



Fișa serviciilor de cercetare-dezvoltare
CRC&D-AUTO

Nr. Crt.	Servicii / expertiză	Descriere	Echipamente
1	Internal Combustion Engine Testing	<p>The infrastructure of this lab can be used for experimental studies within the following axes:</p> <ul style="list-style-type: none">- energetic performances characterization,- chemical pollution characterization. <p>These can be performed either on the engine test cell or on the vehicle during real traffic situation</p>	<ul style="list-style-type: none">-Eddy current dynamometer (brake)-Air Mass Flowmeter-Fuel Balance (Fuel consumption measurement device)-Portable Emission Measurement System (PEMS) for Real Driving Emission (RDE)-In-Vehicle Fuel Consumption Measurement Equipment-In-Vehicle Measurement Equipment for In-Cylinder Pressure-In-vehicle Measurement Equipment for electric power consumption-Working station for advanced simulation
2	Fuel and Lubricant physico-chemical characterization	<p>The infrastructure of this lab can be used for experimental studies within the following axes:</p> <ul style="list-style-type: none">- flash point using Eraflash equipment from Eralytics GmbH, Austria, <p>Solution for the automated measurement:</p> <ul style="list-style-type: none">- viscosity using Automatic Viscometer U-Visc 120 from Omnitek B.V. The Netherlands- sulfur content using equipment for the determination of sulfur SINDIE 2622 from XOS – X-Ray Optical Systems, S.U.A.- density using Digital Density meter DS7800 from Krüss Optronic, Germany- water content using Titrator coulometric Karl Fischer Cou-Lo Aquamax KF from G.R. Scientific, UK.- distillation characteristics using: a) atmospheric distillation Equipment Pam V2 from Orbis BV, Netherlands; b) Vacuum distillation unit model i-Fischer Dist D – 1160 C from Fischer Engineering, Germania	<ul style="list-style-type: none">-Flash point analyzer-Mid - FTIR Spectrometer multi-fuel analyzer-Volatility Specifications Analyzer-Digital Density meter-Automatic Viscometer-Gas Chromatographic-Gas Chromatographic-Gas Chromatographic-Cold Filter Plugging Point-Equipment for Cloud Point determination-Equipment for water content determination-Equipment for the determination of sulfur in petroleum products-Equipment for measuring distillation characteristics-Vacuum distillation unit



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		<ul style="list-style-type: none"> - cloud point using CPA – T30 equipment from PHASE Technology, Canada - Cold Filter Plugging Point using AirSTAR CFPP equipment from Orbis , Netherlands - chemical composition of biodiesel using gas chromatographic 8610C Capillary FID GC from SRI Instruments S.U.A. - chemical composition of fuels using Portable ERASPEC Mid - FTIR Spectrometer designed as a fully automatic multi-fuel analyzer from Eralytics GmbH, Austria. - vapor pressure of gasoline and LPG and report vapor / liquid of gasoline using ERAVAP Volatility Specifications Analyzer from Eralytics GmbH, Austria. - chemical composition of mixtures of biofuels using 8610C Capillary FID GC preconfigured for applications for determining bio-alcohol mixtures (for analyzing light hydrocarbons and alcohols derivatives to C4) from SRI Instruments S.U.A. - chemical composition and octane LPG using CLARUS 500 GC 	
3	Advanced Simulation	Mainly, it is about CFD simulation (RANS, PANS, LES). One particular focus is on 3D simulation of internal combustion engine's processes: in-cylinder flows, air-fuel mixing formation, combustion. Certainly, other subjects may be approached (e.g. vehicle's aerodynamics etc)	
4	Experimental research of the manufacturing processes	Data acquisition for several measurement applications for research and product development. Measurement of displacements, of forces, of pressures, of temperatures.	<ul style="list-style-type: none"> -Data Acquisition Software -Universal amplifier. -Universal amplifier -Force sensor -Infrared camera -FASTCAM Mini -Lathe CNC -Milling center - CNC



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			<ul style="list-style-type: none"> -Turn CNC -Tool presetter and measuring machines -Conventional machine tools -Electrod discharge machining -Universal Sheet Metal Testing Machine -Rolling machine -Roller tool device and system for machining profiled circular grooves on cylindrical pieces by cold plastic deformation -Roller device for machining profiled grooves by intermittent cold plastic deformation -Catia V5 -Multisensor platform -Execution of physical prototyping, with complex forms, maximum dimensions 200 x 250 x 200 mm -Hand-machine to measure in coordinates Micro-Hite 3D
5	Complex characterization of materials	<p>Evaluation of the effects of different treatments on the surfaces of metallic parts with complex geometry by X-ray stress measurement.</p> <p>Mapping measurement of the weld bead on a metallic plate. Retained austenite.</p> <p>Structural analysis by XRD (including high temperature, micro-area, grazing incidence for thin films, texture and pole figures), morphology by optical microscopy, scanning electron microscopy and scanning-transmission electron microscopy (including EBSD - electron backscattering diffraction and cryo-SEM).</p> <p>Nanostructures investigation by small angle X-Ray scattering and SEM/STEM.</p>	<ul style="list-style-type: none"> -Micro-area X-ray residual stress measurement system -Schottky Field Emission Scanning Electron Microscope -Cold Field Emission Scanning Transmission Electron Microscope -X-Ray diffractometer with special attachments -Small Angle X-Ray Scattering Spectrometer -Energy Dispersive X-Ray Fluorescence Spectrometer -Optical Microscope -Vickers Micro hardness
6	Finite Element Modeling and Simulating	FEM numerical simulation of forming processes, cutting process and welding friction stir	

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