

Projects List

CHIRIȚĂ ALEXANDRU-POLIFRON

2022 - 2024 PN-III-P2-2.1-PTE-2021-0306

Drying technologies and innovative energy-independent equipment for mountainous and isolated areas

Coordinating institution: CALORIS GROUP S.R.L. (RO)

Project partners: Partener (P1) - INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Partener (P2) - INSTITUTUL NATIONAL DE CERCETARE-DEZVOLTARE PENTRU MASINI SI INSTALATII DESTINATE AGRICULTURII SI INDUSTRIEI ALIMENTARE - INMA (RO)

Your affiliation:

Project website: <https://ihp.ro/inovusc>

Abstract:

In the context of deepening global energy and food crisis, the use of clean energy in agricultural production processes, increasing energy independence in relation to the national energy system and energy efficiency of processing equipment have become major concerns of workers in the field.

The project proposal, elaborated in a consortium formed by an SME and two research institutes, aims at the realization of a convective dryer intended for processing the vegetal products from the spontaneous flora (berries, mushrooms, medicinal and aromatic plants) in the immediate vicinity of the collection places, isolated and without access to the electricity network.

The method of preserving plant products by enzymatic inactivation (dehydration) is appreciated by specialists in the field as the most efficient and healthiest method of long-term preservation, which ensures food safety of consumers. By dehydration, the products intensely concentrate their nutritional and organoleptic properties, having a higher content of active principles than fresh ones.

The technology of preserving vegetable products by dehydration significantly influences the possibility of keeping processed products in storage, the final humidity reaching 6%; the equipment to be developed under the project will facilitate the transport by reducing the mass and the volume by 8 to 10 times, and by 3 to 4 times, respectively.

The thermal energy necessary for the dehydration process will be produced with the help of a thermal generator operating on the TLUD principle, from the biomass existing at the scene. The air-to-air heat exchanger will provide a clean drying agent (hot air), with major implications for consumer's health.

The electrical energy necessary for the operation of the fan, the electronic module for monitoring the working parameters and the control of the execution elements (electric actuators), will be provided by a state-of-the-art photovoltaic panel.

2020 - 2023 Key expert 121542

Sisteme mecatronice digitale de generare a presiunii de 1000 bar, utilizând amplificatoare hidraulice de presiune (SMGP)

Coordinating institution: UNIVERSITATEA NAȚIONALĂ DE ȘTIINȚĂ ȘI TEHNOLOGIE POLITEHNICA BUCUREȘTI (RO)

Project partners:

Your affiliation: INSTITUTUL NATIONAL DE CERCETARE-DEZVOLTARE PENTRU OPTOELECTRONICA INOE 2000 INCD (RO)

Project website:

Abstract:

2020 - 2022 PN-III-P2-2.1-PTE-2019-0446

Hydrophilic auto-chassis for high energy efficiency operation of interchangeable equipment intended for performing public utility work.

Coordinating institution: GRADINARIU IMPORT EXPORT SRL (RO)

Project partners: **Partener (P1)** - INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Partener (P2) - UNIVERSITATEA NAȚIONALĂ DE ȘTIINȚĂ ȘI TEHNOLOGIE POLITEHNICA BUCUREȘTI (RO)

Your affiliation: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project website: <https://ihp.ro/ASHEUP/index.htm>

Abstract:

For the arrangement and maintenance of spaces belonging to the public domain such as streets, gardens, markets, parking lots, etc. it is necessary to carry out works such as: sweeping and splashing of streets, snow removal, lawn mowing, etc.

These works can be realized with specialized machines and machineries or with vans equipped with mechanical-hydraulic equipment that performs works of public utility: rotary brush for sweeping; snow removal blade, broom for spreading non-slip material, mowing arm, spray tank and washing machine; body or trailer for utility vehicles etc.

The project proposes the hydrofoil of the cars with the total mass authorized by max. 7.5 tons, that is to say they are equipped with a hydraulic system (installation, units, components, controls, adjustments, etc.) capable of operating any mechanical-hydraulic equipment that is mounted on them and performs works of public utility. Limited to max. 7.5 tonnes capacity of hydrophilic trucks for gauges so that they have access to small spaces or narrow streets.

In order to demonstrate the necessity, the utility and the functionality of a hydrophilic chassis, the project also provides the hydraulic actuation of two representative working equipment (snow blade and bounce) simultaneously driven by the hydraulic system implemented on the chassis.

On the truck purchased from import (Volvo, Iveco, MAN etc.) and hydrophilic, the economic agent assembles the required interchangeable equipment that he also realizes and then offers it to the stakeholders.

2018 - 2021 PN-III-P1-1.2-PCCDI-2017-0185

Eco-innovative technologies for recovering of the platinum group metals from scrap catalytic convertors

Coordinating institution: UNIVERSITATEA BUCURESTI (RO)

Project partners: Partener 1 proiect complex (P1) - INSTITUTUL DE CHIMIE "CORIOLAN DRĂGULESCU" (RO)

Partener 2 proiect complex (P2) - INSTITUTUL DE CHIMIE MACROMOLECULARA "PETRU PONI" (RO)

Partener 3 proiect complex (P3) - UNIVERSITATEA NAȚIONALĂ DE ȘTIINȚĂ ȘI TEHNOLOGIE POLITEHNICA BUCUREȘTI (RO)

Partener 4 proiect complex (P4) - INSTITUTUL DE BIOLOGIE (RO)

Partener 5 proiect complex (P5) - INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Your affiliation: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project website: <http://www.3nanosae.org/ecotech-gmp/>

Abstract:

Autocatalysts are used to convert vehicle exhaust (carbon monoxide, nitrogen oxides, hydrocarbons, etc.) into less harmful products, such as: carbon dioxide and nitrogen. Platinum group metals (PGMs) are the active component in autocatalysts and consequently the auto industry is the largest PGM consumer. Limited PGM resources demands recycling to support an expanding auto market. Traditional recycling methods are using high temperatures and highly oxidative agents (e.g. aqua regia) making them large energy consumers and environmental pollutants. As a result, there is a need to develop alternative ways to recycle PGMs with a significant decrease in energy consumption and a reduced impact on the environment. ECOTECH-GMP project at hand draws from the knowledge, skills and competences of top leading Romanian research institutions in materials science, physics, chemistry and engineering for creating the know-how to develop the eco-technologies required to recycle PGM with zero emissions. There is currently no such technology available in the world. Four sub-projects are proposed to solve the issue of PGM eco-recycling, encompassing electrochemistry, coordination chemistry, hydrodynamics and bioelectrochemistry. The sub-projects are intertwined and function in synergy to deliver several solutions to the issue at hand. The potential of this project is mesmerizing for any interested company: small initial capital, low energy consumption and high throughput. The benefits for the society at large are thrilling: improved public health because of decreased toxic pollutants (chlorides, nitrates, nitrides, etc.) and creating new jobs owing to the potential of this technology to transform into an industry.

2018 - 2018 PN-III-P2-2.1-CI-2018-1495

Development of a motorized agricultural platform used for spraying works with remote guiding automation system

Coordinating institution: IQ ROBOTICS S.R.L. (RO)

Project partners: Furnizor de servicii - INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Your affiliation: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project website: <http://www.ihp.ro/pamstrop/index.htm>

Abstract:

The project concerns the development of a motorized platform/equipment platform for "space spraying" in the sense of spraying in several directions from the same pass, up and down, but also to the left and right of the vehicle, used in horticultural crops, especially for crops processed in enclosed enclosures such as greenhouses, solariums, etc

The innovative character of the product is given both by the technology that was first approached in our country (space spraying) and the possibilities of controlling the equipment through manual controls, but also by remote / automated / remote controls, which will allow, in a future stage, to work in a computerized / intelligent mode, based on the use of computers and GPS.

2018 - 2018 PN-III-P2-2.1-CI-2018-1449

Innovative stand for verification hydraulic pumps

Coordinating institution: HIDRAULICA INDUSTRIAL SRL (RO)

Project partners: Furnizor de servicii - INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Your affiliation: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project website: <http://www.ihp.ro/sivph/index.htm>

Abstract:

The beneficiary of the project (SME) has in its portfolio of activities and rehabilitation of products in the field of hydraulic drives: pumps, rotary motors, cylinders, etc. Of these, the largest share in repair volume - about 60% are hydraulic pumps. The repair process ends with the checking of the reconditioned product. The economic agent has a pump repair technology but does not have a special stand to test the repaired pumps.

The project aims at elaborating the documentation for the execution of a stand model for the hydraulic pumps verification as well as the functional design and testing of the main component of the stand: the innovative device for driving of the hydraulic pumps to be tested.

The economic agent will carry out the stand in accordance with the construction documentation drawn up in the project and will use it to check the reconditioned pumps. The innovative device for acting pumps will be developed within the research unit project that has the technical capability required for its design and execution.

The feature of this device is that it allows variation of the drive speed and maintains the pump operation on the constant power curve (hyperbola) so that high speeds and high drive torque are obtained.

The advantage of this solution is that when the test speed decreases, the torque increases and therefore increasing the pressure or the capacity of the pump that can be checked.

The implementation of the project and the construction of the stand contribute to increasing the quality and competitiveness of the products (repaired hydraulic pumps) of the beneficiary.

2018 - 2018 Key expert PN-III-P2-2.1-CI-2018-1495

Development of a motorized agricultural platform used for spraying works with remote guiding automation system

Coordinating institution: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project partners:

Your affiliation: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project website: <http://www.ihp.ro/pamstrop/index.htm>

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The innovative character of the product is given both by the technology that was first approached in our country (space spraying) and the possibilities of controlling the equipment through manual controls, but also by remote / automated / remote controls, which will allow, in a future stage, to work in a computerized / intelligent mode, based on the use of computers and GPS.

2016 - 2018 Key expert PN-III-P2-2.1-PTE-2016-0077

High energy efficiency (HEE) electrohydraulic equipment (EHE) for multipurpose motor vehicles (MPMV)

Coordinating institution: GRADINARIU IMPORT EXPORT SRL (RO)

Project partners: Partener (P1) - INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Partener (P2) - UNIVERSITATEA NAȚIONALĂ DE ȘTIINȚĂ ȘI TEHNOLOGIE POLITEHNICA BUCUREȘTI (RO)

Your affiliation: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project website: <http://www.ihp.ro/echipefen>

Abstract:

MPMVs whose EHE are the subject of this project perform a series of works such as: snow removal from the roadway, spreading anti-skid material, street sweeping and spraying, mowing verges of public roads, trimming trees, etc. The project aims to develop and homologate two types of EHE with HEE for MPMV: hydraulic transmission (HT) and hydraulic installation driving the technological equipment (HIDTE).

a) The hydraulic transmission. MPMVs work in two speed regimes:

- marching speed, is the rapid moving speed from one location to another;
- technological speed, is the speed at which the motor vehicle moves when performs work. The motor vehicles on which the multipurpose equipment is installed routinely have mechanical transmission which is effective in the marching regime but ineffectual in both terms of energy and operation while in the technological speed regime. The project aims to develop a prototype of a four-wheel drive HT of high efficiency in terms of energy and operation while in "technological speed" regime, and also aims to implement it on a MPMV. Energy efficiency will be materialized in low fuel consumption also leading to reduced toxic emissions.

b) The hydraulic installation driving the technological equipment. Technological equipment of MPMVs performs during working lift / lower operations. The lower operation is done by throttling the working fluid in the drive circuit so that lowering is uniform, no acceleration. By throttling, potential energy of "load" is converted into heat which is conveyed to the working fluid. The project aims to develop a prototype of a HIDTE with higher energy efficiency by recovery of potential energy available after the "load" lowering stroke, converting it into pressure energy of the working fluid, storing and then reusing it.

2017 - 2017 PN-III-P2-2.1-CI-2017-0527

Innovative circulating head for demounting, mounting and testing hydraulic cylinders under pressure

Coordinating institution: RAIBAK SRL (RO)

Project partners: Furnizor de servicii - INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Your affiliation: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project website: <http://www.ihp.ro/chich>

Abstract:

This project aims to develop a hydraulic device usable for demounting, mounting and testing reconditioned hydraulic cylinders under pressure.

In demounting a cylinder in order to repair it, and then in remounting it, the company currently uses a support frame on which the cylinder is fixed. Demounting and remounting the cylinder (relieving threads, unscrewing, screwing) is done manually and with great effort, using tools and levers to amplify hand power.

The hydraulic device which will be developed under this project replaces human energy by hydraulic

energy. The power required to relieve threads is achieved by using a hydraulic cylinder, and screwing / unscrewing threaded parts is achieved by using a low-speed hydraulic motor. The hydraulic energy which is used is stored in a hydro-pneumatic accumulator, being also used for testing the cylinder under pressure.

Implementing this device into hydraulic cylinder reconditioning process results in:

- increased productivity and competitiveness of company;
- energy savings in testing a hydraulic cylinder under pressure.

2017 - 2017 PN-III-P2-2.1-CI-2017-0136

Ecological car for melting snow

Coordinating institution: TEHNOPREST-2001 SRL (RO)

Project partners: Furnizor de servicii - INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Your affiliation: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project website: <http://www.ihp.ro/metz/index.htm>

Abstract:

This project proposes financing of several industrial research activities (elaboration of a study in view of introducing into production) for a product which is new on national level, taking account the specialization of the beneficiary, its technical possibilities, and also the experience of the service provider; the product is an ecological snow melting machine, able to replace the current technology to remove snow by carrying it on long distances. The working principle implies melting the snow by hot water and it also can be found in other companies from abroad: USA, Canada, Russian Federation, etc. Most appropriate for cities in Romania is a modular medium-sized machine, of 3...5 tons / hour productivity. The project falls in the smart specialization domain Energy, environment and climate change, subdomain Environment and climate change, as this product helps reduce environmental pollution by controlled discharge of water resulting from snow melting, which is polluted mainly by contaminants coming from urban car traffic. Using this product decreases fuel consumption and related pollutants roughly by half compared to the classic work method.

Because of limited use during a year (2..3 months), this equipment will have a modular design, allowing for the support motor vehicle to be used in other activities as well, when not during the cold season. To be melted, snow is taken from the environment using a milling cutter mounted on the front side of the trunk. Besides the feeder module (the milling cutter), the machine also has a melting module, where the hot water that snow will get in contact with is prepared. A hydraulic pump allows discharge of water resulted from melting at long distances, up to a spot of the sewerage network.

The SME beneficiary, SC TEHNOPREST 2001 SRL, is a powerful company (67 employees, 3.7 mil. € turnover) which performs repairing works for construction machines, motor loaders and transport cars, motor graders, forklifts, etc.

Informatization of the technological process of heat treatment of metallic materials

Coordinating institution: PRESTCOM S.A. (RO)

Project partners: **Furnizor de servicii** - INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Your affiliation: INOE 2000 - FILIALA INSTITUTUL DE CERCETARI PENTRU HIDRAULICA SI PNEUMATICA BUCURESTI RA (RO)

Project website: <http://www.ihp.ro/infoterm>

Abstract:

The beneficiary has an electric furnace for heat treatment of metals with a maximum operating temperature of more than 1200 degrees Celsius. The furnace is equipped with a bipositional temperature regulator which, based on the temperature information provided by a thermocouple temperature sensor, ensures that the temperature set by the operator is reached and maintained by the controller console. The control of the biposition temperature requires the supply of the electrical resistors that make the heating if the measured temperature value is below the desired value minus the value of the hysteresis regulation and the heating off by disconnecting the electrical resistors from the supply source if the measured temperature exceeds the desired value plus the hysteresis value adjustment. The test data is manually managed by the operator using a works register that specifies commercial information, beneficiary, order, name and technical data, material, desired and achieved hardness, etc.

The service provider proposes to make the technological a computerization process more of thermal treatment of metallic materials by replacing the current temperature controller with another with an advanced regulation algorithm with the possibility of communication on a data bus coupled to an industrial computer calculating system. The computerized system runs an operator application that allows, in conjunction with a local or remote database, the complete recording of operating data such as the operator, which has access to the software application based on the password that identifies it, Which were recorded manually as well as the time evolution of the measured parameters of the technological process throughout the duration of the technical treatment.