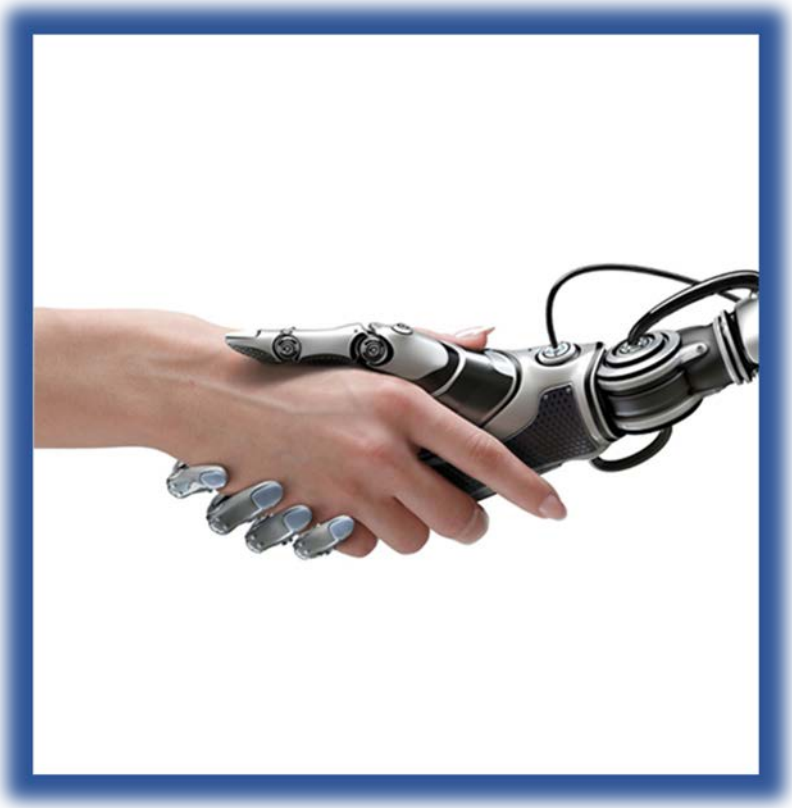
UNIVERSIDAD DE BURGOS

Interreg Sudoe

TuRBO Sudoe

European Regional Development Fund

EUROPEAN UNION



R&D&I PORTFOLIO

AUTOMOTIVE SECTOR

UNIVERSIDAD DE BURGOS

ICCRAM International Center in Critical Raw Materials

Presentation

Universidad de Burgos-ICCRAM (UBU-ICCRAM) is a privileged Research and Innovation core, that constitutes an Excellence International Center in Critical Raw Materials in synergy with a Competence Center devoted to Advanced Industrial Technologies.

Scientific-Technical Services

ICCRAM is a leader actor within the European Innovation Partnership in Raw Materials (EIP Raw Materials) taking part in 6 commitments and coordinating an strategic one (RAWNANOVALUE) linking the future of EU Nanotechnology and Materials value chains to the efficient use and management of Critical Raw Materials. In addition, ICCRAM is task partner in the Knowledge and Innovation Community from the European Institute of Technology (EIT-KIC-Raw Materials).

ICCRAM also leads the Critical Raw Materials Industrial and Resource efficiency Strategy in Castilla y Leon (Spain), where it is a key agent in the RIS3 plan of this region. UBU-ICCRAM is a founder member of industrial clusters such as CYLSOLAR (Castilla y Leon renewable energy and energy solutions Cluster) and CBECYL (Castilla y Leon capital goods and industrial automation Cluster), maintaining a strong alliance with large scale industrial associations like SERCOBE (National Association of manufacturers of capital goods) and international organizations as EU-NANOFUTURES, The European Energy Research Alliance (EERA), or the Nanotechnology Industries Association.

ICCRAM was born conceived to integrate within its structure an "intrinsic path into innovation", and it is supported by an industrial board of more than 26 industries, SMEs and clusters. Moreover, ICCRAM coordinates an industrial platform with the City Cuncil in the context of transition into Circular Economy.

Contact

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Ingeniería Automecánica (iAM)

Presentation

The research group in Automechanics Engineering at the University of Burgos, focus its activity in Mechanics, Systems Engineering and Automatics.

Its main activity spins around machine and/or mechanical systems analysis and design, free production systems automation, robotic systems integrations, failure diagnosis and predictive maintenance programs.

The team elaborate continuously real applied research and innovation projects, with regional important companies, related with equipment goods, automobile auxiliary industry and agrofood sector.

Scientific-Technical Services

- Estudios de optimización de procesos industriales.
- Asesoría en la automatización de procesos industriales.
- Estudios Técnicos e Informes Periciales de máquinas.
- Formación en Mecánica Técnica, Mecanismos, Tecnología y metrología dimensional, Control Numérico, Neumática y 5.Oleohidráulica, Lubricación y Mantenimiento y Robótica industrial.
- Identificación y control de sistemas.
- Reformas de Importancia de vehículos.
- Aplicación y control en tiempo real.
- Análisis y diseño a fatiga de componentes de máquinas.
- Estudios sobre patentes

Contact

Automechanics Engineering (iAM)

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Structural Integrity Group (GIE)

Presentation

The research team of Energy Engineering aims the development of basic research and its application to the field of energy conversion efficiency and the renewable energy research. The scope extends to thermodynamic and transport properties of new fluids and its mixtures (such as fuels and bio-fuels, refrigerants, heat transfer fluids, phase change materials) thermal energy storage materials, energy efficiency in buildings and industry, and energy supply by renewable energies.

Scientific-Technical Services

- Tests of mechanical behavior of materials (traction, compression, fatigue, fractrua, ...)
- Microstructural characterization of materials
- Tests at elevated temperatures (creep).
- Numerical simulation of materials, components and structures
- Miniature tests (SPT)
- Study of the behavior of polymeric materials
- Study of hydrogen embrittlement phenomena
- Study of processes of generation of residual tensions, to improve the life in fatigue of components subjected to high pressuresWear, corrosion, ...

Contact

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Polímeros (POLYMERS)

Presentation

The research of the Group is directed fundamentally towards the design, development and study of new high-value-added polymeric materials for application in advanced technologies:

- a) fibers and materials with high mechanical and thermal resistance for personal protective apparels and for high-performance composite materials
- b) smart textiles and intelligent polymers as sensors for the detection of molecules of special interest (biomolecules, contaminants, explosives, chemical warfare agents, etc.), both in water and in the environment, for industrial, biomedical, environmental and security (civil protection) applications.

Scientific-Technical Services

The work of our Research Group is devoted to the analysis, modification, design and complete synthesis of polymeric materials with the aim of 'a la carte' improving their properties. As an example of collaboration with different companies, we can mention: development of polyurethane foams; analyses and development of glues and resins of urea/formaldehyde and melamine/formaldehyde, adhesives, etc.

Design, synthesis and characterization of polymeric materials with specific properties for special applications. Design of polymers as sensory materials, conducting polymers, and high performance fibers (thermally and mechanically resistance yarns).

Contact

Polímeros (POLYMERS)
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Electroanálisis (ELAN)

Presentation

The current work of this group is the use of photolithographic and screen printing technologies for various applications:

1º) Its subsequent modification with materials such as Nanomaterials Enzymes, Polymers, Organic compounds allows its use as sensors and biosensors in various fields: Pharmaceutical analysis: Analysis of antiepileptic drugs, antibiotics, antidepressants, etc. Environmental analysis: Heavy metal analysis. Metal speciation in real samples. Study of enzymatic inhibition performed by metals using electrochemical biosensors.

2º) Design and study of printed circuits using different printing materials for industrial applications.

Scientific-Technical Services

- Applications of screenprinting technology to the industry.
- The use of screen printing techniques shows great versatility for the development of electronic components that can be used in circuits and other electronic devices. The possibility of modifying silkscreen inks with nanomaterials and other products offers important alternatives in various fields.

Contact

Electroanálisis (ELAN)
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Energy Engineering Research Group (iENERGIA)

Presentation

The research team of Energy Engineering aims the development of basic research and its application to the field of energy conversion efficiency and the renewable energy research. The scope extends to thermodynamic and transport properties of new fluids and its mixtures (such as fuels and bio-fuels, refrigerants, heat transfer fluids, phase change materials) thermal energy storage materials, energy efficiency in buildings and industry, and energy supply by renewable energies.

Scientific-Technical Services

- Study on thermodynamic behaviour of liquid mixtures of industrial interest.
- Energy audits in industry and buildings
- Quality controls of energy installations in buildings
- Thermo hydraulic tests on equipment for heat transmission

Contact

Energy Engineering Research Group (iENERGIA)

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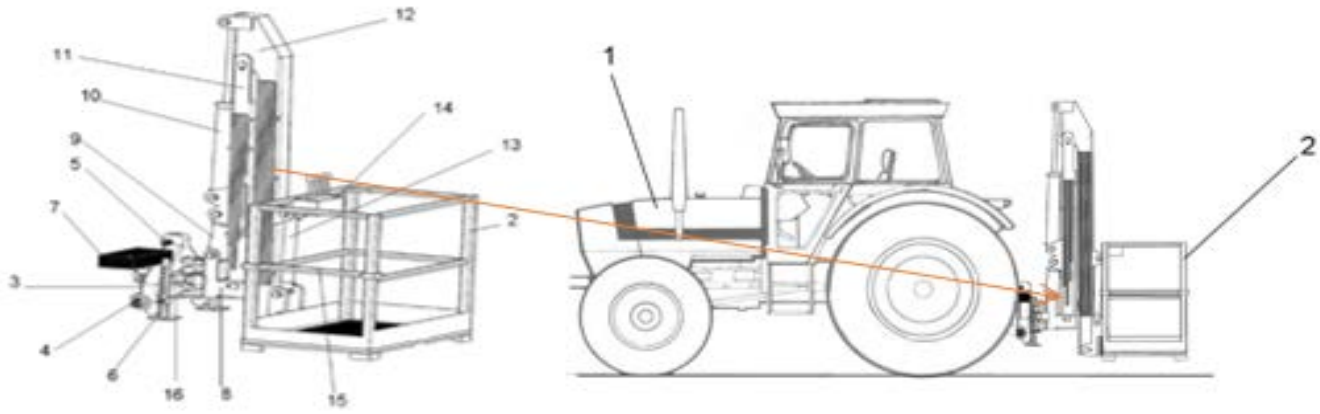
UNIVERSIDAD DE BURGOS

LIFTING PLATFORM AS A TOOL FOR AGRICULTURAL TRACTORS.



TECHNOLOGY SUMMARY

Lifting platform as a tool attachable to three-point hitch for agricultural tractors constituted by an articulated mechanism that has a lifting platform with a cage to elevate people and to make agricultural work in height with safety

CONTEXT

There isn´t any tool designed for the different task at height in the rural and agricultural-livestock sector.

.

BENEFITS

- ENABLING VERTICAL TELESCOPIC MOVEMENT, LONGITUDINAL AND TRANSVERSAL TO MAKE AGRICULTURAL WORK IN HEIGHT WITH SAFETY.

- IT CAN FEED FROM THE BATTERY ELECTRIC OF THE TRACTOR, ALLOWING THE ELIMINATION OF NOISE AND SAVING OF FUEL.

APPLICATIONS

Users of the **agricultural machinery industry** for height tasks in the rural and Agricultural-livestock world such, like:

- Grafting and budding fruit trees.
- Fruit picking of fruit trees.
- And any **height work with safely**.

LIFTING PLATFORM AS A TOOL FOR AGRICULTURAL TRACTORS.

IP RIGHTS

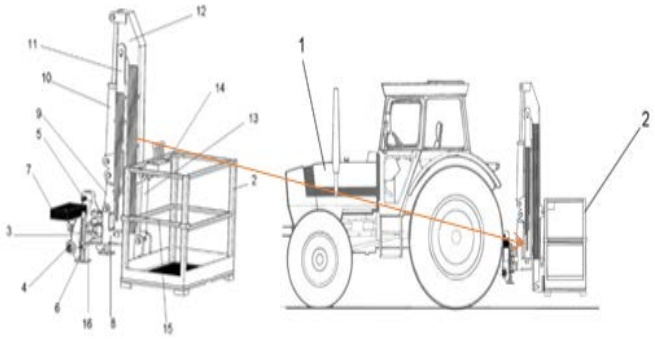
The device is in the market validation phase.

DEVELOPMENT STAGE

In use, test results are available.

KEYWORDS

LIFT TRACTOR AGRICULTURAL SAFETY HEIGHT PRUNING CLEANING RURAL GATHERS TREE FRUIT



DEVELOPED BY

Automechanical Engineering Group (iAM) of the University of Burgos.

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Technology #XXXXX

BUSINESS OPPORTUNITY

- Industrial manufacturing, Material and Transport Technologies
- Protecting man and Environment
- Industrial manufacturing, Material and Transport Technologies

PARTNERSHIP

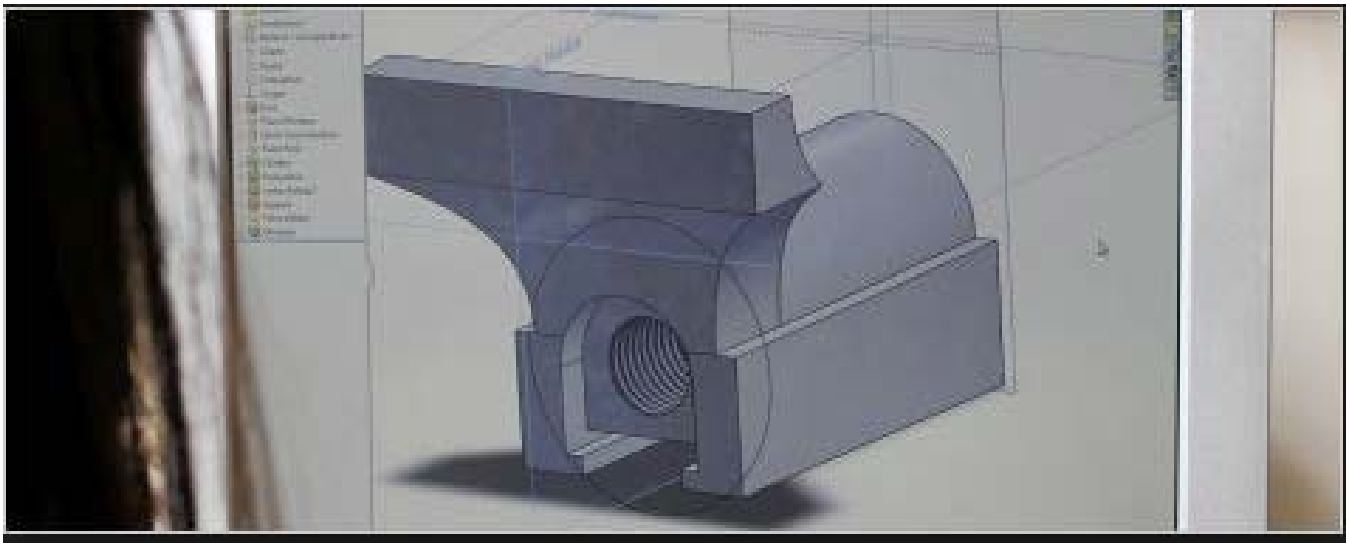
Commercial agreement, License agreement, Technical cooperation: further development, Technical Cooperation: testing new applications; Technical Cooperation: adaptation to specific needs primis.

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

UNIVERSIDAD DE BURGOS

Interreg Sudoe TURBO Sudoe

MANUFACTURING PROCESS OPTIMIZATION METHOD FOR METALLIC COMPONENTS IN THE INDUSTRY.



TECHNOLOGY SUMMARY

The University of Burgos has patented **procedure for the design and manufacturing of cold stamped metal part components** that establishes an interconnection between the process simulation and the structural simulation during the development of the stamped components, so the mechanical properties of the material are modified in function of the predefined level got in each zone of the component.

BENEFITS

THE METHODOLOGY DEVELOPED IMPROVE THE CORRELATIONS NUMERICAL-EXPERIMENTAL OBTAINED BY STRUCTURAL SIMULATION PROGRAMS CURRENTLY USED:

1. REDUCING THE DIFFERENCE BETWEEN THE SIMULATION DATA AND MANUFACTURED ELEMENTS.
2. OPTIMIZING - AT START-UP TIME - THE PROCESS MANUFACTURING FOR A NEW COMPONENTS AND IN MATERIALS USED FOR THE MANUFACTURE OF PARTS.

CONTEXT

The vast majority of metal products in the industrial level are obtained from sheet metal forming, which are used in a diversity of applications, from car bodies, appliances and planes to beverage packaging.

In order to define the final design and structure of a stamped component there are two fundamental steps: the **manufacturing** process to perform the part and the **structural simulation** to overcome the requirements for performance specifications

APPLICATIONS

All the programs currently used in the market they didn't take account the mechanical properties in function of the level of predeformation attained during the component stamping.
The main advantage is that this procedure controls and defines the optimal method of transferring the deformation results (produced during the simulation of the stamping process) to the structural simulation programs.
It is also defined a working methodology, applicable at the industry, with which to estimate by simulation the structural rigidity of the stamped components

MANUFACTURING PROCESS OPTIMIZATION METHOD FOR METALLIC COMPONENTS IN THE INDUSTRY.

IP RIGHTS

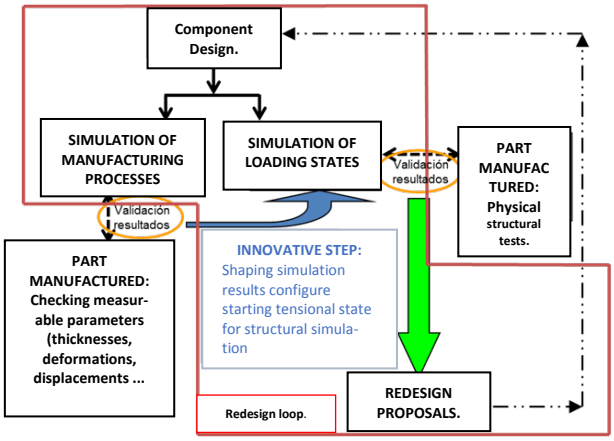
Protected by patent P201630414

DEVELOPMENT STAGE

In use, test results are available.

KEYWORDS

ESTAMPACIÓN PRODUCTOS METÁLICOS SIMULACIÓN NUMÉRICA AUTOMOCIÓN AERONÁUTICA BIENES DE EQUIPO PROPIEDADES MECÁNICAS



DEVELOPED BY

Structural Integrity Research Group (GIE) of the University of Burgos.

BUSINESS OPPORTUNITY

Car bodies
Household appliances aircraft
Beverage containers

PARTNERSHIP

Commercial agreement, License agreement, Technical cooperation: further development, Technical Cooperation: testing new applications; Technical Cooperation: adaptation to specific needs primis.

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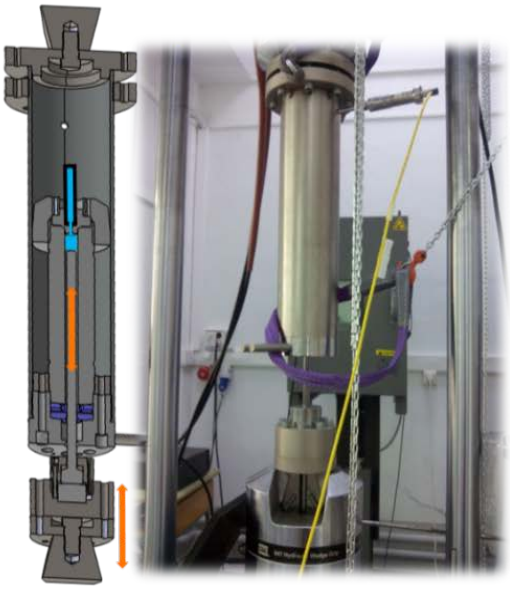
Technology #XXXXX

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

NEW TEST FOR COMPONENTS SUBJECTED TO HIGH PRESSURE (UP TO 6000 BAR).



TECHNOLOGY SUMMARY

Test for components subjected to high pressure (up to 6000 bar) which allows:

- To assess structural integrity and failure analysis.
- To determine the fatigue of the real component under the working pressure.
- To perform hydraulic fracture and fatigue tests up to 6 000 bars.

BENEFITS

1. TO ASSESS STRUCTURAL INTEGRITY AND FAILURE ANALYSIS.

2. TO REPRODUCE THE WORK CYCLE (0-6000BAR-0).

3. TO KNOW THE PERFORMANCE OF NEW COMPONENTS SUBJECTED TO HIGH PRESSURE.

4. TO DETERMINE THE FATIGUE OF THE REAL COMPONENT UNDER THE WORKING PRESSURE.

5. TO PERFORM HYDRAULIC FRACTURE AND FATIGUE TESTS UP TO 6 000 BARS.

CONTEXT

New components subjected to high internal pressure can be verified with a quickly and easy method knowing their perfomance to fracture and fatigue (fatigue life), allowing preventive maintenance of the equipment.

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APPLICATIONS

Manufacturers of Food Processing Machinery by high pressure (HPP, High Pressure Processing), Manufacturers of pipes and elements of conduction submitted to high pressure, and companies that focus their activities on the design, development, construction, assembly, and commissioning of high-pressure machinery,

NEW TEST FOR COMPONENTS SUBJECTED TO HIGH PRESSURE (UP TO 6000 BAR).

IP RIGHTS

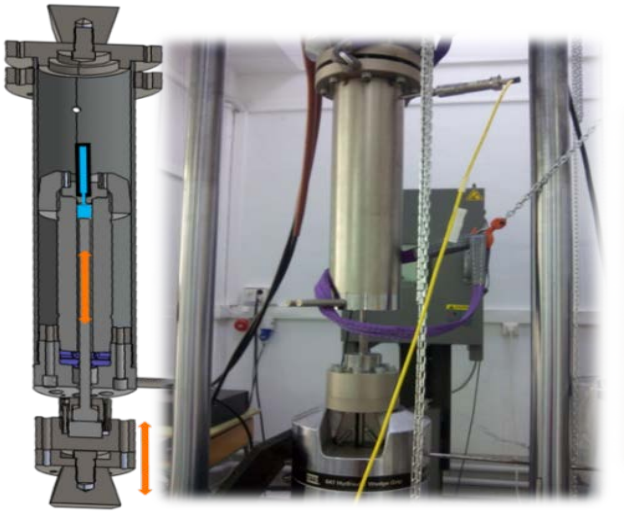
Protected by invention patent P201730409

DEVELOPMENT STAGE

Available for demonstration-field tested.

KEYWORDS

PRESSURE PIPES CONDUCTORS TEST DURABILITY FRACTURE LEAKAGE HPP



CONTACT

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Technology #XXXXX

DEVELOPED BY

Structural Integrity Research Group (GIE) of the University of Burgos.

BUSINESS OPPORTUNITY

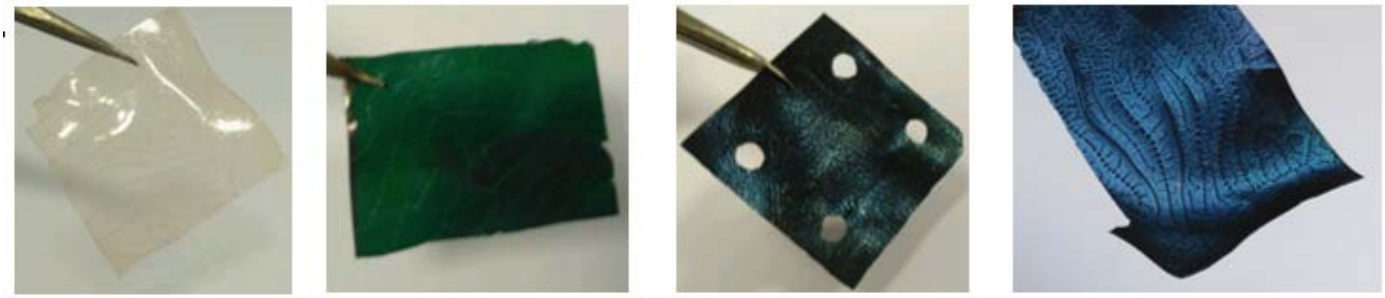
Manufacturers of pipes and elements of conduction submitted to high pressure.
Manufacturers of Food Processing Machinery
Industrial manufacturing, Material Technologies
Industrial Products.

PARTNERSHIP

Commercial agreement, License agreement, Technical cooperation: further development, Technical Cooperation: testing new applications; Technical Cooperation: adaptation to specific needs primis.

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

Polymer Conductor with properties according to your needs.



TECHNOLOGY SUMMARY

The University of Burgos has developed a new solid electrical conductive polymer material, preferably as film or coating, using non-conductive polymers. This material can be used in the production of resistive or conductive sensors for substances of interest, both in gas phase and in solution, or for use in electrical and electronic systems.

BENEFITS

- THEY CAN BE USED AS SEMICONDUCTORS IN ELECTRONICS, AS SUBSTITUTES FOR METALLIC CONDUCTORS, IN THE PREPARATION OF PHOTOVOLTAIC CELLS, AS A CONDUCTOR IN ELECTRONIC CIRCUITS AND IN THE LIGHTENING OF PARTS THAT HAVE TO CONDUCT ELECTRICITY (METAL SUBSTITUTE), SENSORS OF CHEMICAL SPECIES, ETC.
- IN FIELDS SUCH AS AUTOMOTIVE AND AERONAUTICS, FOR EXAMPLE, IT CAN MAINLY BE USED AS ANTISTATIC MATERIAL IN PAINTS, INKS, FABRICS AND ADHESIVES.
- AS A MATERIAL THAT CAN CHANGE COLOR DEPENDING ON THE STATE OF OXIDATION, IT CAN BE USED IN THE MANUFACTURE OF ELECTROCHROMIC DEVICES, SMART WINDOWS AND ELECTRONIC PAPER.

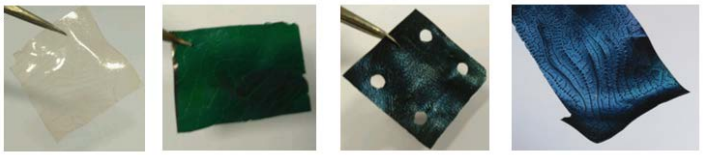
CONTEXT

The process of obtaining the conductive polymer material allows getting a series of tailored properties depending of the use that is desired to give at the material. This is possible based on the selected monomers that form the initial non-conducting structure which can present characteristics such as flexibility, stiffness, chemical resistance, thermal resistance, hydrophilicity, hydrophobia, to name some relevant property in the area of materials applications, where the conductivity can play a special role in innovative applications.

APPLICATIONS

- Application in the field of Bioengineering.
- Application in the field of Nanotechnology.

Polymer Conductor with properties according to your needs.



IP RIGHTS

Protected by patent P201631147.

DEVELOPMENT STAGE

In use, test results available.

KEYWORDS

Electronics, Electrical Conductivity, Conductive and Semiconductive Materials, Organic Technologies, Energy storage, Sensing Materials, Polymeric films, Engineering, Polyanilin, Plastics, Automotive,
Aeronautic.

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Technology #XXXXX

DEVELOPED BY

Polymers group (POLYMERS) of the University of Burgos.

BUSINESS OPPORTUNITY

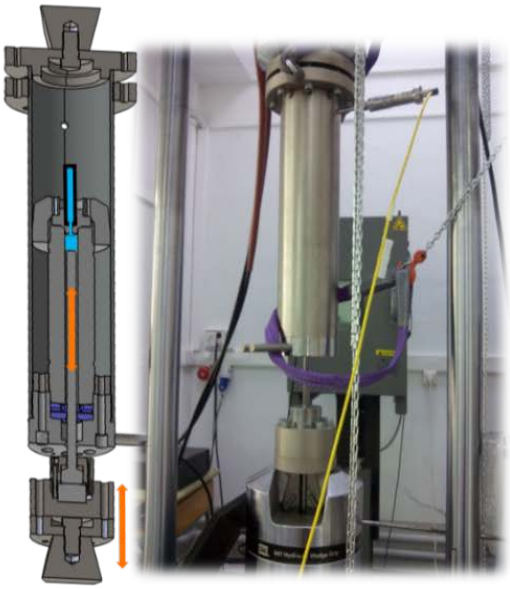
- Electronics, IT and Telecomms
- Other Industrial Technologies
- Energy
- Measurements and Standards

PARTNERSHIP

Commercial agreement, License agreement, Technical cooperation: further development, Technical Cooperation: testing new applications; Technical Cooperation: adaptation to specific needs primis.

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

A DEVICE FOR THE EVALUATION OF THE STUCTURAL INTEGRITY OF PIPES AND CONDUCTION ELEMENTS SUBJECTED TO HIGH PRESSURE.



TECHNOLOGY SUMMARY

A device for testing components subjected to high pressure (pipes and conduction elements), being able to hitch in any universal machine of dynamic tests to reproduce the work cycles (0-6000bar-0) of the different components to analyse. Thanks to this new equipment, it will be possible to verify quickly and easily new components subjected to high pressure knowing their corresponding fatigue lives, allowing preventive maintenance of the equipment,.

BENEFITS

1. TO ASSESS STRUCTURAL INTEGRITY AND FAILURE ANALYSIS.
2. TO REPRODUCE THE WORK CYCLE (0-6000BAR-0).
3. TO KNOW THE PERFORMANCE OF NEW COMPONENTS SUBJECTED TO HIGH PRESSURE.
4. TO DETERMINE THE FATIGUE OF THE REAL COMPONENT UNDER THE WORKING PRESSURE.
5. TO PERFORM HYDRAULIC FRACTURE AND FATIGUE TESTS UP TO 6 000 BARS.

CONTEXT

The majority of industrial components subjected to high pressure only pass static pressure tests for validation, in which the pressure rises up to 1.5 times the working pressure. Currently, there aren´t any commercial devices for fatigue testing of the real component under work pressure, which means that some of the component broken due to fatigue even after passing the pressure test.

APPLICATIONS

Manufacturers of Food Processing Machinery by high pressure (HPP, High Pressure Processing), Manufacturers of pipes and elements of conduction submitted to high pressure, and companies that focus their activities on the design, development, construction, assembly, and commissioning of high-pressure machinery,

A DEVICE FOR THE EVALUATION OF THE STUCTURAL INTEGRITY OF PIPES AND CONDUCTION ELEMENTS SUBJECTED TO HIGH PRESSURE

IP RIGHTS

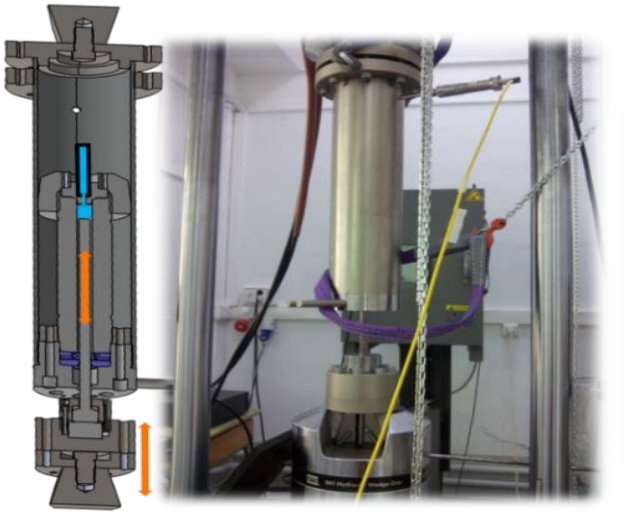
Protected by invention patent P201730409

DEVELOPMENT STAGE

Available for demonstration-field tested.

KEYWORDS

PRESSURE PIPES CONDUCTORS TEST DURABILITY FRACTURE LEAKAGE HPP



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Technology #XXXXX

DEVELOPED BY

Structural Integrity Research Group (GIE) of the University of Burgos.

BUSINESS OPPORTUNITY

Manufacturers of pipes and elements of conduction submitted to high pressure.
Industrial manufacturing, Material Technologies Industrial Products.

PARTNERSHIP

Commercial agreement, License agreement, Technical cooperation: further development, Technical Cooperation: testing new applications; Technical Cooperation: adaptation to specific needs primis.

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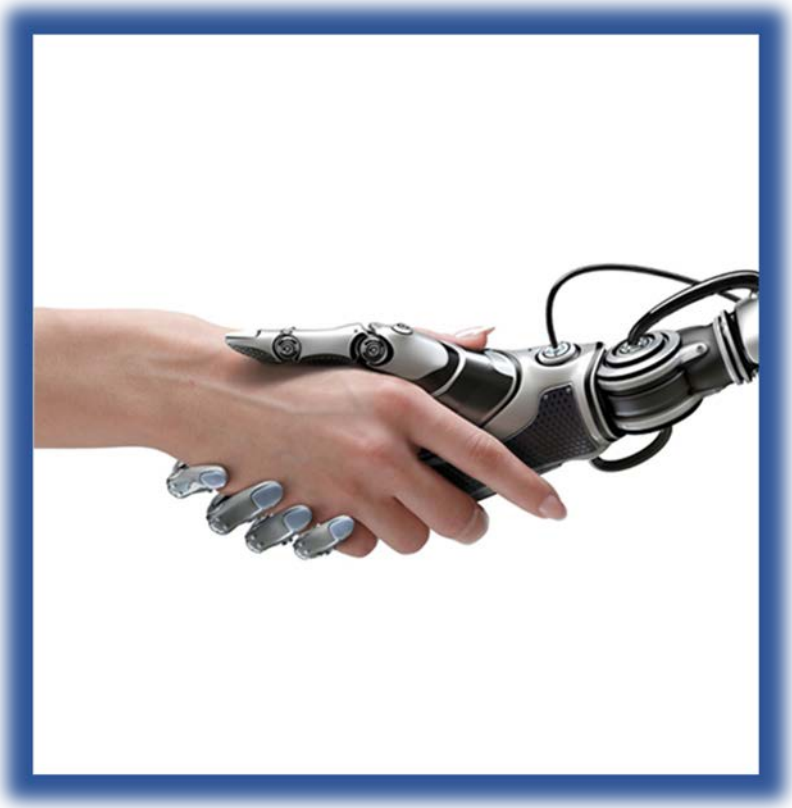
EUROPEAN UNION



R&D&I PORTFOLIO

AUTOMOTION SECTOR

DANIEL CASARES PALOMEQUE

Microelectronic Design Group (M.D.G)

Presentation

The research group of the Department of Electronics has a wide experience in the area of microelectronics. In the year 1994, this team participated in the creation of the first integrated circuit realized at University of Malaga. In addition, they were winners of the Spin-Off Enterprise Creation Competition for an idea based on the integrated circuits construction.

Scientific-Technical Services

Research Topics

- Integrated circuitsand electronic systems design.
- Analog and digital signal processing.
- Artificial neuronal networks and genetic algorithms.
- Free space or unguided optical communications.

Scientific-Technical Services

- Integrated circuitsand electronic systems design.
- Analog and digital signal processing.
- Artificial neuronal networks and genetic algorithms.
- Free space or unguided optical communications.

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MANUFACTURING ENGINEERING

Presentation

The Manufacturing Engineering research group is composed of eight researchers from the Department of Engineering Process at the University of Malaga. Its works and researches are mainly focused on the study and development of optimized manufacturing processes and measurement methods. Furthermore, it is also responsible for the Metrology Centre at the University of Malaga (CEMUM), the first laboratory of this University accredited by the National Accreditation Agency (ENAC).

Scientific-Technical Services

Research Topics

- Analytical Methods in Metal Forming.
- Analysis and optimization of machining processes. Machining of light alloys.
- Dimensional and industrial metrology. Quality manufacturing engineering.

Scientific-Technical Services

- Technical advice on manufacturing processes.
- Manufacturing of complex parts. Characterization of surface quality.
- Technical Advice on measurement methods. Technical Advice on metrological calibration equipment.
- Technical Advice on laboratory accreditation process.
- Audits of laboratories according to ISO 17025.

Contact

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Electric Power System Group

Presentation

This research group is an inter-departmental collaboration of the Higher Technical School of Industrial Engineering (E.T.S.I. Industrial, Malaga). It is specialized in studies on planning, control and exploitation of electrical energy systems. This type of studies are of interest for the different parties depending on the electricity market, like consumers and producers as well as the regulating entities, namely the carrier and the marketer. This team, formed of 4 researchers with a PhD degree, has been in collaboration with the most prominent Spanish companies of that sector.

Scientific-Technical Services

Research Topics

- Planning, control and exploitation of electrical energy systems.
- Electric power markets.
- Optimization techniques for large-scale systems.
- Electric power systems analysis under uncertainty. Probabilistic techniques.

Scientific-Technical Services

- Technical reports and development of models for optimized planning and operation of electric power systems.
- Technical advisor for R&D departments of companies in the electricity sector.
- Development and implementation of deterministic and probabilistic optimization technique models in order to face problems of the electricity sector in particular and those of the industrial production sector in general.

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Electric Power Systems-Malaga

Presentation

The research group Electric Power Systems – Malaga of the Department of Electrical Engineering of the University of Malaga is specialized in the optimization of electric systems aiming to achieve improved energy efficiency. The fundamental research is of interest in the hydroelectric designs, wind-photovoltaic plants design and all types of electric power generation, as well as electrical installation troubleshooting. This research group has an extensive experience in research and teaching and also numerous collaborations with public and private companies.

Scientific-Technical Services

Research Topics

- Optimization of electric energy systems. Analysis of the electric power market. Electricity rates.
- Electric protection. Application of time-frequency transforms.
- Time-frequency analysis of electric transistors.
- Substation predictive maintenance.
- Small hydroelectric power generators. Wind and photovoltaic plants.

Scientific-Technical Services

- Quality of electric energy. Localizing faults in electrical installations.
- Protection against electric power outages. Analysis of the electric energy market. Analysis of electric power networks.
- Electricity rates.

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Electric Engineering Malaga. Renewable Resources

Presentation

The research group Electric Engineering Malaga. Renewable Resources of the Department of Electric Engineering, founded in 1992 with the objective to improve the fundamental properties of engines. The 5 PhD degree members of the group are specialized in the design of electric drives as well as control and regulation of electric machines, e.g., the turbines of wind generators. The group disposes a chamber anechoid used to run tests on candidates for reduction of noise and vibrations of electric engines.

Scientific-Technical Services

Research Topics

- Quality of the power line.
- Design and construction of power inverters through pulse with modulation (PWM) techniques.
- Energy efficiency. Noise and vibration reduction of electric engines.
- Use of electric drives in renewable energy.

Scientific-Technical Offer

- Development of active filters for harmonic elimination and harmonic compensation of reactive power.
- Quality optimization of the power supply.
- Optimization of the mechanic behaviour of induction engines: - Noise. - Vibrations.
- Design of control equipment for engines and their applications.

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System and Automation Engineering

Presentation

The group of Systems Engineering and Automatics counts with a large number of qualified personnel, numerous patents (product of their research in the field), laboratories Robotics and Automation of Industrial Processes, an aero-hydrodynamics laboratory of unmanned vehicles and equipment necessary for carrying out the different lines of research that they develop. In addition, point out that this group founded the Andalusian Institute of Advanced Automation and Robotics.

Scientific-Technical Services

Research Topics

- Teleoperated and Autonomous mobile robots for exploration and rescue applications.
- Mobile Robotics in structured environments (hospitals, museums, large buildings,..).
- Robotic Systems for assistance to minimally invasive surgery.
- Processing images (Three-dimensional maps and satellite change detection).
- Control systems for terrestrial, marine and aerial vehicles.
- Intelligent control systems: Fuzzy systems, neural networks, etc.
- Electric vehicles and technologies for sustainable mobility.
- Automation of logistics system and infrastructure.
- Automation of manufacturing systems.

Scientific-Technical Services

- Design and manufacture of mobile robots for industrial applications and services.
- Automation of manufacturing and production systems.
- Design and production of embedded control systems.
- Applications of robotics to medicine.
- Design and production of mechatronic systems (Goniophotometer for luminaire characterization, X-by-wire systems, haptic systems, etc.)
- Developing systems for electric vehicles and sustainable mobility.

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Fluid Mechanics

Presentation

The research group disposes of a modern laboratory with the latest in equipment, both experimental and computational, a team of highly qualified personnel and a broad curriculum in teaching and research, which ensures the reliability of the measurements and provides access to them for any type of organization, in sectors such as aerospace, automotive, energy, water and gas distribution, watersheds, etc.

Scientific-Technical Services

Research Topics

- Hydrodynamic stability and its application to vortices and swirling flows.
- Aero-hydrodynamics of vehicles
- Sediment transport and erosion
- Combustion.
- Fluid dynamics analysis of renewable energy devices

Scientific-Technical Offer

- Numerical simulation and analysis of fluid flows.
- Wind tunnel tests
- Water tunnel and water channel tests.

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Operations and Sustainability: TICS, Quality and Labour Risk

Presentation

The group of Systems Engineering and Automatics counts with a large number of qualified personnel, numerous patents (product of their research in the field), laboratories Robotics and Automation of Industrial Processes, an aero-hydrodynamics laboratory of unmanned vehicles and equipment necessary for carrying out the different lines of research that they develop. In addition, point out that this group founded the Andalusian Institute of Advanced Automation and Robotics.

Scientific-Technical Services

Research Topics

- Occupational Risks Prevention Systems.
- Quality Management Systems.
- Environmental Management Systems.
- Social responsibility of enterprises.
- Process Improvement and Productivity.
- Information and Communication Technologies.
- International Cooperation for Development and Sustainability.

Scientific-Technical Offer

- Audit and diagnostics of Occupational Risks Prevention Systems.
- Integrate Environmental Management, Health and Safety and Quality in the overall management of the company.
- Improving processes and sustainability.
- ICT implementation in enterprises.
- Security integration in methods and production processes, risk assessment and emergency measures.

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Energetics

Presentation

Renewable energies are, along with saving energy and an efficient use of energy, a solution for a clean energy future, efficient, safe and autonomous. The research group of "Energetic", of the School of Industrial Engineering at the University of Malaga, develops applications in solar energy to ensure sustainable development through both thermosolar and photovoltaic technologies.

Scientific-Technical Services

Research Topics

- Renewable energies.
- Characterization of solar thermal systems and components.
- Characterization of solar photovoltaic systems and components.
- Use passive solar energy.
- Solar Weatherization.

Scientific-Technical Services

- Evaluate the thermal behavior of air conditioning systems.
- Energy saving systems and energy efficiency applied to the building.
- New applications of solar energy in cooling systems.
- Energy audits. Rational Use of Energy.
- Residential Automation: wireless connections applied to climate.

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Material Behaviour and Processing

Presentation

This research group belonging to the School of Industrial Engineering at the University of Malaga dedicates its studies to the development of materials and surfaces for various applications, highlighting the ones used in the metallography, metallurgy and construction fields.

Scientific-Technical Services

Research Topics

- Multiaxial fatigue.
- Determination of closing crack stress in fatigue.
- Random Fatigue.
- Development of structural ceramic and composite materials from waste.
- Production systems of thin layers by reactive thermoprojection.
- Growth of fatigue cracks with loads of variable amplitude.

Scientific-Technical Services

- Production of new materials.
- Obtaining Porous Ceramic Materials.
- Preparation of materials and surfaces.
- Materials Characterization by IR and XRF.
- Testing materials. Mechanical behavior and corrosion.

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Mechanical Engineering Malaga

Presentation

This research group that conducts its business in the School of Industrial Engineering and the Polytechnic School, is composed of 12 researchers, 5 of them are Doctors Engineers and the rest graduates. They make their labour both at teaching and researching, and also providing services to industry.

Scientific-Technical Services

Research Topics

- Engineering Vehicle: - Dynamic behavior of tires modeling. - Development of theoretical and experimental intelligent braking systems in cars. Simulation on test bench. - Behavior in-service security-oriented in cars. Automation testing lines of ITV. - Design and manufacture of a buggy type vehicle for use as a platform for the development of new subsystems.
- Biomechanics: mechanical behavior of the lumbar spine.
- Modeling prosthetic knee as an aid for selecting the optimal surgical technique.
- WINMECC: Developing specific software for simulation and synthesis of plane mechanisms.
- Mechanical aspects in the design of mobile robots: mechanical design, dynamic simulation, optimization of trajectories.

Scientific-Technical Offer

- Issuance of official reports for cataloging historic vehicles (accredited by the Ministry of Innovation, Science and Business of Andalusia).
- Advanced mechanical design.
- Design and manufacture of prototype mechanical systems for research and industrial applications (in collaboration with the machining workshop at the University of Malaga).

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Waste and Environmental Technology

Presentation

The research activity of the group is centred on the use of lignocellulosic waste and lignin kraft. There is also a line of work within the area of carbons technology, where are investigated applications of active carbons as catalysts in chemical or environmental processes.

Scientific-Technical Services

Research Topics

- Thermochemical use of lignocellulosic waste.
- Preparation and characterisation of active carbons and molecular sieves.
- Preparation and characterisation of catalysts.
- Reduction and/or elimination of polluting compounds from liquid or gaseous effluents.

Scientific-Technical Services

- Use of lignocellulosic waste for obtaining vegetable carbon and active carbon.
- Obtaining active carbon from the waste of rubber tyre pyrolysis.
- Development of inorganic materials in the areas of catalysis, the environment and energy.
- Elimination of gaseous pollutants (nitrogen oxides and volatile organic compounds) and liquids.

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GRAPHIC DESIGN AND ENGINEERING

Presentation

The research group Graphic Design and Engineering of the Graphic Expression, Design and Projects Department at University of Malaga, has more than 15 years experience in the field of technological innovation associated with graphical techniques. The main objective of their research is to develop systems to help increase the competitiveness of enterprises.

Scientific-Technical Services

Research Topics

- Computer Graphics and photorealistic representation.
- Virtual reality: animation and simulation.
- Photography and digital image processing.
- CAD: three-dimensional modeling and prototyping.
- Product design.
- Topography, GPS and photogrammetry.
- Geographic information systems.CAD: three-dimensional modeling and prototyping.
- Recovery of historical and graphic heritage.

Scientific-Technical Offer

- Technical advice on industrial design.
- Technical advice on surveying and mapping.
- Technical advice on planning and position of resources and services.
- Technical advice on design and product development.
- Design and prototype of models and digital 3D models.

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THERMAL MOTORS AND ENERGY EFFICIENCY

Presentation

This research group located in the Engineering School at the University of Málaga, specializes in the study of the thermal properties of engines. Among its facilities are different test bench, for vehicles and engines, besides a laboratory cogeneration to research simultaneous generation of energy: Stirling Engine, Solar thermal energy and photovoltaic. RESEARCH TOPICS SCIENTIFIC-TECHNICAL

Scientific-Technical Services

Research Topics

- Car emissions.
- Stirling engines.
- Internal Combustion Engines.
- Energy efficiency.
- Cogeneration.

Scientific-Technical Offer

- Optimization of thermal engines.
- Improving energy efficiency in engines.
- Manufacture of energy collector systems.
- Study of cars devices in test bench.

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MACHINE PERCEPTION & INTELLIGENT ROBOTICS

Presentation

The Machine Perception & Intelligent Robotics group (MAPIR) belongs to the Department of System Engenieering and Automatics and to Instituto de Investigación Biomédica de Málaga (IBIMA). The group has more than twenty years' experience in the development of solutions for intelligent robotic systems (localization, map building, autonomous navigation, human-robot interaction, etc.) and sensory systems based on artificial vision and olfaction.

Scientific-Technical Services

Research Topics

- Autonomous robots.
- Computer vision.
- Electronic noses.

Scientific-Technical Services

- Development of service and assistance robots.
- Data analysis and decision making through techniques from Artificial Intelligence and Machine Learning.
- Guided vehicles like robots, cars, drones, etc.
- Gas and odor detection and recognition.
- 3D modelling of objects, buildings and infrastructures.
- Monitoring and performance in smart environments.

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Industrial Informatics and Microelectronics (MINFO)

Presentation

The MINFO (Computer Microelectronics) research group, which is part of Informatics Technical School, is mainly committed to the research and development of electronic instruments for the improvement of the efficiency of the production lines in industrial surroundings.

Scientific-Technical Services

Research Topics

- Laser-based electronic instruments.
- Design of circuits, both analogical and digital.
- New technologies in electronic design. Application to electronic cards.
- Processing of images in industrial surroundings.
- Automatic supervision of industrial processes.

Scientific-Technical Services

- Applications for improving the efficiency of production processes.
- Acquisition and processing of images for the purposes of their application to specific inspection and to the improvement of the quality in industrial processes.
- Electronic design and development of prototype cards for the purposes of the maintenance of bank terminals.

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Design of Advanced Interfaces (DIANA)

Presentation

DIANA(research, development and innovation planning of the Junta the Andalucía works on novel advanced interfaces for applications to the new information and communication technologies. The main focus of the Networks and Radio Technology group is the analysis, modelling, control and management of new generation communication networks (both cellular and multihop networks, mesh or sensors network). A line of evaluation and development of software architectures and development of mobile applications eHealth is also included. Man-Machine Interaction line engaged in design, development and evaluation of new interactive systems, specially those related to mixed reality, brain-computer interfaces and new paradigms of interaction. This line includes design and development of projects related to narration and interaction. Design of Electronic Systems line is focused mainly on design and development of hardware/software of monitorization and control systems. Educational innovation line is focused in ICT applied to teaching, engineering teaching and transversal competences.

Scientific-Technical Services

Research Topics

- Networks and Radio Technology.
- Human-Machine Interfaces and Virtual Reality.
- Electronic Systems Design.
- Educational Innovation.

Scientific-Technical Services

- Virtual reality.
- Interactive systems. Brain Computer Interaction
- Cellular radio networks.
- Smart antennas technology.
- Monitoring and remote control of industrial facilities.
- Sensor networks. Body area networks.
- Electrónic and interactive art.

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SCENIC

Presentation

The **SCENIC** (**Service and Component ENgineering for Internet Computing**) group is part of the GISUM (Software Engineering Group of the University of Malaga) and are specialised in Software interoperativity and Cloud computing.

The group has collaborated in multiple national and international projects including H2020.

The SCENIC has grown in the last years and has opened new research lines in new ICT trends like IoT-Internet of Things and other scenarios.

Scientific-Technical Services

Problem solving in App integration in Cloud

App Development:

- Problem solving in Cloud servers.
- Development in multiple plataforms.
- Possibility to change from one provider to other with minimun efort and efecto.
- Independent of PAS or IASS used.

Analysis tools for services:

- Velocity analysis.
- Answer Time between App and server.
- Behavior prediction of App depending of the server provider.

IoT-Internet of Things:

- Sensor automatisation and sensor configuration to pre-process before App interaction.

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NICS

Presentation

The **NICS** (Network, Information and Computer Security Lab) group is part of the GISUM (Software Engineering Group of the University of Malaga) and are specialised in Cybersecurity and privacy, digital witness and Criptography.

The group has participated in several EU projects: WP7, H2020, Marie Curie Actions, etc with excellent results.

Scientific-Technical Services

Software development in Cybersecurity and privacy.

Influenced areas:

- In Smog.
- In Cloud.
- In critical infrastructure monitoring in IoT devices.
- Advanced Criptography for Blockchain.
- Digital Witness: Safeguarding Digital Evidence by using Secure Architectures in Personal Devices.
- Reliability in IoT

Application in vehicule communication for autonomus vehicule.

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ERTIS

Presentation

The **ERTIS** (Embedded Real-Time Systems) group is part of the GISUM (Software Engineering Group of the University of Malaga) and are specialised in Methodologies for Critical Software Development, Complex Systems Middlewares, Cyber-Physical Systems and Cloud Computing Integration.

Scientific-Technical Services

- Critical infrastructure monitoring for predictive maintenance.
- Software development for embedded devices in automotive sector for physical variables monitoring.
- Energy consumtion monitoring with smartmeters.
- IoT software developing.
- Traceability by blockchain technology.

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CAOSD

Presentation

The **CAOSD** (Component and Aspect Oriented Software) group is part of the GISUM (Software Engineering Group of the University of Malaga) and are specialised in component-based systems developing, aspect-oriented systems and agent-oriented systems. smart homes, home telecare, vehicular networks, etc.

The Group has collaborated in multiple EU projects in different consortiums.

Scientific-Technical Services

Software development:

- Dynamic configuration software for IoT devices network.
- Genetic algorithms for IoT systems optimisation in execution time.
- Cybersecurity: dynamic configuration keeping the security protocols.

Energy consumtion:

- Energy consumtion test.
- Software energy consumtion for Wireless systems: battery life cycle.

App development:

- Algorithm optimisation for touristic tours and disabled people.
- Algortihm multiobjective development.

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PROTEUS

Presentation

The **PROTEUS** group is part of the GISUM (Software Engineering Group of the University of Malaga) and are specialised in Security Systems and privacy, Security certification and, security in Cyber-Physical Systems (CPSs) and IoT. Reliable computing and cryptographic hardware.

The group has participated in multiple WP6 and WP7 projects involved in the EU funding programs.

Scientific-Technical Services

Information Security design:

- Security privacy by design.
- Security systems engineering.
- Control model by hastags or attributes:
    - ABAC (Attribute Base Access Control.
    - SAC (Semantic Access Control)
- Payment systems “car to car” and/or “car to infraestructura”

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MORSE

Presentation

The **MORSE** (**Mobile Networks and Software Reliability**) group is part of the GISUM (Software Engineering Group of the University of Malaga) and are specialised in Model based testing and model checking for Cyber Physical Systems (CPSs). Runtime verification of extra-functional properties in CPSs. Quality of Service/Quality of Experience in 4G/5G mobile networks. Experimental facilities for research in wireless communications.

Scientific-Technical Services

Mobile networks software development:

- Base stations
- Network core
- Operator Network

5G Network Core software development:

- SAN
- NFV
- MEC (Mobile Edge Computing)
- MEC (Multiaccess Edge Computing)
- LLC (Low Latency Communication)
- URLLC (Ultra Reliable Low Latency Communication)

Software reliability. Software analysis to purge and reliability analysis for:

- Common software
- Aircrafts software
- Critical infrastructures software

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NEO

Presentation

The **NEO** (**Networking and Emerging Optimization**) group is part of the GISUM (Software Engineering Group of the University of Malaga) and are specialised in Cloud Computing Security. Critical Infrastructures Protection, Identity Management, Internet of Things, Non-repudiation, RFID. Secure Software & Service Engineering, Trust & Reputation Management y Wireless Sensor Networks.

Scientific-Technical Services

Software testing in IoT and Fiware.

Systems and Process optimisation (e.g. industrial process, logistic plataforms design) by:

- Machine learning
- Evolutive algorithms
- AI – Artificial Intelligence
- Metaheuristics by bioinspired algorithms.

Smartcity (micro-simulation):

- Cloud computing
- Grid
- GPU – Graphical Processing Units
- FPGA
- App development of iOS and Android

Smartcity:

- Communication between vehicles.
- Traffic prediction by machire learning
- Route optimization (e.g. in waste collection, etc)

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KHAOS

Presentation

The **KHAOS** group is part of the GISUM (Software Engineering Group of the University of Malaga) and are specialised in integration mangment and Data Analysis: data bases, semantic web, linked open data and Big Data.

These technologies are applied to Systems Biology, translational information technology and, Cultural Heritage and Tourism.

Scientific-Technical Services

- Scalable Reasoning on Large data Volumes.
- Middleware based on Ontologies
- Discovery of semantic relationships among ontologies
- Composition of Semantic Web Services. ESB Semantic
- Recommendation of contents based on semantics
- Semantic extension of data bases
- Semantic Web for E-Science
- Multi-objective optimization
- Big Data Analysis
- Business Intelligence Models

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SURFACES AND MATERIALS LABORATORY

Presentation

The Group **Surfaces and Materials Laboratory** develops the activity in 3 main áreas: Energy storage by electrochemical methods, translucent and transparent materials developing and nanostructures for optic applications.

The Group has participated in European consortiums for Research and Develop projects and has multiple patents in nano and micro-structures.

Scientific-Technical Services

Energy and materials:

- Manurfacture and characterisation of nanostructures.
- Selective surfaces manufacturing.
- Nano-structured anodes and cathodes manufacturing for lithium ion batteries.
- Transparent Oxid Conductors (TOC) characterization and manufacturing.
- Nanoparticles and nanostructures generation by microprecursors irradiation.
- Commercial Solar cells efficiency optimisation

Defence and Aerospace:

- Electromagnetic shielding materials for anti-radar funtions.

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ACE_TI

Presentation

The **ACE_TI** (Green Buildings & Energy Supply, Sustainable Urban Mobility) belongs to a big group placed in University of Sevilla. However, part of the research is elaborated in University of Malaga by Javier Duran and his group, which is specialised in electric engines and power converters with 12 or more phases. These technologies could be applied to wind energy, electric vehicles or Aerospace sector.

They have developed a patent in 2014 of power controllers monitoring and management.

Scientific-Technical Services

12 (or more) phases electric engines:

- Power converters.
- Power controllers.

Electric engines with phase fault tolerant.

Urban electric vehicles:

- Demonstration development.

Energy managment:

- Intelligent systems development.

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Thermal Engines UMA

Presentation

The Thermal Engines UMA research group is composed of researchers from the Department of Mechanical, Thermal and Fluid Engineering at the University of Malaga. This group is mainly focused on the study of emissions in thermal engines and optimization of development of injection systems in them.

This researches are useful to improve the efficiency of combustion engines and reduce the pollution produced by them.

Scientific-Technical Services

Research Topics

- Thermal Engines.
- Direct injection systems in thermal engines.
- Gaseous and particulate emissions of thermal engines.
- Energy analysis of complex systems.
- Analysis of Computational Flows in Thermal Motors

Scientific-Technical Services

- Characterization of the soot of an ignition engine
- Modeling injectors
- Modeling of diesel engines
- Simulation of flows within engines
- Energy recovery systems in the exhaust gases
- Modeling of exchangers

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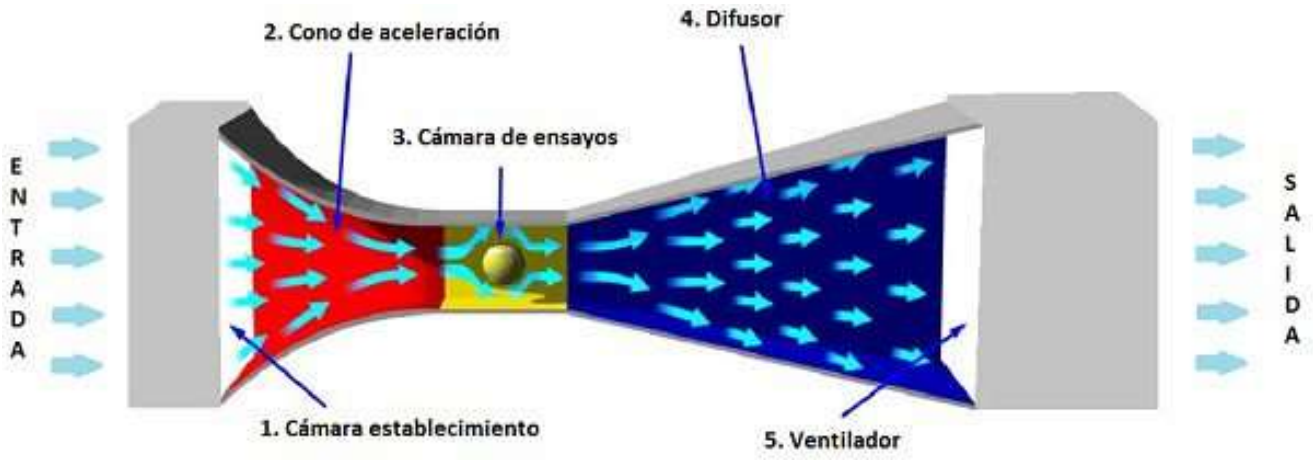
INJECTION NOZZLE FOR AERODYNAMIC IMPROVEMENT IN VEHICLES



TECHNOLOGY SUMMARY

The present invention consists of an injection nozzle for the aerodynamic improvement in vehicles, especially in motorcycles, automobiles or trains, which achieves by means of a Venturi effect, increasing the speed of air output without the use of any other type of device, modifying the aerodynamic profile of the vehicle, approaching it in the form of a more slender profile, which adapts better to the incident flow.

BENEFITS

This technology has the following advantages:

RESISTANCE: The resistance is reduced, counteracting it and modifying favorably the aerodynamic response of the vehicle.

SPEED: It is possible to increase the top speed of the vehicle, increasing, in turn, the power of it, thanks to this new system.

CONSUMPTION: The lower resistance of the air that is obtained to the advance of the vehicle, generates a lower consumption of fuel and therefore, a lower amount of emissions of polluting gases in the atmosphere.

EASILY: This nozzle is easily installable on a motorcycle..

CONTEXT

In the motor world, the study of aerodynamics is one of the most analyzed topics to achieve the reduction of the resistance exerted by the air to the advancement of a vehicle.

Currently there are several methods that try to improve this aspect, requiring several of them from some device that involves a complication in the manufacture and assembly, and may not be valid in some types of vehicles such as, for example, motorcycles, cars or trains, since they have less space for the installation of new devices.

APPLICATIONS

The present invention has utility in the following fields:

ENGINES

IMPROVE AERODYNAMICS AND PERFORMANCE OF MOTORCYCLES, CARS OR TRAINS

INJECTION NOZZLE FOR AERODYNAMIC IMPROVEMENT IN VEHICLES

IP RIGHTS

This technology (system) is currently protected by patent.

Granted patents in Spain (priority date December 2011) .

Patent publication number is ES2416930B2 and WO2013098438

DEVELOPMENT STAGE

TRL 4: The technology has been tested through a prototype that demonstrated its technical viability.

KEYWORDS

VEHICLE
AUTOMOTIVE
NOZZLE
MOTORCYCLE
AERODYNAMICS

DEVELOPED BY

Inventors: Antonio García Rubio, Carlos Manuel Del Pino Peñas, Juan Antonio Cabrera Carrillo, Antonio Simon Mata

BUSINESS OPPORTUNITY

Technology transfer by licensing.

PARTNERSHIP

Looking for companies are interested in licensing agreement or collaborations to commercialize the technology.

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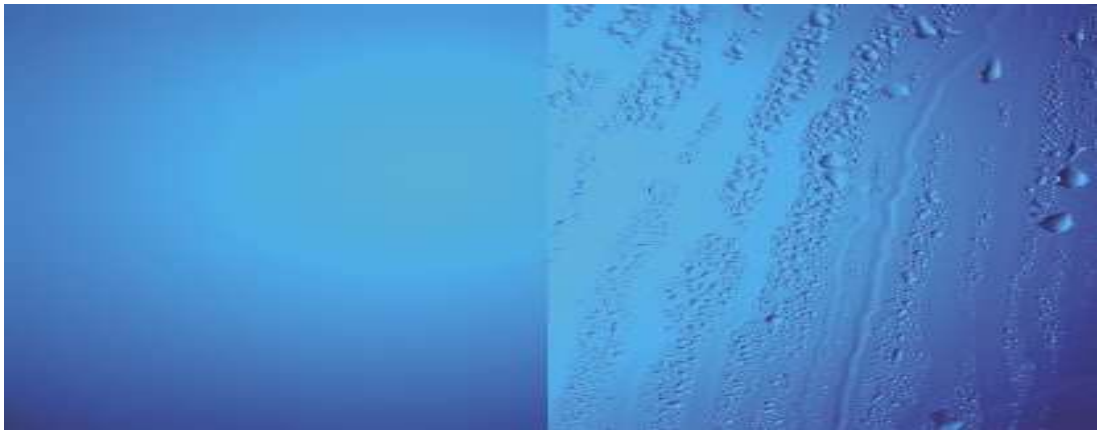
Technology #0001

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

ANTI-FOGGING PREDICTIVE DEVICE AND PROCEDURE



TECHNOLOGY SUMMARY

The present invention consists of an an device and a predictive anti-fogging procedure that is anticipated in the performance of mechanisms that locally lower the dew temperature around surfaces exposed to outdoor or indoor environments in which condensation should be avoided, starting from of the knowledge of the dew temperature of the air and the temperature of the object and acting through two actions: the decrease in the relative humidity of the air surrounding the object and the increase in the temperature of the surface of the object (not the volume).

BENEFITS

This technology has the following advantages:

CONSUMPTION: The main advantage of the present invention is that it is a new predictive or predictive method that acts before the fog occurs, also reducing the energy necessary to prevent the formation of fog, both in outdoor environments and in indoor environments.

CONTEXT

The most generalized procedure to eliminate surface fog now uses thermal resistors attached to the object; for example: lunettes or thermal mirrors in cars or anti-fog mirrors in bathrooms. The energy cost of the process is high and slow, since energy must be supplied to the object in its volume first (loss energy), until on its surface the drops acquire enough energy to vaporize.

APPLICATIONS

The present technology is useful for the specific control of condensation, applicable to the treatment of exterior or interior surfaces exposed to humid air in which condensation must be prevented before it appears:

VIEWFINDERS OF SURVEILLANCE CAMERAS

DUCTS AND WALLS OF ENCLOSURES WITH AIR CONDITIONING

GLASS OR MOONS IN CARS

ANTI-FOGGING PREDICTIVE DEVICE AND PROCEDURE

IP RIGHTS

This technology (method and systems) is currently protected by a familiy of patents.

Granted patents for Spain (priority date December 2010)

Patent publication number is ES2362593

DEVELOPMENT STAGE

TRL 4: The technology has been tested through a prototype that demonstrated its technical viability.

KEYWORDS

AUTOMOBILE
CONDITIONING
FOG
LUNETTES
THERMAL MIRRORS
MIRROR

DEVELOPED BY

Inventors: Francisco Javier Rios Gomez, Jorge Romero Sanchez, Raquel Natividad Fernandez Ramos, Jose Francisco Martin Canales, Francisco Javier Marin Martin

BUSINESS OPPORTUNITY

Technology transfer by licensing.

PARTNERSHIP

Looking for companies are interested in licensing agreement or collaborations to commercialize the technology.

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Technology #0002

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

IDENTIFICATION SYSTEM BASED ON NEW RFID TAGS WITHOUT CHIP

TECHNOLOGY SUMMARY

The present invention proposes a type of RFID tag that does not need chips, so that its cost is comparable to that of a bar code. The proposed tags would use multi-conductor structures, which would generate resonances by coupling their lines. The position of these resonances would be controlled by geometric parameters of the conductor tracks that form the multiconductor structure. So, it would be the positions of these resonances that would encode the information.

BENEFITS

The main competitive advantages of this technology are:

LOW COST: They do not need a chip, which entails a low production cost.

DOUBLE READING: They allow a double reading: electromagnetic and optical.

COMPATIBILITY: with globally accepted standards.

CONTEXT

The identification of elements or products in industry and commerce is of vital importance nowadays due to the logistic, traceability and security needs of the same. The most widespread identification system today is the bar code. Another identification system of great popularity, and which aims to replace or coexist with the bar code, is radio frequency identification (RFID). One of the major drawbacks of RFID technology compared to conventional bar codes is the high cost of a single RFID tag. This cost is given, practically in its entirety, by the price of the chip that the RFID tags have to include.

APPLICATIONS

The identification and security systems are available in any environment where the movement and exchange of goods is necessary. Therefore, technology has its application in industry and commerce where it is required by logistic, traceability and security needs.

LOGISTIC
TRACEABILITY
SECURITY NEEDS

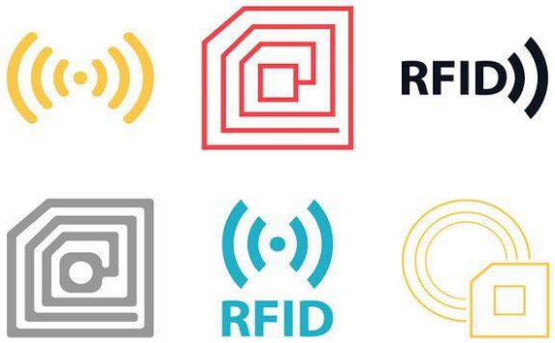
IDENTIFICATION SYSTEM BASED ON NEW RFID TAGS WITHOUT CHIP

IP RIGHTS

This technology (method and systems) is currently protected by patent.

Granted patents in Spain (priority date May 2013)

Patent publication number is ES2415983 and WO2014188020.



DEVELOPMENT STAGE

The technology has been implemented and a pilot has been run that demonstrated its technical viability.

KEYWORDS

AUTOMOBILE
RFID
IDENTIFICATION
TAG
TRANSPORT
TOURISM
CULTURE AND EDUCATION

DEVELOPED BY

This technology has been developed by Microelectronic Design Group.

Inventors: Enrique Marquez Segura, Juan Antonio García Fernández

BUSINESS OPPORTUNITY

Technology transfer by licensing.

PARTNERSHIP

Looking for companies are interested in licensing agreement or collaborations to commercialize the technology.

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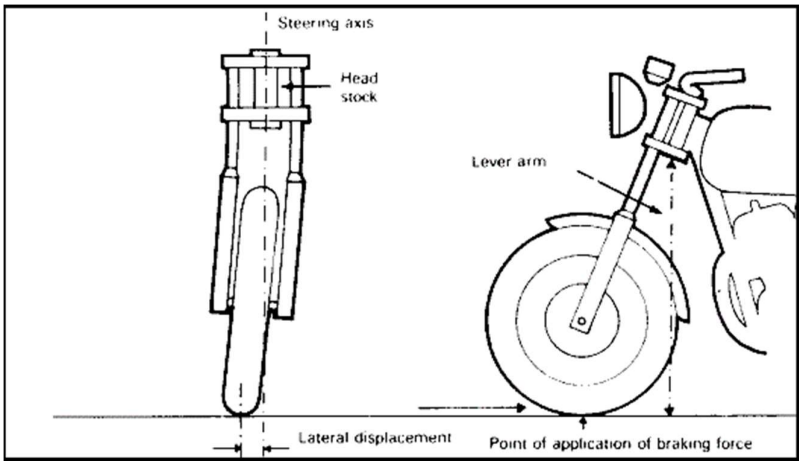
Technology #0002

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

STEERING SYSTEM WITH VARIABLE GEOMETRY FOR MOTORCYCLES AND SIMILAR



TECHNOLOGY SUMMARY

The object of the invention is a new steering system based on a mechanism with variable geometry that allows a quick and easy adjustment of the steering geometry of the vehicle, which is allowed to modify the behavior during driving.

BENEFITS

The present invention solves the previous problems thanks to a new steering system with variable geometry that allows to modify the combined way the displacement and the relative angle between the fork and the steering axis in a way that is much easier to choose, control and modify the geometrical parameters of the vehicle, compare the initial and modified geometries, and find dynamic responses expected by theoretical studies.

More specifically, the steering system of the invention makes it possible to adjust the offset and the relative angle between the fork and the steering axle simultaneously; and correct, in part, the negative effects that occur on other geometric quotas.

CONTEXT

The frontal geometry of particular vehicles, stories such as a cycle or tricycle, such as a motorcycle, affects the key parameters for the control in the curve and the speed in the different driving conditions. It can be said that the front geometry of a motorcycle is in a steep position, that is to say: the steering axis, the set of seatposts, the suspension fork and the fork-type wheel).

In the current systems are affected some parameters involved in the front geometry of motorcycles to improve the speed of the same. The most used are, by direct modification of compensation as a result of direct modification between cycle and direction of the address, but in both cases are different final geometries than expected, as they are involuntarily modified quotas that were not intended to be Initially modified This affects in an undesired way the dynamic response and the maneuverability of the motorcycle.

APPLICATIONS

The present invention belong to the sector of bicycles or tricycles, preferably in the field of motorcycles, mopeds and bicycles. The patent proposes a new steering system based on a mechanism with variable geometry that allows a quick and easy adjustment of the steering geometry of the vehicle, which allows to modify its behavior during driving.

STEERING SYSTEM WITH VARIABLE GEOMETRY FOR MOTORCYCLES AND SIMILAR

IP RIGHTS

This technology is currently protected by patent.

Granted patents in Spain (priority date March 2014)

Patent publication number is ES2523391

DEVELOPMENT STAGE

TRL 4: The technology has been tested through a prototype that demonstrated its technical viability.

KEYWORDS

VEHICLE
AUTOMOTIVE
MOTORCYCLE
BICYCLE
MOPED
STEERING SYSTEM
VARIABLE GEOMETRY

DEVELOPED BY

This technology has been developed by Mechanical Engineering Málaga research group.

Inventors: Juan Antonio Cabrera Carrillo, Ignacio Garijo Sánchez, Juan Jesus Castillo Aguilar, Antonio Simon Mata, Francisco Manuel Garcia Vacas, Antonio Jesus Guerra Fernandez, Enrique Carabias Acosta, Antonio Ortiz Fernandez

BUSINESS OPPORTUNITY

Technology transfer by licensing.

PARTNERSHIP

Looking for companies are interested in licensing agreement or collaborations to commercialize the technology.

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Technology #0004

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

ELECTRONIC MODULES AND MODULAR ELECTRONIC SYSTEMS TO OPTIMIZE THE MANAGEMENT AND CONTROL OF POWER CONVERTERS

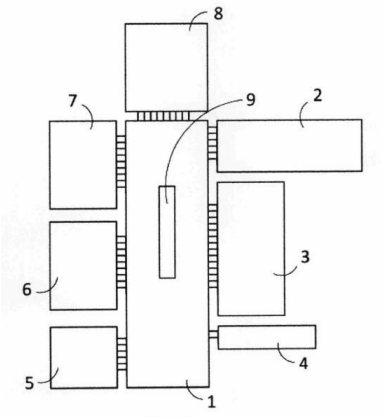


Figura 1

TECHNOLOGY SUMMARY

This invention allows electronic control systems for modular and scalable power converters that adapt easily and quickly to the requirements of the converters to be controlled and that allow implementing the new control algorithms that appear without the need to change all the control hardware . This electronic control system, being modular, allows it to be composed of a numerous set of cards or modules that can be interconnected easily, as if it were a puzzle, to form in a short time a control hardware valid for any type of power converter in any application, and in which any known control algorithm can be implemented given that it

BENEFITS

This electronic control system has the following advantages:

MEASUREMENTS: Increase the number of measurements to be made (voltage, current, speed, temperature),

CONTROL: Increase the number or change the type of semiconductors to control (directly linked to the topology of the converter),

STORE: Store the operating conditions or measurements with a datalogger (data recording

CONTEXT

The main purpose of power electronics is the use of electronic devices to convert and control energy in a way that meets the requirements of the systems connected to its output. It has always been the power converters that are intended to be controlled and, in many other cases, the control algorithm to be applied, which has determined the electronic control system used.

This has made it necessary for each power converter to develop a specific electronic control system, having as a limitation the need to completely redesign the electronic control system in case of modification of the power hardware, bringing with it extra costs in its development and materials.

APPLICATIONS

The present invention belong to the area of power electronics and electrical engineering. Specifically, it has its use in different applications in which appear one or more power converters, whatever the topology, configuration and type of semiconductor used.

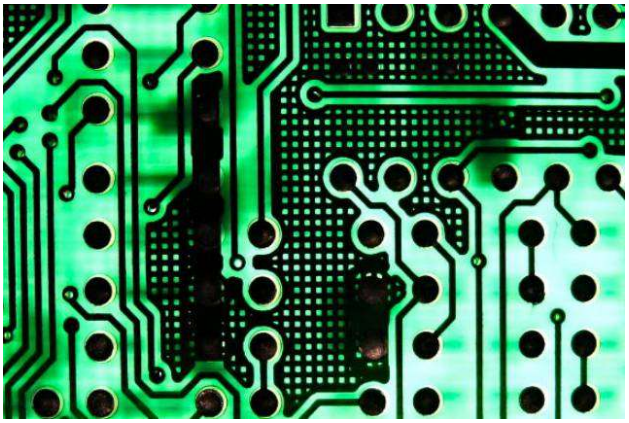
ELECTRONIC MODULES AND MODULAR ELECTRONIC SYSTEMS TO OPTIMIZE THE MANAGEMENT AND CONTROL OF POWER CONVERTERS

IP RIGHTS

This technology is currently protected by patent.

Granted patents for Spain (priority date November 2014).

Patent publication number is ES2558951.



DEVELOPMENT STAGE

TRL 4: The technology has been tested through a prototype that demonstrated its technical viability.

KEYWORDS

VEHICLE
AUTOMOTIVE
NOZZLE
MOTORCYCLE
AERODYNAMICS

DEVELOPED BY

Inventors: Mario Javier Duran Martinez.

This technology has been developed by ACE_TI research group. This group (Green Buildings & Energy Supply, Sustainable Urban Mobility) belongs to a big group placed in University of Sevilla. However, part of the research is elaborated in University of Malaga by Javier Duran and his group, which is specialised in electric engines and power converters with 12 or more phases.

BUSINESS OPPORTUNITY

Technology transfer by licensing.

PARTNERSHIP

Looking for companies are interested in licensing agreement or collaborations to commercialize the technology.

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Technology #0005

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

NEW PROCEDURE FOR BIODIESEL PRODUCTION THROUGH HETEROGENIC CATALYSIS

TECHNOLOGY SUMMARY

The present invention proposes a heterogeneous process for obtaining biofuels, particularly biodiesel, by catalytic transesterification of vegetable or animal oils or fats, with alcohols of low molecular weight and under mild conditions of temperature and atmospheric pressure. For this purpose, a metal zincate, particularly an alkaline metal or a divalent transition metal, is used as a precursor of active basic solid catalysts. The thermal activation of the metal zinkate used as a precursor can be carried out over a wide range of temperatures, although a temperature of 400 ° C is sufficient to obtain active catalysts.

BENEFITS

This technology has the following advantages:

• Higher reaction speed of the process compared to other solid catalysts

• The temperature of decomposition or activation of the catalyst is lower than that of other basic solid catalysts

• The solid catalyst is reusable.The precursor is stable in the air

• The large volumes of aqueous effluents derived from the intense washing are avoided, since these are not so necessary

• Simplicity, reproducibility and easy scaling of the synthesis

CONTEXT

The biodiesel production plants use the conventional process by homogeneous catalysis where the catalyst is a hydroxide or alkaline methoxide dissolved in the methanol itself. This discontinuous process has some drawbacks, therefore, for some years is being investigated in the development of solid catalysts that allow this process through heterogeneous catalysis, simplifying the separation phases of the catalyst and washing, among other advantages.

APPLICATIONS

The present technology has its application in the production processes of biofuels, and more specifically, biodiesel.

NEW PROCEDURE FOR BIODIESEL PRODUCTION THROUGH HETEROGENIC CATALYSIS

IP RIGHTS

This technology (method and systems) is currently protected by patent.

Granted patent for Spain (priority date Abril 2009)

Patent publication number is ES2345866 and WO2010112641

DEVELOPMENT STAGE

TRL 4: The technology has been tested through a prototype that demonstrated its technical viability.

KEYWORDS

VEHICLE
AUTOMOTIVE
BIODIESEL
BIOFUELS
CHEMISTRY

DEVELOPED BY

Inventors: Pedro Jesus Maireles Torres, Jose Santamaria Gonzalez, Ramon Moreno Tost, Juan Miguel Rubio Caballero, Josefa Maria Merida Robles, Enrique Rodriguez Castellon, Antonio Jimenez Lopez. This technology has been developed by Department of Inorganic Chemistry, Crystallography and Mineralogy. This research group disposes of a modern laboratory with the latest in equipment, both experimental and computational, a team of highly qualified personnel and a broad curriculum in teaching and research.

BUSINESS OPPORTUNITY

Technology transfer by licensing.

PARTNERSHIP

Looking for companies are interested in licensing agreement or collaborations to commercialize the technology.

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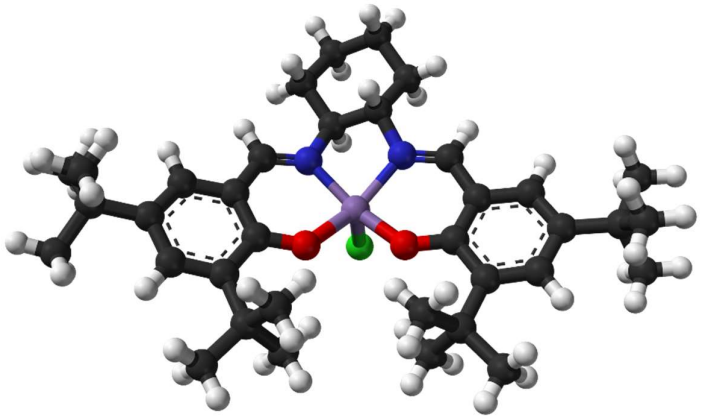
Technology #0006

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

PROCEDURE FOR OBTAINING A NEW VPO CATALYST



TECHNOLOGY SUMMARY

The present invention provides a method for obtaining a VPO catalyst on a biomastic carbonaceous support derived from vegetal and animal material, such as wood from forests, residues from agricultural and forestry processes, and industrial, human or animal waste.

BENEFITS

This technology has the following advantages:

• This procedure requires less severe pressure and temperature conditions.

• The chemical activation of the biomastic material produces a carbon with greater stability at high temperatures under oxidation conditions.

• The carbonaceous catalytic support is resistant in the reaction conditions, presenting a high value of surface area and its preparation being viable from the technological point of view, given that biomass residues can be revalued.

• The catalysts used in the present invention, being very active, allow to work at high spatial speeds, which presents a great industrial advantage, since they require larger volume

CONTEXT

The catalysts based on vanadium and phosphorus oxides (VPO) are known for their catalytic properties in the oxidation reactions of light alkanes. In particular, the VPO catalysts constitute the only commercial catalyst system for the gas phase oxidation of n-butane to maleic anhydride. Many inventions referring to different methods of synthesis of VPO catalysts can be found, there are several studies that show that these VPO catalysts could catalyze partial oxidation reactions of other light alkanes, however, these processes are currently not carried out in a industrial process due to the technological disadvantages they present.

APPLICATIONS

The present technology has its utility to obtain a VPO catalyst on a biomastic carbonaceous support oriented to the production of hydrocarbons, within the chemical sector.

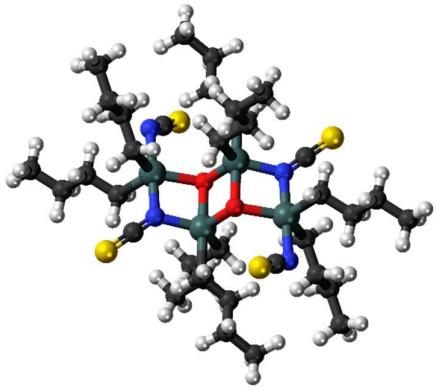
PROCEDURE FOR OBTAINING A NEW VPO CATALYST

IP RIGHTS

This technology (procedure) is currently protected by patent.

Granted patent for Spain (priority date April 2010).

Patent publication number is ES2366843.



DEVELOPMENT STAGE

TRL 4: The technology has been implemented and a pilot has been run that demonstrated its technical viability.

KEYWORDS

VEHICLE
AUTOMOTIVE
CHEMISTRY
BIOMASS
CATALYSTS
VPO
HYDROCARBONS
CARBON

DEVELOPED BY

This technology has been developed by Waste and Environmental Technology Málaga research group. The research activity of the group is centred on the use of lignocellulosic waste and lignin kraft.

Inventors: Miguel Angel Bañares Gonzalez, Ricardo López Medina, Tomas Cordero Alcantara, Maria Olga Guerrero Perez, Jose Rodriguez Mirasol, Juana María Rosas Martinez

BUSINESS OPPORTUNITY

Technology transfer by licensing.

PARTNERSHIP

Looking for companies are interested in licensing agreement or collaborations to commercialize the technology.

CONTACT

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Technology #0007

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html

NEW ABS BRAKING SYSTEM

TECHNOLOGY SUMMARY

This automatic and intelligent braking system comprises a hydraulic circuit simplified with respect to the traditional configuration of a conventional ABS system, and a control system of this hydraulic circuit. The hydraulic circuit has been simplified with respect to the traditional ABS configuration. This configuration allows the process to be carried out in a controlled manner and up to optimum levels, both during the moments of pressure reduction and of increase, for example, not being necessary, for example, the total reduction of the pressure in the case of blockage. The control system that includes this invention acts as an interface between the driver and hydraulic braking circuit, with which the driver has the feeling of being the one who operates the braking system, although in reality braking control is established by a logic of control in function of the force that establishes the driver in the pedal of brake and of the conditions of adherencia of the roadway.

CONTEXT

The brake system is one of the most important active safety elements in motor vehicles, it is responsible for reducing the speed to its stop if necessary. The development of braking systems that maintain the stability and control of the vehicle, also achieving a braking distance as short as possible, has been a challenge since the traction vehicles began to increase the speed and power of their engines. Currently, most manufacturers offer numerous devices related to braking equipment among the options for equipping their vehicles. Among the most widely deployed systems in vehicles is the anti-lock braking systems (ABS.- Antilock Brake System).

APPLICATIONS

The present technology has its application in the automotive sector, and in particular for its implementation in the technological area of vehicle braking control systems.

BENEFITS

This technology has the following advantages:

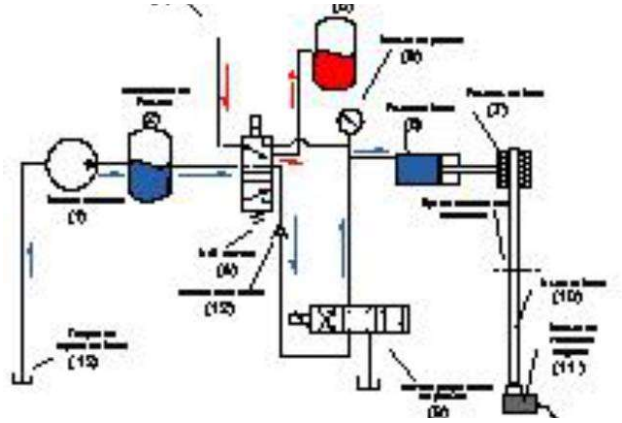
- Decreased braking distance under any condition of adhesion. Improved directional stability during braking processes.

- Elimination of pressure fluctuations and rebounds in the brake pedal typical of traditional ABS. Elimination of wheel lock.

- Easy incorporation of other tracking systems such as ESP or TCS. Does not require the installation of additional sensors.

- Possibility of being implemented in four-wheeled vehicles as well as three or two vehicles.

NEW ABS BRAKING SYSTEM



IP RIGHTS

This technology (system) is currently protected by patent.

Granted patent in Spain (priority date December 2008).

Patent publication number is ES2343667, WO2010076356, US2012025600 and EP2390152

DEVELOPMENT STAGE

TRL 4: The technology has been tested through a prototype that demonstrated its technical viability.

KEYWORDS

VEHICLE
AUTOMOTIVE
ABS
BRAKES

CONTACT

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Technology #0001

DEVELOPED BY

This technology has been developed by Mechanical Engineering Málaga research group.

Inventors: Juan Antonio Cabrera Carrillo, Antonio Simon Mata, Juan Jesus Castillo Aguilar, Antonio Ortiz Fernandez, Francisco Manuel Garcia Vacas, Antonio Jesus Guerra Fernandez

BUSINESS OPPORTUNITY

Technology transfer by licensing.

PARTNERSHIP

Looking for companies are interested in licensing agreement or collaborations to commercialize the technology.

TRL: Technology Readiness Level – more information in https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html