROMANIA	SPECIAL OSIM AWARD	ULTRASONIC MEASURING SYSTEM FOR DEPOSITION OF SEDIMENTS IN THE RESERVOIRS	Mihai Margaritescu Alexandru Moldovanu Vlad Vaduva Cristian Draghescu Florin Isvoranu
4.	The 43th International Exhibition of Inventions, New Techniques and Products - 2015 **GENEVA - SWITZERLAND**	GOLDEN MEDAL	MECATRONIC INNOVATIVE EQUIPMENT FOR COMPLEX CHARACTERIZATION OF SURFACES IN VECTOR SPACES: SIZES, STRENGTH, TEMPERATURE	Gheorghe I. Gheorghe Aurel Zapciu Iulian Sorin Munteanu
5.	The 43th International Exhibition of Inventions, New Techniques and Products - 2015 **GENEVA - SWITZERLAND**	SPECIAL AWARD BY THE FRENCH FEDERATION OF INVENTIONS	MECATRONIC INNOVATIVE EQUIPMENT FOR COMPLEX CHARACTERIZATION OF SURFACES IN VECTOR SPACES: SIZES, STRENGTH, TEMPERATURE	Gheorghe I. Gheorghe Aurel Zapciu Iulian Sorin Munteanu
6.	The 43th International Exhibition of Inventions, New Techniques and Products - 2015 **GENEVA - SWITZERLAND**	GOLDEN MEDAL	MECHATRONIC CALIBRATION EQUIPMENT FOR NANOTECHNOLOGICAL PRODUCTS	Popan Gh. Lung Ioan Boga Ioan Serban Gh. Budu Gica
7.	The 19th International Exhibition "**IINVENTICA 2015**" IASI - ROMANIA (June 24-26)	GOLDEN MEDAL	FLEXIBLE MICROPOSITIONING MECATRONIC EQUIPMENT WITH GRIPPER	Iulian Munteanu; Gheorghe I. Gheorghe Aurel Zapciu ; Istriteanu Simona Elena Ancuta Paul
8.	The 19th International Exhibition "**IINVENTICA 2015**" IASI - ROMANIA (June 24-26)	GOLDEN MEDAL	ULTRASONIC MEASURING SYSTEM FOR DEPOSITION OF SEDIMENTS IN THE RESERVOIRS	Mihai Margaritescu Alexandru Moldovanu Vlad Vaduva Cristian Draghescu Florin Isvoranu

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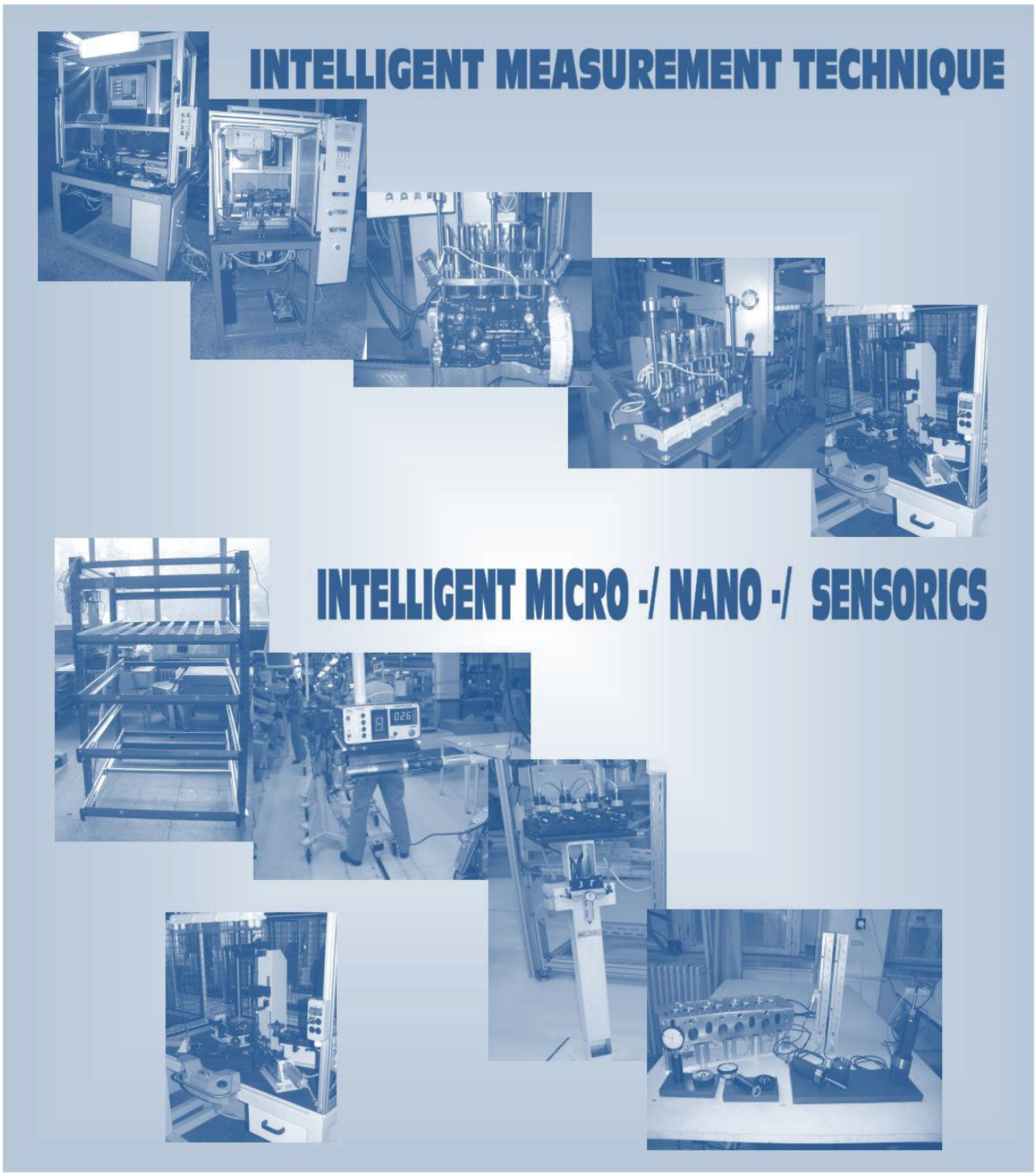
INTELLIGENT MEASUREMENT TECHNIQUE
INTELLIGENT MICRO -/ NANO -/ SENSORICS

PROTOCOLS
INCDMTM

INTERNATIONAL SCIENTIFIC PROTOCOLS

Continuation in
• 2015 •

1. Scientific Protocol signed with "The International Centre of Mechatronics in Linz – AUSTRIA" & INCDMTM Bucharest, Romania

2. Scientific Protocol signed with "Texas Institute of Science (TxIS) – USA" & INCDMTM Bucharest, Romania

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NOTE