



enterprise europe

# Boletín de Oportunidades de Cooperación: Medio Ambiente

Boletín nº 142  
Abril 2016



Agencia Andaluza del Conocimiento  
**CONSEJERÍA DE ECONOMÍA Y CONOCIMIENTO**



# Índice

| <i>Búsquedas de Socios</i> |  |
|----------------------------|--|
| Referencia                 | Título   |
| RDPL20160322001            | ERA-NET WaterWorks: academic and industrial partners interested in a project of water purification by the innovative recovery processes of phosphorus and metals in selected aqueous environments are sought |

| <i>Demandas Tecnológicas</i> |   |
|------------------------------|---|
| Referencia                   | Título  |
| TRCN20160302001              | A Chinese company is looking for solutions for the concentrated liquid caused by the treatment of landfill leachate     |
| TRKR20160408001              | Request for active camera lens cleaning system for cameras mounted on automobiles                                       |
| TRGR20160309001              | Creation of an e-forest management product for oak forests  |
| TRES20151223004              | Enzymatic peeling of citric fruits  |
| TRES20151210001              | Seeking technical cooperation with sensing engineering companies  |
| TRFR20160321001              | Partners sought in the field of agriculture and civil security to integrate existing sensor-based solutions into drones |
| TRCN20160302001              | A Chinese company is looking for solutions for the concentrated liquid caused by the treatment of landfill leachate     |
| TRCN20160314001              | Integrated instrument for sewage treatment sought   |

| <i>Ofertas Tecnológicas</i> |   |
|-----------------------------|---|
| TOBE20150601001             | A chemical free solution for fouling, scaling and corrosion in industrial processes                                     |
| TOIT20160314002             | Quick release system adaptable to almost any application needed enabling faster, safer, and easier connection.          |
| TOUK20160303001             | Novel pressure monitoring system for high voltage fluidfilled or oil-filled cables                                      |
| TOES20150205002             | Patented device for dynamic ventilation facades   |
| TOFR20160224001             | Expertise in managing industrial hazards using 3D modelling of fluidized dispersions                                    |
| TOBE20160210001             | Innovative & dynamic groundwater skimming solution on offer for soil remediation  |
| TOSI20160226001             | Improved operation of silicon photomultipliers in sensory systems   |
| TOFR20160219001             | Ultraviolet boosting of plant defences – Innovative ultraviolet lamps to stimulate natural defence mechanisms of plants |
| TODE20160314002             | Measurement data management for the water industry  |

|                 |  |
|-----------------|--|
| TOFR20160301001 | <b>Biological solutions for the re-use of CO2 from industrial emissions</b>  |
| TOES20160323001 | <b>Natural solutions to grow food and vegetables without chemical residues</b>   |
| TOTR20160211001 | <b>A Turkish automotive manufacturer offers innovative cheap and enviromentally friendly cooling system through manufacturing agreement and licensing agreement.</b>                                   |
| TOIT20160311001 | <b>A new method for thermal characterization of transparent and semi-transparent materials using outdoor measurements and dynamic simulation</b>   |
| TOIT20160315003 | <b>Innovative industrial plant able to process and convert automotive shredder residue and end of life tyres rubber, into fuel products search partners for commercial agreement and joint venture</b> |
| TOES20151214001 | <b>Production of briquettes for energy recovery of furniture waste with polyurethane foams</b>   |
| TOSE20160303001 | <b>Automatic waste sorting system for portable batteries that enables data management possibilities</b>  |
| TOLT20160226001 | <b>Modelling and simulation of thermolysis (pyrolysis) processes</b>   |
| TOUK20160314001 | <b>Plasma technology for the treatment of hazardous waste offered by a UK company</b>  |
| TOUK20160314002 | <b>Plasma technology for the recovery of base/precious metals and treatment of electronic waste offered by UK company</b>  |
| TODE20160329002 | <b>Opportunities for technical scale experiments generating waste to value innovations at a landfill research center</b>   |
| TOFR20160301001 | <b>Biological solutions for the re-use of CO2 from industrial emissions</b>  |
| TOES20160229001 | <b>Efficient cultivation and harvesting of microalgae</b>  |



***Medio Ambiente:  
Tecnologías Ambientales***

## Research & Development Request

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### **ERA-NET WaterWorks: academic and industrial partners interested in a project of water purification by the innovative recovery processes of phosphorus and metals in selected aqueous environments are sought.**

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#### Summary

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*A Polish research centre specialized in the field of microencapsulation based on natural and modified polymers is looking for partners interested in a project of water purification by the innovative recovery processes of phosphorus and metals in selected aqueous environments under ERA-NET WaterWorks. They are looking for industrial and academic partners associated with an issue of re-use of phosphorus recovered from water as well as with reducing soil and water pollution.*

**Creation Date**            22 March 2016  
**Expiration Date**        23 March 2017  
**Reference**                RDPL20160322001

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#### Details

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##### Description

A Polish centre is engaged in researches on microencapsulation. The group was created in 2002 as an independent organizational unit at local technical university.

The centre is looking for potential partners from both academic and industrial fields who are interested in issue of re-use of phosphorus recovered from water reservoirs. It has already created a partnership with a local company engaged in recycling and waste management.

There is a group of elements such as phosphorus or metals that after the "consumption" are not susceptible to bioconversion processes but may be almost indefinitely recycled. These elements are scattered at every stage of their application, which may cause the depletion of their resources and their pollution of water and soil. According to sustainable development we should seek opportunities to recover phosphorus and metals and closing their cycle of transformation. Phosphorus is an element essential to life and nothing can replace it. Its resources are limited and rapidly depleted, thus alternative methods of its recovery are so important.

Currently available technologies have a low yield and are not economical profitable. The most important alternative sources of phosphorus include municipal sewage and industrial waste products and final products of their processing. Currently implemented are pilot programs and demonstration of technology precipitation of magnesium ammonium phosphate (struvite) from wastewater and sewage sludge and the recovery of phosphorus from the ashes of the burning of sewage sludge. Due to the high investment costs and the diversity of methods and processes of the proposed wastewater treatment technologies are not applicable in industry.

The proposed design will concern the development of innovative and unique systems and methods of binding phosphorus and metals in the aqueous medium with the potential for re-use of such system in further applications. Poland will carry out research on novel hybrid systems for the purification of water from metal cations and phosphorus. Systems will be received on the basis of natural polymers in form of hydrogels with specific adsorbers and microorganisms have the ability to accumulate elements recycled. Systems based on iron compounds are active under reducing conditions, removing phosphate ions in a wide pH range that found both in natural and industrial waters (from 4 to 10) and can be easily industrially applicable in transport and dispensing. The second part will be a design study the possibility of using systems developed for recovery of selected metals and phosphorus in water and its re-use. Efforts will be trying to recover phosphorus and metals from wastewater and products of their processing. By using the proposed hybrid systems will have deposition of deposits in pipes, pumps and the tanks, which occurs when recovering phosphorus by chemical and biological agents, often disqualify these methods due to the very high operating costs. Another object of the research will be the natural reservoirs where the application of the tested systems can bring economic and environmental impact by recovering valuable elements and the reduction of pollution of aquatic ecosystems and slowing down or even fully reverse the process of eutrophication. The resulting products enriched with phosphorus or metals are fully biodegradable and could be used as raw materials for production of phosphate fertilizers or direct application capsules saturated with phosphorus, as the phosphorus fertilizer with slow release, as well as the ability to act as hydrogels and thus improving retention capacity of the soil for water and its availability for plants in a more stabilized conditions.

Framework programme conditions:

[http://www.waterjpi.eu/index.php?option=com\\_content&view=article&id=440&Itemid=1008](http://www.waterjpi.eu/index.php?option=com_content&view=article&id=440&Itemid=1008)

The official deadline for the call: 19/04/2016.

Deadline for EoI: 30/03/2016.

Anticipated duration of the project: 24 weeks.

## Advantages and Innovations

The project will have positive impact on environment. The goal of the project is to evaluate and test the novel methods and innovative recovery processes of phosphorus and metals. Phosphorus is an element essential to life and it cannot be replaced. As its resources are limited its recovery is more and more important and is in line with sustainable development.

## Stage of Development

Proposal under development

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## Keywords

### Technology

|          |  |
|----------|--|
| 05001004 | Organic Chemistry                      |
| 10002007 | Environmental Engineering / Technology |
| 10002011 | Soil and Groundwater Pollution         |
| 10004001 | Industrial Water Treatment             |

### Market

|          |   |
|----------|---|
| 08004004 | Other pollution and recycling related                               |
| 09004008 | Other manufacturing (not elsewhere classified)                      |
| 09005    | Agriculture, Forestry, Fishing, Animal Husbandry & Related Products |

## NACE

M.72.1.1

Research and experimental development on biotechnology

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**Open for EOI :**    **No**

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## Partner Sought

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### Type and Role of Partner Sought

Partners interested in problem of phosphorus recovery from natural and industrial water reservoirs and its further use in production of e.g. fertilizers. A prospective partner should be active in academic or industrial fields.

### Type of Partnership Considered

Research cooperation agreement



## Technology Offer

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# A chemical free solution for fouling, scaling and corrosion in industrial processes

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## Summary

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*A Flemish SME, active in the industrial cleaning sector, developed a combination of nanocoating and ultrasonic treatment that leads to elimination or strong reduction of biofouling, scaling and corrosion, which forms an alternative or additional technology for the treatment of liquids with chemicals. They are looking for industrial partners to cooperate via a commercial agreement with technical assistance.*

**Creation Date** 14 December 2015  
**Expiration Date** 01 March 2017  
**Reference** TOBE20150601001

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## Details

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### Description

A Flemish SME developed an alternative technology to solve problems with fouling, scaling and contamination in general of liquids in industrial processes. The technology is based on a combination of nanocoatings and ultrasonic treatment with the know how of the company. Problems of biofouling, scaling, corrosion and contamination are currently solved with chemicals such as surfactants, inhibitors, dispersants. New regulations on the use of chemicals (REACH) and the constant restriction or abolition of active substances forces the industry to look for alternative solutions. In addition, safer and environmental friendly chemicals seem rarely meet the standards. As environmental regulations make the cooling water healthier, the problems with fouling, scaling, algae growth are more of a concern than in the past.

The Flemish SME offers a solution for this fouling, scaling and microbiological contamination in industrial processes.

A treatment of industrial equipment with a dirt repellent nano-coating results in easy-to-clean surfaces. These surfaces tend to be less contaminated with foul, scale and microbiological organisms.

The coating can be applied on site during a shut down or in house (spare parts). The main properties of this type of coating are a high hydro- and oleophobicity, durability and strong chemical and uv-resistance. The temperature resistance is up to 750°C. The coating is suitable for the food-industry (certificate available). The very strong adhesion to metal substrates leads to a durable solution for unsolved fouling problems.

Although the market for nano coatings is growing rapidly in the OEM the use of nano coatings as a solution for existing industrial challenges is very limited. One of the reasons is the lack of expertise in the application of these coatings in an industrial environment (retrofit).



The SME offers the expertise to industries that are confronted with these type of problems and together with the operational management they define the problem and the way these nano coatings can be applied.

The benefits of this approach for the industry are the following:

- less fouling and remaining deposits during process
- less microbiological contamination
- avoids clogging
- strong reduction or complete elimination of cleaning- and disinfection chemicals
- protection against chemical and bacteriologic induced corrosion
- ...

Following industrial equipment has been successfully treated in the past with nanocoatings: tanks, tubes, separators, cutters, impellers. Test results are expected for headboxes, heat exchangers and moulds.

Strong references are available on demand. The SME is currently looking for industrial partners that are confronted with the problems mentioned above. Partners can be found in several domains:

- food industry
- oil and gaz/refinery/off shore
- paper and pulp
- power plants
- marine
- water management

Because both of the used technologies are still evolving, the Flemish SME offers a custom made solution to the client.

Potential industrial partners are willingly to mount/investigate testpanels in their production process. Perform a feasibility test with a few m<sup>2</sup> for the coating and follow the results. Together with the Flemish client optimisations will be done. If possible compare the actual situation with the new method and help to estimate an ROI.

## Advantages and Innovations

- less fouling and remaining deposits during process
- less microbiological contamination
- avoids clogging
- strong reduction or complete elimination of cleaning- and disinfection chemicals
- protection against chemical and bacteriologic induced corrosion

## Stage of Development

Already on the market

## IPR Status

Secret Know-how

## Profile Origin

Private (in-house) research

## Keywords

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### Technology

|          |  |
|----------|--|
| 07001010 | Micro- and Nanotechnology related to agriculture |
| 08001004 | Food Processing                                  |
| 10002013 | Clean Production / Green Technologies            |
| 10004001 | Industrial Water Treatment                       |

### Market

|          |  |
|----------|--|
| 06001006 | Chemicals and materials                                    |
| 08004003 | Water treatment equipment and waste disposal systems       |
| 08004004 | Other pollution and recycling related                      |
| 09008002 | Water, sewerage, chemical and solid waste treatment plants |

### NACE

|          |                                 |
|----------|---------------------------------|
| C.25.6.1 | Treatment and coating of metals |
|----------|---------------------------------|

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

Industrial partner that is confronted with problems such as scaling, fouling and corrosion that are currently solved by the use of chemicals. The partner wants to limit the use of chemicals by introducing alternative non-chemical based technologies. The partner will be informed of successful cases in the past (references) and is prepared to introduce a test at low cost.

Industrial partner (also SME's) can have 3 roles:

- \* investigate mounted testpanels in the production process
- \* feasibility test : provide 1- several m2 for the coating and follow the results
- > interaction with the Flemish partner to optimise
- \* help with estimation of ROI by comparing the new method with their current situation (requires insight in production and cleaning methods and the figures - with NDA!)

### Type and Size of Partner Sought

>500 MNE, 251-500, SME 51-250, >500

## Type of Partnership Considered

Commercial agreement with technical assistance

## Technology Offer

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# Quick release system adaptable to almost any application needed enabling faster, safer, and easier connection.

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## Summary

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*An Italian SME has developed and patented a quick release system that enables to connect two slings in a fast, safe way, without any specific tool with a 120° degree turn. The pin can be opened/closed by hand up to tens of tons of WLL (Working Load Limit). The system presents a double safety closure, making the accidental opening even with severe vibrations impossible. The company is seeking a partner to cooperate to produce and sell the device and develop new market applications.*

**Creation Date** 15 March 2016  
**Expiration Date** 31 March 2017  
**Reference** TOIT20160314002

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## Details

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### Description

An Italian SME is seeking a partner that produces and markets the quick release system. Preferably an expert in the industry that knows well the market in order to further develop different application to fully satisfy the market's needs and gain a valuable market share from current connection systems that will be obsolete. The company is open for different cooperation suggestions and to negotiations. The patent can also be further developed into new industries that are still unknown to the SME developing it to this day.

Possible fields of application:

- For equipment, as well as assemblable and/or removable accessories, needing a robust, quick and safe connection
- As connecting element of machinery components requiring temporary removal for maintenance.
- As anchoring element in lifting, logistics and transport
- Application on large façades, occasionally removable for maintenance, allowing access inside the building.
- For paneling and temporary fencing, guarantees quick installation and removal
- Safe coupling of the beams when assembling and disassembling sheds and tents in short time
- For scaffoldings and itinerant constructions such as amusement parks, stages for concerts and shows
- Quickly removable connection for superstructures and equipment of large size and weight.

Facilitated periodic maintenance

- Systems of lifting loads with matching belts, ropes, chains
- Rapidly installable connections for movable bridges
- Quickly installable and removable tactic platforms and raised platforms

- Facilitated maintenance in absence of workshops and garages

## Advantages and Innovations

The Innovation of this patent consists in not having to extract the pin horizontally in order to unlatch the device. The pin always remains in place allowing the system to open only with a 120° degree turn on its own axle. The system can be adapted to suit almost any connection link needed.

- **Easiness and Quickness:** The main advantage is that it can be opened by hand (up to several tons of WLL) or without any special tool making it quick, safe, and easy to open/close multiple times. It is very time-cost effective especially for applications where it needs to be opened and closed often.
- **Safety:** is increased because the pin does not detach and the locking-mechanism hinders an unintended opening of the connection link. The risk of workplace-accidents is eliminated by avoiding intermediate stages through an explicit “open” (pin open) or an explicit “close” (pin closed and locked).

## Stage of Development

Available for demonstration

## IPR Status

Patent(s) applied for but not yet granted

## Profile Origin

Other

## Keywords

### Technology

|          |  |
|----------|--|
| 02002009 | Machine Tools                                      |
| 02006001 | Materials, components and systems for construction |
| 02006002 | Construction methods and equipment                 |
| 02009016 | Charging system                                    |
| 10001002 | Assessment of Environmental Risk and Impact        |

### Market

|          |  |
|----------|--|
| 08002007 | Other industrial automation  |
| 08003001 | Machine tools, other metal working equipment (excl. numeric control) |
| 08003002 | Hoists, cranes and conveyors   |
| 08003006 | Power transmission equipment (including generators & motors)         |
| 08003007 | Other industrial equipment and machinery                             |

### NACE

|          |   |
|----------|---|
| C.28.2.2 | Manufacture of lifting and handling equipment |
|----------|---|

Open for EOI : **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

Industry. Companies interested in the quick release system to use it and/or to produce it and/or to sell it and/or to develop new applications.  
Possible fields of activities could be the transportation of goods, (metalworking) industry, construction of facades and scaffoldings.

### Type and Size of Partner Sought

SME 11-50,>500 MNE,251-500,SME 51-250,>500

### Type of Partnership Considered

License agreement  
Technical cooperation agreement



## Technology Offer

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# Novel pressure monitoring system for high voltage fluid-filled or oil-filled cables

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## Summary

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*A UK company has developed a novel pressure monitoring system for high voltage fluid-filled electricity cables (FFC's), which offers real-time and predictive monitoring of cable insulation. The company is able to adapt the system to specific needs and offer installation and training, and is seeking electricity transmission and/or distribution companies that use oil/fluid-filled cables to retrofit the system into their existing network under a commercial agreement with technical assistance.*

**Creation Date** 03 March 2016  
**Expiration Date** 09 March 2017  
**Reference** TOUK20160303001

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## Details

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### Description

Oil or fluid filled cables currently present a number of challenges to electricity companies. These ageing assets need to be checked regularly as oil leaks from them can reduce insulation levels to dangerous levels and can contaminate ground and water courses. Additionally, ongoing maintenance can result in the disruption of traffic and businesses.

The pressure monitoring system developed by the UK Company provides cable asset managers with information to more ably manage these events via an automated reading of pressure along a FFC route, which includes a suite of alarms and an algorithm to provide early warning of leakage. This predictive monitoring allows maintenance works to be more conveniently scheduled, while specific cable sections can be identified for further work on leak resolution.

The company is seeking to appoint contacts from the following countries that might already have underground, oil or fluid filled high voltage cable systems, which may benefit from this system under a commercial agreement with technical assistance.

The countries are:

Austria  
Belgium  
Bulgaria  
Croatia  
Cyprus  
Czech Republic  
Denmark  
Finland  
France

Germany  
Greece  
Guernsey  
Hungary  
Iceland  
Ireland  
Italy  
Macedonia  
Malta  
Netherlands  
Norway  
Poland  
Portugal  
Romania  
Russia  
Slovakia  
Slovenia  
Spain  
Sweden  
Switzerland  
Turkey

The system can be retro-fitted and the company is offering a range of ongoing support, including

- Server hosting
- Secure remote web access
- Communications service management
- Customer systems integration tools
- Procurement, installation and commissioning
- Staff Training

## **Advantages and Innovations**

This asset management tool offers the following advantages:

- Automated reading of pressure along a FFC route
- Early warning of leakages via algorithm alarms
- Additional warning of leakage via threshold alarms
- Online access to data 24/7 for fault monitoring
- Allows prioritisation of maintenance works
- Provides cabinet access control records / alarms
- Option to monitor, temperature, current & contacts
- Isolates cable section for leak location (e.g. perfluorocarbon tracer)
- Gives positive proof of leakage/damage incidents
- Demonstrates best practice environmental control

## **Stage of Development**

Already on the market

## **IPR Status**

Copyright

## **Profile Origin**

Other

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## Keywords

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### Technology

|          |  |
|----------|--|
| 01002004 | Embedded Systems and Real Time Systems       |
| 03004004 | Electrical Engineering/ Electrical Equipment |
| 09001009 | Sensor Technology related to measurements    |
| 09003    | Electronic measurement systems               |
| 10002010 | Remote sensing technology                    |

### Market

|          |   |
|----------|---|
| 03003    | Power Supplies                                  |
| 03007002 | Other measuring devices                         |
| 03007003 | Other analytical and scientific instrumentation |
| 08001014 | Lubricants and functional fluids                |
| 08002002 | Industrial measurement and sensing equipment    |

### NACE

|          |                             |
|----------|-----------------------------|
| D.35.1.2 | Transmission of electricity |
| D.35.1.3 | Distribution of electricity |

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

- Type of partner sought: Electricity transmission and/or distribution company
- Specific area of activity of the partner: Use of oil or fluid-filled cables
- Task to be performed by the partner sought: Integrate and adapt the UK company's novel pressure monitoring system to their existing network of underground cables.

### Type of Partnership Considered

Commercial agreement with technical assistance

## Technology Offer

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### Patented device for dynamic ventilation facades

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#### Summary

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*A Spanish inventor has patented a ventilation and dehumidification device of double sheet facades with air chamber. It can be adjusted depending on weather conditions, from inside the house, and prevents condensation in the air cavity, resulting in energy saving and cosy indoor environments. It has low manufacturing and installation costs compared to traditional solutions. This device is offered for companies interested in a license agreement*

**Creation Date**      05 February 2015  
**Expiration Date**    14 March 2017  
**Reference**            TOES20150205002

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#### Details

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##### Description

A Spanish inventor has patented device for ventilation and dehumidification of double sheet facades with air cavity. This device is easily adjustable depending on weather conditions from inside the house, allowing it to be open in summer and closed in winter. This device makes the facade work as a ventilated in summer (the most efficient at high temperatures), and as a closed double sheet in winter (the most efficient at low temperatures).

The principle is very simple. The air in the cavity is renewed by the draft generated by "chimney effect" when a device is installed in the bottom of the facade and another at the top. The user simply turns the knob to "open" or "closed" position and ventilates or isolates the air cavity.

Its cylindrical or parallelepiped design and the possibility of manufacturing it in different colours and designs allow an aesthetic integration into the facade (for example replacing a brick in a face brick facade).

Significantly increases comfort in homes, especially in summer, because it prevents the interior brick sheet from heating and continue releasing this heat to the house even hours after having received solar radiation.

It can be made of any material capable of with standing weather conditions, although aluminium or plastic is recommended. Given its small size, manufacturing and installation costs are modest, being an almost negligible in the total cost of the facade.

It's suitable for both new constructions and rehabilitations. This energy saving measure has a huge potential market. For example Spain has approximately 25,000,000 homes, and about 80% of them have double sheet facades.

The most important advantage is that provides you the most energy efficient facade in the market (the adjustable ventilated double sheet) at a cost almost similar to the normal double

sheet (not ventilated) facade, which is a 50% cheaper than the ventilated type. it makes available to any user one of the few dynamic, adjustable, facades that exist at a minimal cost, that will rapidly pay-off thanks to the energy savings generated.

It's also an environmental protection measure since it substantially reduces CO2 emissions to the atmosphere. (Horizon2020's purpose), there for its implementation is widely favoured and even subsidies are offered to those particulars or communities who undertake such actions.

Since both types of facade, double sheet and ventilated double sheet cavity, are already tested and standardized, this patent doesn't need new research projects, what it does is merge the advantages of both facades (low cost and adjustable ventilation).

The company is looking for companies to transfer of rights involving the authorization by the licensor to use the licensed material by the licensee, in return for a fee or share of royalties.

## Advantages and Innovations

Currently there is no similar product on the market. There are only devices that remain always open to avoid condensation in the air chamber, or expensive systems for opening and closing ventilated facades that can not be adjusted by each apartment owner in a building, and that can not be applied to existing double sheet facades unless another sheet of ventilated facade is built over the existing one, which would excessively increase rehabilitation costs.

This is the only affordable dynamic facade (allows us to individually adjust it in our home according to outside weather conditions) which allows control of two climatological elements that impact on the facades; temperature and humidity.

As main advantages:

- Transforms a traditional facade or double sheet into a ventilated, individually adjustable, one of the best energy efficient and low cost on the market.
- It can be used in both new projects and existing facades.
- Reduced size.
- Reduced manufacturing cost and installation.
- By venting the air chamber, each user can control both the temperature and humidity of it.
- It can be used in all type of buildings: commercial, apartments, town houses, detached properties, etc.
- for energy saving rehabilitation works.
- Great energy savings for the user and, given its low cost, very rapid pay-off.
- Reduced CO2 emissions, therefore installation is subsidized in many countries.
- Increased thermal comfort inside home.

## Stage of Development

Proposal under development

## IPR Status

Patents granted

## Profile Origin

Private (in-house) research

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## Keywords

### Technology

|          |  |
|----------|--|
| 02006001 | Materials, components and systems for construction |
| 04007001 | Energy management                                  |
| 04007004 | Thermal insulation                                 |
| 10002007 | Environmental Engineering / Technology             |

### Market

|          |   |
|----------|---|
| 09007001 | Construction companies  |
| 09007002 | Manufacture of construction materials, components and systems |
| 09007003 | Distribution of building products and systems                 |
| 09007004 | Engineering and consulting services related to construction   |
| 09007005 | Facility management companies                                 |

### NACE

|          |   |
|----------|---|
| C.22.2.9 | Manufacture of other plastic products                     |
| C.25.1.1 | Manufacture of metal structures and parts of structures   |
| F.41.2.0 | Construction of residential and non-residential buildings |
| F.43.3.9 | Other building completion and finishing                   |
| M.71.1.1 | Architectural activities                                  |

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**Open for EOI :** **Yes**

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## Partner Sought

### Type and Role of Partner Sought

Potential Partner: Investor, construction company, manufacturer or distributor of construction products, energy efficiency company, manufacturer of facade products.

Offering to potential customers: License Agreement.



## **Type and Size of Partner Sought**

SME 11-50,R&D Institution,SME <10,>500 MNE,251-500,SME 51-250,>500

## **Type of Partnership Considered**

License agreement

## Technology Offer

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# Expertise in managing industrial hazards using 3D modelling of fluidized dispersions

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## Summary

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*An innovative French SME has developed expertise in managing industrial hazards using 3D modelling of fluidized dispersions to model the sudden release of hydrocarbons into the environment following the rupture of a storage tank, or fluids spread into the atmosphere following leakage or pipe breaches. The SME can model the dispersions of fluid on complex plants using its proprietary cutting edge 3D software developed on its own. Technical cooperation is offered.*

**Creation Date** 17 March 2016  
**Expiration Date** 21 March 2017  
**Reference** TOFR20160224001

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## Details

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### Description

This French SME can model fluidized industrial hazards including hydrocarbons and gas dispersions but also evaporation of volatile liquid slick thanks to a 3D proprietary software developed by its R&D team.

Regarding hydrocarbons, when they are suddenly released into the environment following the rupture of a storage tank, like a wave, the SME can model the wave impacts, such as overpressure and overflow.

Regarding atmospheric dispersion of the gas following, for example, an explosion of gas connections, the SME can precisely 3D model the atmospheric dispersion in the vicinity of the explosion and the surrounding areas taking into account the wind or climatic evolutions.

The company can also 3D model the combined scenario of gas leakage and hydrocarbon dispersion.

The SME proprietary software provides powerful digital tools that are at the cutting edge of technology and continuously being updated. It is currently developing robust and reliable 3D modelling software to optimise calculation times, for accurate numerical simulations using 3D finite element meshes.

Opportunity exists for technical cooperation with industrial partners interested in risk management and modelling of complex physical phenomena.

### Advantages and Innovations

The company's expertise offers the following advantages:

- \* Both video and cartographic 3D modelling
- \* 3D modelling of complex industrial plants
- \* IT capacities for FE volume meshing a wide range of industrial hazards

- \* Capacities to 3D model the fluids temperature and viscosity
- \* Continuous upgrading of IT software

## Stage of Development

Already on the market

## IPR Status

Secret Know-how

## Profile Origin

Other

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## Keywords

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### Technology

01004016

Analysis Risk Management

10001002

Assessment of Environmental Risk and Impact

### Market

08004

Pollution and Recycling Related

08006

Industrial Services

### NACE

K.66.2.1

Risk and damage evaluation

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

The ideal partners are industries and application research centres.

Specific area of activity of the partner: risk management, modelling of complex physical phenomena, environment-related risk management

Task to be performed by the partner sought: conception of a mutual interface for modelling of phenomena software, transfer of knowledge in fluids management

### Type and Size of Partner Sought

251-500,SME 51-250,>500

## Type of Partnership Considered

Technical cooperation agreement

## Technology Offer

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# Innovative & dynamic groundwater skimming solution on offer for soil remediation

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## Summary

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*A Belgian SME, active in the soil remediation, developed a patented solution to eliminate, by vacuum skimming, the pollutants floating on the aquifers. The solution has some major competitive advantages versus other skimming technics such as the adaptability to level variations or to free phase texture. The company does guaranty the elimination of 100% of any free phase present into the wells. They're looking for commercial agreements with technical assistance or service agreements in Germany.*

**Creation Date** 10 February 2016  
**Expiration Date** 03 March 2017  
**Reference** TOBE20160210001

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## Details

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### Description

A Belgian SME, active in the soil remediation by skimming, is looking for partners in Germany.

Active in the sector for more than 15 years, the company is specialised in on-site elimination of free phase LNAPL (Light Non Aqueous Phase Liquid) supernatant on an aquifer. Indeed, they spent few years to develop a patented technology that enables to literally suck up the pollutants while pumping very little water.

This innovative solution, already on the Belgian, French and South African markets, is complementary to others decontamination technologies such as soil or water treatments. Therefore, it can be easily integrated into a comprehensive solution for the remediation of a polluted site.

Concretely, after an accident or historical hydrocarbon soil pollution, the polluted site has to be cleared. The solution of the Belgian company is applicable when the LNAPL has reached the aquifer, creating a floating free phase to be eliminated. Another major requirement is that the soil must be permeable to enable the product free phase to reach the wells.

Actually, the solution includes:

- 2 or 4-inch wide skimmers
- a pumping unit for 1 to 40 wells
- a storage unit

A skimmer is composed of different parts. The main one being a floater. In practice, when the skimmer is placed into the well, the floater positions itself at the intersection of the water and the pollutants.

The great value of the Belgian company patented skimmers resides into some major

competitive advantages:

- Floater follow the variation of the groundwater level to up to 2.5m
- Eliminate very thin free phase
- Eliminate very viscous free phase (up to like liquid honey)
- Very little water pumped

The pumped product is sent it to a storage unit.

According to the soil permeability, the Belgian company determines the frequency of the pump cycles.

As an option, the installation can be anti explosion proof and, effluent water and air can be treated through active carbon.

Today, the company is looking for partnering opportunities in Germany. The partnerships sought could be operated within the framework of commercial agreements with technical assistance or services agreement.

Actually, the company is mainly looking for sanitation companies on the lookout for skimming alternatives.

The Belgian company would rent the equipment and transmit its know-how to the partner. So, the partner would have a role of project manager for the implementation and would ensure maintenance, reporting, measures, client contacts, etc.

They're also looking for environmental consultancy firms interested in recommending the technology to clients in the need.

Here are some references:

- Renault
- Audi
- Electrabel - GDF Suez
- BP
- TOTAL
- Kuwait Petroleum Belgium (Q8)

Here are some environmental consultancy firms:

- VEOLIA
- SITA – Suez Environnement
- AECOM

## Advantages and Innovations

The technology:

- is a unique dynamic skimming technology for eliminating 100% of the free phase using vacuum suction
- eliminates very thin free phase
- eliminates very viscous free phase (up to like liquid honey)
- allows a continuous adjustment of the floater to the changes of groundwater level up to 2.5m variation
- pumps a very low volume of water so, little effluent volume to treat
- is insensitive to dirt and needs very low maintenance
- can be connected of up to 40 wells per pumping unit
- has a very low energy consumption

## Stage of Development

Already on the market

## IPR Status

Patents granted



## Profile Origin

Private (in-house) research

## Keywords

### Technology

|          |  |
|----------|--|
| 10002006 | Ecology                                |
| 10002007 | Environmental Engineering / Technology |
| 10002011 | Soil and Groundwater Pollution         |
| 10002012 | Remediation of Contaminated Sites      |
| 10004001 | Industrial Water Treatment             |

### Market

|          |                                       |
|----------|---------------------------------------|
| 06001002 | Production services                   |
| 06001005 | Storage and transportation            |
| 06001006 | Chemicals and materials               |
| 06001007 | Other oil and gas                     |
| 08004004 | Other pollution and recycling related |

### NACE

|          |   |
|----------|---|
| E.37.0.0 | Sewerage  |
| M.72.1.9 | Other research and experimental development on natural sciences and engineering |

**Open for EOI :** **Yes**

## Partner Sought

### Type and Role of Partner Sought

- Type of partner sought:  
Sanitation companies
- Specific area of activity of the partner:  
Environment - groundwater remediation, soil decontamination, brownfield remediation, etc.
- Task to be performed by the partner sought:  
The partner should be on the lookout for skimming alternatives to treat contaminated

groundwater.

As sanitation company, the partner would have a role of project manager for the implementation within the framework of a commercial agreement with technical assistance or a service agreement.

The partner could also be a consultancy firm and, as environmental consultancy firm, the role would be to recommend the technology to clients in the need.

## **Type of Partnership Considered**

Services agreement

Commercial agreement with technical assistance

## Technology Offer

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# Improved operation of silicon photomultipliers in sensory systems

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## Summary

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*A Slovenian research institute and a Slovenian SME jointly developed a sensory system based on silicon photomultipliers (SiPM) useful in research and industrial measurement systems based on SiPM. The system improves the operation of SiPM by reducing the systematic error caused by sensor saturation. License agreement and/or technical cooperation are offered to companies interested in development of new products, or improving existing products with built-in precise SiPM-based sensory systems.*

**Creation Date** 26 February 2016  
**Expiration Date** 10 March 2017  
**Reference** TOSI20160226001

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## Details

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### Description

A Slovenian research institute and a Slovenian SME have developed a sensory system based on silicon photomultipliers (SiPM) capable of eliminating the systematic error due to the sensor saturation from the output signal.

Typical sensory systems based on SiPM are usually composed of SiPM sensors connected to a multichannel analyser that collects, and enables further analysis of, the signal from these sensors. Since the SiPM sensors consist of thousands of microcells, the statistics of the binomial saturation allows for a relatively modest relative uncertainty in the number of temporarily inhibited microcells.

The device developed by the Slovenian researchers represents a sensory system consisting of SiPM sensors connected to a multichannel analyser through a fast analogue-digital converter and correction processor. The analogue-digital converter converts the electrical signal to digital signal (a series of numbers), which is further processed in the correction processor. This processor generates another series of numbers, corrected to such values that would have been obtained from the sensor, if there was no binomial saturation. Thus, proportional representation of the actual light incident on the sensor is reflected. The corrected signal is then further processed in a multichannel analyser that prepares a list with records of impulse amplitudes.

The correction processor of the device compensates the binomial saturation in such a way that in each suitably chosen short time interval the processor executes the following: (1) prepares an estimate on the number of microcells that are still inhibited, on the basis of known sensor properties, and based on estimation of the number of previously inhibited microcells prepared during previous time intervals; (2) prepares an estimate on the current sensor sensitivity, which is proportional to the number of currently active microcells. From these data, an estimate on the

actual light input to the sensor is prepared, by taking into account the reduced sensor sensitivity due to the number of inhibited microcells.

The device is directly useful in further processing in research and industrial measurement systems, in medical diagnostic devices and cameras, security systems and all other systems, which have built-in silicon photomultipliers (e.g. in the fields of hazard and threat detection, bi-photonics, high energy physics, LiDAR surveying technology, and so on).

Since the technology aims to reach its full potential in an industrial setting wherever precise sensory SiPM is needed, industrial partners are sought. The technology is in the field of finer mechanics, therefore technical cooperation is sought in order to facilitate continuous development rather than just routine production. License agreements and / or agreements for technical cooperation will enable the researchers to maintain their focus on the research behind the technology whereas up-scaling to industrial level will be carried out in the industrial partner's setting.

The technology was developed in a close collaboration between a Slovenian institute and a Slovenian SME and the knowledge behind the presented device relates to both: the assembly of the device and its operation as well as the algorithms based on correction tables were prepared by a systematic search of parametric space of amplitudes and timestamps. The researchers from the Slovenian institute are nuclear physicists with competences in spectroscopic measurements of photons by high resolution detectors and active members of global nuclear laboratory scientific networks participating in the planning, execution and analysis of coincidence experiments with polarised electron beams and polarised targets, whereas the Slovenian SME is a top global semiconductor company known for its processor expertise, software and system-wide view competences.

## Advantages and Innovations

In the regime of piled-up pulses of light the SiPMs may be subjected to conditions where:

a) A significant proportion of SiPM microcells have been excited by light within a short period of time. Consequently the overall light sensitivity of a SiPM sensor for further incident light is significantly reduced, which is known as "binomial saturation" resulting in non-linear response of the system and its reduced dynamic range;

b) High occurrence rate of the measured light flashes causes overlapping of flashes over time. Consequently the gain of the sensor depends not only on the brightness of the pulse being measured, but also on the temporal dynamics and amplitudes of the most recent preceding pulses.

Binomial saturation and overlapping of flashes over time are compensated by introducing the correctional processor unit into the sensory system device. The analogous signal from SiPM is converted to digital and corrected based on pre-prepared estimation for temporary detector sensitivity.

The technical solution reduces the systematic measurement error in determining the intensity of brightness of frequent flashes of light and improves the operation of sensory systems, which have built-in silicon photomultipliers, such as research and industrial measurement systems, medical diagnostic devices and cameras, security systems etc.

## Stage of Development

Prototype available for demonstration

## IPR Status

Patent(s) applied for but not yet granted

## Profile Origin

National or Regional R&D programme

## Keywords

### Technology

|          |  |
|----------|--|
| 01003008 | Data Processing / Data Interchange, Middleware |
| 02009009 | Sensors for cars and transport                 |
| 05003002 | Optics   |
| 06001013 | Medical Technology / Biomedical Engineering    |
| 10002010 | Remote sensing technology                      |

### Market

|          |  |
|----------|--|
| 02007012 | Medical/health software                      |
| 02007015 | Integrated software                          |
| 03007002 | Other measuring devices                      |
| 08002002 | Industrial measurement and sensing equipment |

### NACE

|          |   |
|----------|---|
| M.72.1.9 | Other research and experimental development on natural sciences and engineering |
|----------|---|

**Open for EOI :** **Yes**

## Partner Sought

### Type and Role of Partner Sought

Industrial partners involved in production and development of new or existing products with incorporated precise sensory SiPM based systems are sought to adjust it to industrial needs. Licence agreements and/or technical cooperation agreements are sought. The possibility of joint applications to EU calls is not excluded.

### Type and Size of Partner Sought

SME 11-50, SME <10,251-500, SME 51-250, >500

### Type of Partnership Considered

License agreement  
Technical cooperation agreement

## Technology Offer

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# Ultraviolet boosting of plant defences – Innovative ultraviolet lamps to stimulate natural defence mechanisms of plants

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## Summary

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*A French laboratory developed a non-chemical and environmentally safe method based on new ultraviolet lamps that is able to stimulate plant natural defense systems from serious damages of pathogens. The laboratory is seeking any company interested in plant protection, natural defenses stimulators and biocontrol, and is offering a license agreement or research cooperation to enhance the prototype.*

**Creation Date**            22 February 2016  
**Expiration Date**        08 March 2017  
**Reference**                TOFR20160219001

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## Details

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### Description

A French public research laboratory involved in fruits and vegetables physiology has developed a highly effective physical method for stimulating the plant defense mechanisms based on very short exposure times with innovative ultraviolet (UV) lamps.

Reducing risks for human health and the environment is a major issue. The “EcoPhyto Plan” was launched by the French Government to reduce by 50% the use of pesticides in France by 2025 while maintaining high yields as well as high quality of agricultural produces. Farmers need new efficient methods to control pests and diseases of crops while reducing the use of pesticides.

Pesticides are culture/pathogen dependent and toxic while biochemical plant stimulation products are complicated to use and highly regulated.

The new UV lamps maximize UV positive effects and show higher efficacy than continuous lighting at similar doses.

This method could be applied for stimulation of defenses of plants as well as plant organs in natural environments, open-field conditions, greenhouses, vertical farms, parks and post-harvest facilities.

The research team is now looking for an industrial partner interested in licensing-in the technology (License Agreement). In particular they are looking for a market player in plant protection, natural defenses stimulators or biocontrol. The objective is that the company develops and commercializes an innovative UV solution for crop protection.

The research team is also open to Research Cooperation Agreement to pursue the development of the technology.

## Advantages and Innovations

- Very fast and efficient treatment,
- Environmentally safe and absence of toxic residues on crops,
- Very suitable for field application,
- Possible application from seed to post harvest,
- Systemic effect: no need to treat the entire plant,
- Versatile method: broad range of pathosystems,
- Favorable regulatory environment: no specific approval is required,
- No problem of formulation,
- Physical method compatible with chemical or biological treatments

## Stage of Development

Under development/lab tested

## IPR Status

Patent(s) applied for but not yet granted

## Profile Origin

National or Regional R&D programme

## Keywords

### Technology

|          |                                    |
|----------|------------------------------------|
| 07001001 | Agriculture Machinery / Technology |
| 07001003 | Biocontrol                         |
| 07001004 | Crop Production                    |
| 08002003 | Safe production methods            |
| 10002006 | Ecology                            |

### Market

|          |   |
|----------|---|
| 05008    | Agro and Marine biotech   |
| 05009004 | Plant health  |
| 09005    | Agriculture, Forestry, Fishing, Animal Husbandry & Related Products |

### NACE

|        |                                |
|--------|--------------------------------|
| A.01.1 | Growing of non-perennial crops |
| A.01.2 | Growing of perennial crops     |
| A.01.3 | Plant propagation              |

**Open for EOI :**    **Yes**



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## Partner Sought

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### Type and Role of Partner Sought

The research team is currently looking for an industrial partner interested in licensing-in the technology. In particular they are looking for a market player in plant protection, natural defenses stimulators or biocontrol. The objective is that the company develops and commercializes an innovative UV solution for crop protection.

The research team is also open to Research Cooperation Agreement to pursue the development of the technology.

### Type and Size of Partner Sought

SME 11-50, SME <10,>500 MNE, 251-500, SME 51-250,>500

### Type of Partnership Considered

License agreement  
Research cooperation agreement

## Technology Offer

# Measurement data management for the water industry

## Summary

*A small German company offers a management system for water measurement data that can be applied in many areas, e.g. in monitoring of rain, floods, water and wastewater plants, hydrology and others. Advantages include higher resolution and the possibility to combine data from many different sources. Partners are sought to implement the system within commercial agreements with technical assistance.*

|                        |                 |
|------------------------|-----------------|
| <b>Creation Date</b>   | 14 March 2016   |
| <b>Expiration Date</b> | 17 March 2017   |
| <b>Reference</b>       | TODE20160314002 |

## Details

### Description

A small German company is specialised in management solutions for measurement data in the field of hydrology and environmental protection. Their activities range from basic evaluation over data processing and to hydrologic expert reports.

The company develops measurement data management systems for all water applications, such as urban drainage, groundwater, precipitation, climatology or water quality. The systems render possible to administrate indicators of any parameter.

They offer newly optimised standard software for time series information systems. This is more user-friendly and more easily configured now. It is independent from operating systems.

The software can be tailored to any activity profile. The administrator can show or hide individual functions and thus enable many applications, such as:

- Simple system with basic functions
- Tool to visualize (with a map)
- Expert system with extensive correction – analysis - correction function.

It is possible to access time series any time. Several hydrographs of different parameters can be shown in one graph. The various time series can be linked. Standard reports as well as special evaluations are available. Selected data can be published via internet.

Statistics functions are manifold to describe, e.g., low tide analysis, peak discharge, heavy rain analysis and others.

Partners from the water sector, such as engineering firms, utilities or public sector are sought for commercial agreements with technical assistance to implement the system and adjust it to their requirements with the German company's assistance and consultancy.

## Advantages and Innovations

- Unlike commonly used systems, heterogeneous data from different sources can easily be processed
- Higher resolution than commonly used systems. Detailed data are stored over a long period of time
- Expert system can be tailored to user specifications
- Very user-friendly through ongoing further development and optimisation

## Stage of Development

Already on the market

## IPR Status

Secret Know-how

## Profile Origin

Private (in-house) research

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## Keywords

### Technology

|          |                                |
|----------|--------------------------------|
| 02009018 | Measurement devices            |
| 10002011 | Soil and Groundwater Pollution |
| 10004    | Water Management               |
| 10004002 | Municipal Water Treatment      |
| 10004005 | Rain Water                     |

### Market

|          |  |
|----------|--|
| 02007001 | Systems software   |
| 08002002 | Industrial measurement and sensing equipment               |
| 09008002 | Water, sewerage, chemical and solid waste treatment plants |

### NACE

|          |   |
|----------|---|
| C.26.5.1 | Manufacture of instruments and appliances for measuring, testing and navigation |
|----------|---|

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

Partners are sought for commercial agreements with technical assistance:

Type:

Engineering companies, public sector, municipalities, water treatment plant operators

Area of activity of partner:

Monitoring or operation of water or wastewater plants, monitoring of rain, flood and other water parameters, hydrology

Tasks to be performed:

Implement the system. The German company will offer support and consultancy in tailoring the system to the requirements and can offer related services where required.

### Type of Partnership Considered

Commercial agreement with technical assistance

## Technology Offer

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# Biological solutions for the re-use of CO<sub>2</sub> from industrial emissions

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## Summary

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*A French research institute developed an innovative approach based on biological solutions for the re-use of CO<sub>2</sub> emitted by industry. They are looking for companies, R&D institution or university in petrochemical industry, cement plant, wine cooperative or food processing industry for technical cooperation, research agreement or license agreement to adapt the solution to specifications of industries.*

**Creation Date** 01 March 2016  
**Expiration Date** 05 April 2017  
**Reference** TOFR20160301001

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## Details

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### Description

CO<sub>2</sub> (carbon dioxide) is the primary greenhouse gas emitted through human activities with 36 Mds tons emitted in 2014. As such, solutions to limit emissions and / or capture and store CO<sub>2</sub> have become a major environmental concern. One possibility is to consider CO<sub>2</sub> emitted from industrial plants as a raw material for chemicals production, turning what was considered as a waste into one of the largest carbon feedstocks for the production of fuel or platform molecule.

Nonetheless, CO<sub>2</sub> has a strong chemical stability provided by the high dissociation energy of C (carbon) =O (oxygen) bond. Therefore, the activation of this molecule requires efficient and selective catalysts that are challenging for industrial.

A french research institute was created in 1994. Its main activities are a pluridisciplinary research focused on the elaboration and characterization of new materials, especially membranes. The area of skills extends to membranes processes in domains such as effluent treatments, gas separation, biotechnology applied in food and health science.

This french research institute propose an innovative approach to this problem based on biological solutions. A nonpathogenic microbial population is used to reduce directly and selectively CO<sub>2</sub> into formate, a basic form of formic acid. Results show that a significant formate production can be obtained at 30°C and atmospheric pressure (soft conditions) and prove that this new bioprocess can be one of the effective solutions for the atmospheric CO<sub>2</sub> problematic. In addition, formate is a particularly interesting molecule since it can be used as a liquid vector for the storage of H<sub>2</sub> (dihydrogen) or as a precursor for the synthesis of biopolymers and methanol.

They are looking for companies, R&D institution or university in petrochemical, cement plant, wine or food processing sector to adapt this innovative solution to specification of partner's

sector unknown by the research institute. The collaboration considered could be a technical cooperation, research cooperation agreement or license agreement.

## Advantages and Innovations

- Biological solutions
- Soft conditions
- Effective solution for the atmospheric CO2 problematic

## Stage of Development

Available for demonstration

## IPR Status

Patent(s) applied for but not yet granted

## Profile Origin

Other

## Keywords

### Technology

|          |  |
|----------|--|
| 06006012 | Bioprocesses                           |
| 10002003 | Capture and Storage of CO2             |
| 10002007 | Environmental Engineering / Technology |
| 10002013 | Clean Production / Green Technologies  |
| 10003007 | Waste to Energy /Resource              |

### Market

|          |                                  |
|----------|----------------------------------|
| 06003009 | Biomass and Biofuels             |
| 07003    | Food and Beverages               |
| 08001018 | Polymer (plastics) materials     |
| 08001019 | Speciality/performance chemicals |
| 08004    | Pollution and Recycling Related  |

### NACE

|          |   |
|----------|---|
| M.72.1.9 | Other research and experimental development on natural sciences and engineering |
|----------|---|

**Open for EOI :**    **Yes**

## Partner Sought

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### Type and Role of Partner Sought

- Type of partner sought : companies, R&D institution or university wanting to develop the re-use of CO2 emitted by its own activity
- Specific area of activity of the partner : petrochemical industry, cement plant, wine cooperative, food processing industry
- Task to be performed by the partner sought : Co-development and license agreement of the solution according to specifications of the industrial

### Type and Size of Partner Sought

SME 11-50, University, R&D Institution, >500 MNE, 251-500, SME 51-250, >500

### Type of Partnership Considered

- License agreement
- Technical cooperation agreement
- Research cooperation agreement



## Technology Offer

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# Natural solutions to grow food and vegetables without chemical residues

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## Summary

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*A Spanish company has developed the technology to obtain residue-free fruit and vegetables by using innovative biostimulant products formulated from plant and mineral extracts. They look for partners interested in developing new solutions according to specific needs and/or partners interested in jointly tackling R&D ideas or projects for new products or applications. Research cooperation, technical cooperation or techno-commercial agreements could be established.*

**Creation Date** 23 March 2016  
**Expiration Date** 06 April 2017  
**Reference** TOES20160323001

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## Details

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### Description

The company offering the solutions is established in Spain. They cover all the steps of the process by dedication of their resources to research, development, innovation, manufacturing and marketing of natural fertilizers, biopesticides and biofungicides based on plants and minerals extracts. They also provide technical advice regarding the use of their products in eco/bio agriculture, which respect the environment and allow farmers to produce their crops at competitive prices and avoiding the use of chemical pesticides.

The natural solutions guarantee the growth of food vegetables that will not have any chemical residue. The company develops the necessary technology to obtain chemicals free fruits and vegetables by using innovative biostimulant products formulated from botanic and mineral extracts. The produced mixes cover all the growing needs effectively so the obtained products allow the farmers to distinguish themselves, to increase their profitability, to open up to new markets with greater added value and to sell high quality healthy food for consumers at large at a competitive price.

Environmentally-friendly, the company studies and respects always the law in each country where their products are sold. So, prior to market, any product is registered in the correspondent public organization, abiding all the legal requirements.

The competitiveness of the customers is very important for the company members, so they accompany the farmers in the process of acquiring the required capabilities to control pests and diseases of crops without chemicals, at a similar cost per hectare than conventional plantations. Thereby, they provide added value to the agroindustry by supporting the obtaining of nice and strong crops, at the same price, and healthier than the competitors' products. The company opens up new markets for agro industries that intend to grow and harvest healthy, high-quality crops, supplying them to the consumer at a competitive price.

The products can be sorted into three distinct lines:

- Crop nutrition: the fertilization of crops using these natural solutions guarantees respect for the crop itself, the consumer and the environment. This line includes rooting compounds, amino acids and deficiency correctors, along with other items.
- Plants resistance to problems arising from excess moisture: these products are all suitable to be used in organic, integral or residue-free agriculture. They are extremely effective and safe for crops and consumers alike.
- Plants resistance to pests and diseases: the products concerned offer the properties required for the endogenous control of certain pests. These products are not subject to safety time-limits, and are suitable for use in organic or zero-residue farming. They also respect people and the environment.

Currently the company is looking for, on the one hand, partners with specific needs in the development of their environment-friendly products to obtain healthy food vegetables without chemical residues and, on the other hand, companies or other organization interested in searching together ideas for R&D projects and new developments. Research cooperation, technical cooperation or techno-commercial agreements are expected to be reached.

## Advantages and Innovations

Crops treated with conventional products generate food with chemical wastes that may be harmful to the health of any consumer. In many cases the established safety limits are not respected by the producers and this may have a very negative impact for both, humans and animals. Furthermore these bad and very widespread practices contribute to the destruction of the biodiversity and the environment.

The use of natural raw materials, together with botanicals and minerals for the production of fertilizers, bio-pesticides and bio-fungicides products, produces profitable growing safe food, with high quality and suitable for all markets.

The products the company develops are absolutely natural for the protection of crops and allow the farmers to produce profitable fruits and vegetables free of harmful residues, feature that greatly increases quality and provides the suitability for distribution in all the markets.

The products provide improved crop quality with full respect for human health and the environment, and they also contribute to stimulation, recovery and maintenance of the natural fertility of the soil, helping to protect native plants and animal species.

## Stage of Development

Already on the market

## IPR Status

Secret Know-how, Granted patent or patent application essential, Trade Marks, Copyright

## Profile Origin

National or Regional R&D programme

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## Keywords

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## Technology

|          |  |
|----------|--|
| 07001003 | Biocontrol                             |
| 07001004 | Crop Production                        |
| 07001005 | Horticulture                           |
| 07001006 | Pesticides                             |
| 10002007 | Environmental Engineering / Technology |

## Market

|          |   |
|----------|---|
| 07003002 | Health food   |
| 08001022 | Agricultural chemicals  |
| 09005    | Agriculture, Forestry, Fishing, Animal Husbandry & Related Products |

## NACE

|          |   |
|----------|---|
| A.01.1.3 | Growing of vegetables and melons, roots and tubers        |
| A.01.6.1 | Support activities for crop production                    |
| C.20.1.5 | Manufacture of fertilisers and nitrogen compounds         |
| C.20.2.0 | Manufacture of pesticides and other agrochemical products |
| Q.86.9.0 | Other human health activities                             |

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

- Type of partner: company, research/technology centre, university
- Activity of the partner: manufacturer or user of products to grow vegetable foods, researchers in crop growth issues
- Role of the partner sought: joint development of new products, joint sharing of interesting ideas/knowledge for new projects to be carried out together, joint to register products.

### Type and Size of Partner Sought

SME 11-50, University, R&D Institution, SME <10,>500 MNE, 251-500, SME 51-250, >500

### Type of Partnership Considered

Commercial agreement with technical assistance  
 Technical cooperation agreement  
 Research cooperation agreement

## Technology Offer

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# A Turkish automotive manufacturer offers innovative cheap and environmentally friendly cooling system through manufacturing agreement and licensing agreement.

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## Summary

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*A Turkish automotive company located in Bursa, Turkey, is the second biggest industrial enterprise of Bursa and the sixth biggest industrial enterprise in Turkey. The company manufactures passenger and commercial vehicles and is increasing its competitiveness progressively with approximately 6,500 employees, and annual production capacity of 400,000 units. The Turkish automotive company has developed a novel cooling system and offers licensing and manufacturing agreement.*

**Creation Date** 11 February 2016  
**Expiration Date** 03 March 2017  
**Reference** TOTR20160211001

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## Details

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### Description

Manufacturing for 5 global brands; Fiat, Peugeot, Citroen, Opel and Vauxhall, as part of Minicargo and the new Doblo projects, the company brings together 6 powerful global brands Fiat, Alfa Romeo, Lancia, Maserati, Ferrari and Jeep with the consumers in Turkey.

The company has invented a novelty cooling system. The innovative cheap and environmental friendly cooling system (ICECS) is a system where there is not any need to use a refrigerant which has high global warming potential (GWP) value. ICECS provide heating and cooling with air and air is used as refrigerant. The system doesn't need outside connection and works independently.

The innovative system uses less energy according to other competing technologies. The ICECS is small, light and cheap. The system provides roundable air flow without any moveable damper also the whole of system has no any moveable parts too. The first physical tests are completed and the company seeks partners for licensing agreement and manufacturing agreement for the invention.

### Advantages and Innovations

Rivals of this novelty system using similar cooling techniques requires piping and instrumentation through a preset structure. They consume too much energy and they are difficult to assemble. However, this new system eliminates all of these disadvantages.

There are also more advantages to mention as follows;

- The system does not need outside connection for heating and cooling as a heat pump does.
- The system provides roundable air flow without any moveable damper also the whole of system has no any moveable parts.
- There is no need to use any refrigerant which generally has higher GWP values.
- Airflow is provided by cooling energy without external energy.
- It is environmentally friendly.

## Stage of Development

Field tested/evaluated

## IPR Status

Patent(s) applied for but not yet granted

## Profile Origin

National or Regional R&D programme

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## Keywords

### Technology

|          |                                       |
|----------|---------------------------------------|
| 004008   | Energy efficiency                     |
| 04002008 | Cooling technologies                  |
| 10002013 | Clean Production / Green Technologies |

### Market

|       |  |
|-------|--|
| 08005 | Other Industrial Products (not elsewhere classified) |
|-------|--|

### NACE

|          |                                   |
|----------|-----------------------------------|
| D.35.3.0 | Steam and air conditioning supply |
|----------|-----------------------------------|

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**Open for EOI :** **Yes**

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## Partner Sought

### Type and Role of Partner Sought

The company is looking for partners with different roles: industrial partners for prototyping, demonstration and serial production activities under a licence agreement and/or manufacturing agreement.

## **Type and Size of Partner Sought**

University, R&D Institution, >500 MNE, SME 51-250

## **Type of Partnership Considered**

License agreement

Manufacturing agreement

## Technology Offer

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# A new method for thermal characterization of transparent and semi-transparent materials using outdoor measurements and dynamic simulation

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## Summary

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*An Italian university research team with expertise in renewable energy offers a new method to evaluate the thermal performance of transparent and semi-transparent materials such as light diffusing insulating glass, under real operating conditions. The methodology is useful to test innovative materials and composites whose thermal properties are not known. The partners sought are research centres, universities and SMEs interested in research cooperation or technical cooperation agreement.*

**Creation Date** 23 March 2016  
**Expiration Date** 05 April 2017  
**Reference** TOIT20160311001

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## Details

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### Description

Windows and glazing can offer to building occupants visual relief, insulation against heat and cold, control of light and ventilation. Windows and other fenestrations are of great importance adding esthetical qualities and beauty to the building design.

In recent decades, fenestrations have been often considered for another type of concern: their influence on the building energy consumption. This aspect may have a direct influence on the design and performance of lighting and air-conditioning systems. For this reason, researches on new materials and their properties have grown recently, as for example glazing with the integration of silica aerogel in monolithic form or the use of electro-chromic smart windows.

A common problem, of these new technologies, is that the semi-transparent part is composed by different materials with several physical properties that sometime are not yet defined. Furthermore, external thermal loads in buildings depend mainly on thermal transmittance and on the solar heat gain coefficient (SHGC) that should be considered to identify the thermal behaviour of glazing systems. In particular, the SHGC is defined as the fraction of incident solar radiation admitted through a window, both directly transmitted and absorbed and released inward.

The university research team, active in the renewable energy sector with expertise in photovoltaic field, proposes a new methodology that uses devices named Solar Test Boxes (STBs) and a dynamic simulation software.

The STBs are able to evaluate the overall energy performance of innovative glazing systems suitable for energy saving purposes, consisting of layers of different materials whose thermal characteristics cannot be easily retrieved.



The method consists in a short-term outdoor monitoring of STBs thermal behaviour and in a calibrated dynamic simulation model for the boxes. The thermal properties can be evaluated finding the best match between the experimental data and the calibrated model simulation data. The STBs are instrumented to measure inside air temperature, illuminance and surface temperature of the inner and outer side of the test pane. Outside temperature and relative humidity, solar irradiance on the vertical plane and wind speed and direction can also be measured.

The STBs maximize the thermal contribution of the transparent material allocated on the short side of the box. Each box has five out of six faces heavily insulated to guarantee adiabatic conditions and one face shaped in order to host different kinds of transparent or semi-transparent samples.

The outdoor measurements inside and outside the test boxes are used to accurately calibrate the dynamic simulation model in order to obtain the global thermal transmittance and the solar heat gain coefficient.

The dynamic simulation software allows the building simulation of energy performance, indoor air quality and thermal comfort in dynamic conditions. The software is also able to cover a large range of phenomena, such as the integrated airflow network and thermal models, Carbon dioxide (CO<sub>2</sub>) and moisture calculation, and vertical temperature gradients.

The team offers its expertise to research centres, universities and SMEs involved in thermal characterization of insulating materials and semi-transparent photovoltaic devices. The team is interested in research and technical cooperation.

## Advantages and Innovations

The methodology is easily reproducible, low cost, with a low technical impact.

It allows a comparative analysis of thermal and lighting performance of innovative transparent material with respect to a double glass reference pane.

The evaluation of materials is performed under operating conditions meaning the determination of their true performance.

## Stage of Development

Available for demonstration

## IPR Status

Secret Know-how

## Profile Origin

Private (in-house) research

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## Keywords

### Technology

10002007

Environmental Engineering / Technology

### Market

06003001

Solar/thermal energy

## NACE

M.71.1.2

Engineering activities and related technical consultancy

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

The research team is looking for research centres, universities and SMEs interested in thermal characterization of innovative insulating materials and semi-transparent photovoltaic devices. The research team offers research cooperation or technical cooperation agreement to adapt the proposed methodology for a new application.

### Type and Size of Partner Sought

SME 11-50, University, R&D Institution, SME 51-250

### Type of Partnership Considered

Technical cooperation agreement  
Research cooperation agreement

## Technology Request

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# A Chinese company is looking for solutions for the concentrated liquid caused by the treatment of landfill leachate

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### Summary

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*A Chinese leading environmental solid waste treatment company is looking for solutions for the concentrated liquid caused by the treatment of landfill leachate with membrane method. They want to cooperate with partners through research cooperation agreement and technical cooperation agreement.*

**Creation Date** 02 March 2016  
**Expiration Date** 07 March 2017  
**Reference** TRCN20160302001

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### Details

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#### Description

This Chinese company was established in 2010.

The main products and services include household waste treatment, heavy metal pollution treatment and recycling of various kinds of metals.

The company owns a combination of three platforms, including resource integration platform, technology R&D platform as well as investment and financing platform.

The company is looking for partners for research cooperation agreement and technical cooperation agreement of solutions for the concentrated liquid caused by the treatment of landfill leachate with membrane method. The concentrated liquid is mainly composed of biorefractory organic compound. The volume of the liquid to be treated is about 200 tons per day in cities and 1-10 tons per day in rural areas.

After the treatment of NF/RO (nano filtration/nano filtration) membrane, landfill leachate will produce about 30% highly concentrated liquid. The company is in search of an advanced and feasible technology to deal with the concentrated liquid mentioned above. The running cost of the treatment should be low, with an investment less than 50 thousand per ton, and an operating cost of about 10 euro per ton. The subsequent waste should be disposed easily.

#### Technical Specification or Expertise Sought

Solutions for the highly concentrated liquid caused by the treatment of landfill leachate with membrane method. The technology should be feasible and the operating cost should be low. Waste produced by the treatment should be disposed easily.

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### Keywords

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## Technology

|          |                                |
|----------|--------------------------------|
| 10002011 | Soil and Groundwater Pollution |
| 10003003 | Land and Sea Disposal          |
| 10003004 | Recycling, Recovery            |

## Market

|          |  |
|----------|--|
| 08004003 | Water treatment equipment and waste disposal systems |
| 08004004 | Other pollution and recycling related                |

## NACE

|          |  |
|----------|--|
| E.38.2.1 | Treatment and disposal of non-hazardous waste              |
| E.38.2.2 | Treatment and disposal of hazardous waste                  |
| E.39.0.0 | Remediation activities and other waste management services |

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

The company is looking for R&D institutions, universities or companies involved in advanced technologies of household waste treatment. The company is interested in research cooperation agreement and technical cooperation agreement.

### Type and Size of Partner Sought

University,R&D Institution,>500 MNE

### Type of Partnership Considered

Technical cooperation agreement  
Research cooperation agreement

## Technology Request

### Request for active camera lens cleaning system for cameras mounted on automobiles.

#### Summary

*A Korean company, specialized in developing and manufacturing high-tech parts, is looking for an active camera lens cleaning system for automobile exterior cameras. The conventional way which uses water for cleaning is not appropriate for exterior cameras, so they want to find new ways to clean the camera lens. They are looking for a partner available for research cooperation agreement or technical cooperation agreement.*

**Creation Date** 08 April 2016  
**Expiration Date** 11 April 2017  
**Reference** TRKR20160408001

#### Details

##### Description

A Korean company, a manufacturer of high-tech parts, has an idea to develop cleaning system for automotive exterior camera.

Recently, camera technology is applied in the car industry more quickly than before. Many camera technologies are already applied to the backward and forward of the vehicles for user's convenience.

To replace side view mirrors with exterior cameras, it is essential to keep the camera clean. The conventional way which uses water is too costly and cannot clean the camera perfectly. The new cleaning system can be applied near camera as a module. So, combination of camera and compact sized cleaning kit is requested. And it would be good to have auto cleaning system and pollution recognition algorithm. Pollution prevention coating (antistatic) or air compressor and washer nozzle would be welcomed.

The company is looking for a partner who provides an advanced technology mentioned above and does research and development together to create a completed module with cleaning system.

They prefer a company or a research institute which has references in cleaning system for electronic devices such as cameras or micro parts. No preference for countries.

##### Technical Specification or Expertise Sought

Must have

1. Combination of camera and cleaning kit
2. Compact size of cleaning kit

Nice to have

1. Auto cleaning system

- 2. Pollution recognition algorithm
- Favorable
- 1. Pollution prevention coating (antistatic)
- 2. Air compressor and washer nozzle

## Keywords

### Technology

|          |  |
|----------|--|
| 02002001 | Cleaning (sandblasting, brushing)                  |
| 03001001 | Cleaning Technology                                |
| 03003    | Apparatus Engineering                              |
| 10001002 | Assessment of Environmental Risk and Impact        |
| 11005    | Infrastructures for social sciences and humanities |

### Market

|          |  |
|----------|--|
| 07004008 | Other consumer products  |
| 08002002 | Industrial measurement and sensing equipment                         |
| 08003001 | Machine tools, other metal working equipment (excl. numeric control) |
| 08003007 | Other industrial equipment and machinery                             |
| 09001003 | Leasing of railcars, buses, cars, etc.                               |

### NACE

|          |   |
|----------|---|
| C.26.2.0 | Manufacture of computers and peripheral equipment                           |
| C.26.3.0 | Manufacture of communication equipment                                      |
| C.26.4.0 | Manufacture of consumer electronics   |
| C.26.6.0 | Manufacture of irradiation, electromedical and electrotherapeutic equipment |
| C.26.7.0 | Manufacture of optical instruments and photographic equipment               |

**Open for EOI :**    **Yes**

## Partner Sought

### Type and Role of Partner Sought

Type of partner sought: company, research institute, university  
 Specific area of activity of the partner: optics technology etc.

Task to be performed: research cooperation or technical cooperation on active camera lens cleaning system for automobile.

## **Type of Partnership Considered**

Technical cooperation agreement  
Research cooperation agreement



## Technology Request

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# Creation of an e-forest management product for oak forests

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### Summary

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*A Greek academic institution is interested in creating an e-forest product which will link Balkan regions. This product can be an intelligent tool for all involved stakeholders. The aim is to better utilise the raw material and to minimise the waste. The institution is interested in having technical cooperation with a public institution (research or academic institute, forestry managing authority/agency) or a non-profit private organization from FYROM.*

**Creation Date** 09 March 2016  
**Expiration Date** 14 March 2017  
**Reference** TRGR20160309001

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### Details

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#### Description

A Greek academic institution aims at creating an e-forest product which will link Balkan regions. It will be located in Greece, Albania, Bulgaria and FYROM. The proposed product will act as an intelligent tool for all forestry agencies, barrel and sawmills SME's. At the same time it will contribute in the creation of a "brand name" for Balkan Quercus as referred to other reputable quality timber production areas. Moreover, it will improve the utilization of raw material and minimize the produced waste.

The basic aim is to maximize the utilization of oakwood and improve the quality of wood products. In addition, to exploit the residues of oak trees in the forest after logging, in order to create wood or non-wood products and end up in creating a "brand name" for further use by the industry.

In the Balkans there are many common Oak species, which are mainly used for the production of fire wood, due to the increasing needs of combustible raw material. However, if treated properly, their products can be more competitive and profitable for wood industries. Furthermore, the efficiency of forests and optimization of their quality can be succeeded.

The institution is interested in cooperation with a partner from FYROM. Preferably the partner's profile should comply with the following requirements: Public institution (research or academic institute, forestry managing authorities/agencies) or non-profit private organization.

#### Technical Specification or Expertise Sought

Environment/forestry management with specialization in the following topics:

- Collection of GIS data
- Collection and analysis of wood residues from oak trees

## Stage of Development

Concept stage

## IPR Status

Secret Know-how

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## Keywords

### Technology

|          |  |
|----------|--|
| 07002001 | Forest technology                      |
| 07002004 | Silviculture, Forestry                 |
| 07002005 | Wood Products                          |
| 10002005 | Biodiversity / Natural Heritage        |
| 10002007 | Environmental Engineering / Technology |

### Market

|          |   |
|----------|---|
| 02003    | Specialised Turnkey Systems   |
| 08004004 | Other pollution and recycling related                               |
| 09005    | Agriculture, Forestry, Fishing, Animal Husbandry & Related Products |

### NACE

|          |                    |
|----------|--------------------|
| P.85.4.2 | Tertiary education |
|----------|--------------------|

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**Open for EOI :** **Yes**

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## Partner Sought

### Type and Role of Partner Sought

The Greek institution is interested to cooperate with a partner complying with the following requirements:

- Public institution (research or academic institute, forestry managing authorities/agencies) or non-profit private organization
- Environment/forestry management with specialization in the following topics: collection of GIS data, collection and analysis of wood residues from oak trees logging.

### Type and Size of Partner Sought

University,R&D Institution

## Type of Partnership Considered

Technical cooperation agreement

## Technology Request

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### Enzymatic peeling of citric fruits

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#### Summary

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*A Spanish company is specialized in fruit processing for industrial use. The company's main activity is aseptic processing and preservation of fruits. It has recently incorporated to its range of products individually quick frozen (IQF) fruit processing, using cryogenic technology. It is interested in acquiring a technology that allows an enzymatic peeling of citric fruits. It is looking for industrial partners interested in a commercial agreement with technical assistance.*

**Creation Date** 23 December 2015  
**Expiration Date** 02 March 2017  
**Reference** TRES20151223004

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#### Details

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##### Description

The spanish company is interested in finding a technology that allows an enzyme peeling of citrus fruits. The peeling is currently done by applying heat before scalding. However, the effectiveness of this process is not complete. In some fruits such as orange, the peel is very attached to the pulp so staff is required to, by hand, finish the peeling.

The company is currently processing an average of 50.000 tonnes of fruit per year.

The company is looking for an agreement arranging the acquisition of a technology paired with the provision of a number of services in support of, or essential to a transfer of technology. The company is interested in establishing a commercial agreement with technical cooperation with the aim of acquiring a technology based on enzyme peel able to peel the fruit and therefore that permits the company improve peel efficiency.

##### Technical Specification or Expertise Sought

With the adquisition of an enzyme peel technology the peeling would be performed in one step.

##### Stage of Development

Already on the market

##### IPR Status

Other

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#### Keywords

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#### Technology

|          |  |
|----------|--|
| 08001004 | Food Processing                                  |
| 08001005 | Food Technology                                  |
| 08002002 | Food Microbiology / Toxicology / Quality Control |
| 08002003 | Safe production methods                          |
| 10002013 | Clean Production / Green Technologies            |

## Market

|          |   |
|----------|---|
| 07003002 | Health food                                       |
| 07006    | Other Consumer Related (not elsewhere classified) |
| 08001017 | Industrial chemicals                              |

## NACE

|          |  |
|----------|--|
| C.10.3.2 | Manufacture of fruit and vegetable juice |
|----------|--|

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

The company is looking for other companies in the food industry to establish a commercial agreement with technical assistance. The company is looking to purchase a technology product and requires the necessary support. The sought company should offer a technology that is already on the market.

### Type of Partnership Considered

Commercial agreement with technical assistance

## Technology Request

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# Seeking technical cooperation with sensing engineering companies

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## Summary

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*A Spanish SME active in the area of ICT (Information and Communication Technologies) is interested in getting in contact with potential partners (SMEs) in the fields of M2M (machine-to-machine) and IoT (Internet of Things). The potential partners should contribute via technical cooperation with their knowledge of sensors market as well as expertise in sensor integration (into device) and communication with developed APPs (Applications for Mobile devices)*

**Creation Date** 07 March 2016  
**Expiration Date** 15 March 2017  
**Reference** TRES20151210001

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## Details

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### Description

A Southern Spanish SME with a intensive activity in the design and programming of APPs (Applications for Mobile devices) is looking for potential partners for technical cooperation in the next fields:

- \* M2M (machinetomachine)
- \* IoT (Internet of Things).

They are very interested in getting in contact with partners that provide engineering services related to sensing.

The partner should contribute with knowledge and expertise in the areas of Internet of Things and M2M (Machine to Machine).

The Spanish SME will develop the specific APP that will make use of information collected via sensors previously integrated into the mobile device.

The technical cooperation approach will be oriented to several sectors since the Spanish technology based SME is starting a new line in the areas hereby exposed: Internet of Things and Machine2Machine.

### Technical Specification or Expertise Sought

The potential partner should have capabilities for:

- \* Designing the sensing architecture of the project. The Spanish SME would send requirements and the partner should choose the suitable sensors as well as make the integration into the final product.
- \* Integration into a physical hub. The partner should have a hub for making integration of all

sensors.

\* Data output. Sensors should include a software layer for connection so that data can be collected and managed.

## Stage of Development

Already on the market

## IPR Status

Secret Know-how

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## Keywords

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### Technology

|          |   |
|----------|---|
| 01003023 | Environmental and Biometrics Sensors, Actuators |
| 01003025 | Internet of Things                              |
| 06005002 | Sensors & Wireless products                     |
| 09001009 | Sensor Technology related to measurements       |
| 10002010 | Remote sensing technology                       |

### Market

|          |  |
|----------|--|
| 03001    | Electronic Components                        |
| 08002002 | Industrial measurement and sensing equipment |
| 08002004 | Robotics                                     |

### NACE

|      |  |
|------|--|
| J.62 | Computer programming, consultancy and related activities |
|------|--|

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**Open for EOI :** **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

Type of partner: Companies/SMEs.

Area of activity: Sensing engineering, sensors.

Role: They would technically cooperate in the fields of M2M (machinetomachine) and IoT (Internet of Things) technologies.



The partner sought should provide not only his expertise and knowledge of the sensors market, but also sensors integration and interoperability with the APP developed by the Spanish SME.

**Type and Size of Partner Sought**

SME 11-50, SME <10, SME 51-250

**Type of Partnership Considered**

Technical cooperation agreement

## Technology Request

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# Partners sought in the field of agriculture and civil security to integrate existing sensor-based solutions into drones.

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### Summary

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*French SME that manufactures fully plug-and-play Remotely Piloted Aircraft Systems (RPAS) looks for partners in the fields of agriculture and civil security to co-develop drone-integrated solutions responding field real needs. A joint venture agreement is ideally sought.*

**Creation Date** 21 March 2016  
**Expiration Date** 29 March 2017  
**Reference** TRFR20160321001

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### Details

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#### Description

This French SME has been specializing since 2009 in Remotely Piloted Aircraft Systems (RPAS). Managed by an experienced engineer, the company is acquainted to controlling and commanding unmanned aerial systems.

The company just finalized two prototypes of MALE (Medium Altitude, Long Endurance) drones, which have the advantages to be vertical take off and landing and fully plug-and-play. It has therefore the ability to integrate any existing sensor-based application into its aircraft systems. This enterprise has already been working locally with civil security institutions and wineries to integrate specific application into its drones. Its objective now is to co-develop joint solutions with enterprises for specific applications. It therefore needs a partner willing to integrate already existing sensor-based applications in its plug-and-play drones.

The company therefore wants to collaborate through a joint venture agreement with enterprises of the civil security and agriculture fields. It offers its engineering capabilities in the command, control and flight planning systems in order to allow the deployment of the jointly-developed solution to an operational scale. The final goal of the project is to develop replicable ready-to-market solutions.

#### Technical Specification or Expertise Sought

This SME looks for partners in the agriculture and civil security which sensor-based applications are to be integrated into a drone. The co-developed solution should respond a real need that exists in the partner's sector, whether solving a problem or optimizing an existing process for farmers, breeders or civil security authorities (fire rescue teams, police forces, etc.).

#### Stage of Development

Field tested/evaluated

## IPR Status

Secret Know-how

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## Keywords

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### Technology

|          |   |
|----------|---|
| 01003021 | Remote Control                            |
| 02011002 | Aircraft                                  |
| 09001009 | Sensor Technology related to measurements |
| 10002010 | Remote sensing technology                 |

### Market

|          |   |
|----------|---|
| 05004002 | Rescue and emergency equipment                                      |
| 06006002 | Metering and monitoring   |
| 08002002 | Industrial measurement and sensing equipment                        |
| 09001006 | Airfield and other transportation services                          |
| 09005    | Agriculture, Forestry, Fishing, Animal Husbandry & Related Products |

### NACE

|          |   |
|----------|---|
| C.30.3   | Manufacture of air and spacecraft and related machinery |
| C.30.3.0 | Manufacture of air and spacecraft and related machinery |

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**Open for EOI :** **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

This SME is looking for partners being enterprises working in the field of agriculture or civil authorities. In both cases, they should have sensor-based applications offering the possibility to be integrated into an aircraft system, related to applications such as, for example : wine storehouses controlling, forest fire monitoring, meteorology, smart cities, etc.

It will be expected from the partner to collaborate in the definition of the tender specifications of the jointly developed solution, as well as providing its full expertise in its field. Help will also be expected in the final marketing of the developed solution.

## **Type and Size of Partner Sought**

SME 11-50,R&D Institution,SME <10,>500 MNE,251-500,SME 51-250,>500

## **Type of Partnership Considered**

Joint venture agreement



***Medio Ambiente:  
Agua y Residuos***

## Technology Offer

# Innovative industrial plant able to process and convert automotive shredder residue and end of life tyres rubber, into fuel products search partners for commercial agreement and joint venture

## Summary

*Italian start-up has developed a new kind of innovative industrial plant, which is able to process and convert automotive shredder residue and end of Life tyres rubber, into fuel products, reducing the environmental impact and making more efficient the entire automotive sector. The company is looking for strategic partners able to employ the fuel products generated by the plant under commercial agreement with technical assistance and joint venture agreement.*

**Creation Date** 15 March 2016  
**Expiration Date** 21 March 2017  
**Reference** TOIT20160315003

## Details

### Description

In order to reduce the environmental impact of waste produced by the Transport sector, the Directive ELV (End Life Vehicles) require an integrated approach that involves all the main players of the automotive chain. Within the transport sector particular attention is devoted to the life cycle of vehicles, including their disposal, that must reach well defined recovery targets. Critical issues remain unresolved, in particular the disposal of some car residues which still end up in landfill and in addition it is required a more efficient recovery of used tires. This Italian start-up has developed a new kind of innovative industrial plant, which is be able to process and convert ASR (Automotive Shredder Residue or car fluff) and ELT (End of Life Tyres) rubber, into fuel products, reducing the environmental impact and making more efficient the entire automotive sector.

This technology, at full regime, could lead to the total elimination of landfill disposal, as regard car-fluff, with the related environmental impact and transportation costs. Materials transformed into fuels can be used as energy source by the players of the sector, contributing in this way to the development of a circular economy that embraces the whole vehicles life.

This Italian company was born in 2011 as an engineering company for the realization of an invention of the owners, engineers with long-time experience in the field of waste treatment and energy production. The owners of the company have carried out a big investment to realize a first functioning prototype (pilot plant), which is now generating a lot of interest from big energy companies and possible partners. The company is now working on the realization of a bigger industrial plan able to treat one ton of material (against the current 20/25 kg of the present pilot plant) and therefore reach a scalable solution for one main market segment: treatment of transport sector wastes. More applications are possible: the company will explore these later on.

The company is looking for strategic partners interested in buying the products of the future industrial plants (both solid and liquid products) to sign a commercial agreement with technical assistance or start a joint venture.

## Advantages and Innovations

Italian company's technology is extremely innovative and competitive as at present there are no similar plants able to treat and transform carfluff into fuels without generating further pollution. The main advantages of this invention are: absence of emission of dangerous substances during the process, capability to convert 100% of a payload made of ASR (automotive shredder residue) or ELT (End of Life Tyres) rubber into fuels (with a small % of residual water), high reduction for the need of landfill disposal.

## Stage of Development

Prototype available for demonstration

## IPR Status

Patents granted

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## Keywords

### Technology

10003004                      Recycling, Recovery

### Market

08004002                      Chemical and solid material recycling

### NACE

C.28.9.9                      Manufacture of other special-purpose machinery n.e.c.

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**Open for EOI :**    **Yes**

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## Partner Sought

### Type and Role of Partner Sought

Materials transformed into fuels by this innovative plant can be used as energy source by different players, therefore the aim of the company is to find the right partners to close such circular economy embracing the whole vehicles life. Namely the company is looking for strategic commercial partners interested in a long term cooperation related to the products of the future industrial plants (both solid and liquid). The partner could be a medium / big company operating



in the energy sector, interested in signing a commercial agreement with technical assistance or in starting a joint venture.

Company's goal is to produce and sell about 20 plants in 5 years. By reaching this target 480.000 tons/y of car fluff and used tires rubber will be recycled, increasing the percentage of recyclability of cars from the current 75% to 80% in Europe.

## **Type of Partnership Considered**

Commercial agreement with technical assistance

Joint venture agreement

## Technology Offer

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# Production of briquettes for energy recovery of furniture waste with polyurethane foams

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## Summary

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*A Spanish research group has developed a new production process of briquettes from furniture waste, enabling the management and energy recovery, avoiding the environmental problems and easing transport, handle and store. The briquettes, with high energy density, can be used as fuel for thermal power plants or industrial boilers. Companies in waste treatment sector or furniture industry interested in exploitation of this technology through licensing agreements or technical cooperation are sought.*

**Creation Date** 13 January 2016  
**Expiration Date** 01 March 2017  
**Reference** TOES20151214001

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## Details

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### Description

Lignocellulosic wastes, such as wood, are being widely used as a renewable energy due to the significant reduction in the emission of acid gases and greenhouse, as well as improved management of natural resources. However, one of the main disadvantages of this waste is that energy is limited because of their low density.

On the other hand, current European legislation does not allow the burning of chemically treated wood such as furniture waste, demolition wood, etc. for domestic use. Likewise, landfilling of these wastes should be avoided because of their high energy content, low density and environmental problems they cause. Alternatively, these wastes can be energy recovered in power plants and industrial boilers through direct combustion or co-firing with coal, the latter having great environmental benefits.

A common problem in the municipal solid waste treatment plants is the management of bulky waste such as furniture waste, and it does not currently exist an appropriate solution to this problem. Furniture waste is mainly composed of wood and upholstery foam, which show a high calorific value (the Net Calorific Value of wood and polyurethane foams are 16 and 24 MJ/kg, resp.) even though foams having a low density.

The main technical drawback of co-firing is the density difference between the fuels used, being able to cause problems of feed fuel to the boiler. In this regard, densification of biomass into pellets or briquettes with high energy density appears as a solution, while reducing costs in transportation, handling and storage.

A Spanish research group has developed a new compact material and a production process of briquettes with high energetic content in order to carry out a proper and viable treatment and

energy recovery from waste from furniture industry (wood and upholstery foams mainly).

Due to the flexible character of polyurethane foams, a densification of separate foam is not simple. The solution provided in the present invention uses a mixture of the two components (wood and polyurethane foams) for briquettes.

The compacted material developed is formed mainly by biomass and foam (Fig1). Whereas biomass (lignocellulosic) consists of waste wood or timber products, the foam is composed of polyurethane foam or similar from sofas, cushions, pillows, chairs, mattresses, etc.

The method for producing briquettes of the present invention comprises the following steps:

- 1) Crushing of wood waste and foam to a certain size.
- 2) Compacting of the material obtained into the shape of briquettes by a hydraulic piston press briquette machine.

In the different laboratory assays, the research group has studied and defined the process parameters, which are the most influential on the physicochemical characteristics of the briquette such as percentage of mixture of materials, the size of crushing, appropriate humidity and compaction pressure.

As a result of this research, the research group has obtained briquettes with physicochemical characteristics similar to conventional briquettes (wood) in terms of resistance to fragmentation and abrasion, durability (DU - according to European standard CEN-TS 14588:2003), density and calorific value appropriate for use as industrial fuel (Fig2).

Through this procedure can be obtained briquettes of 53 mm diameter and variable height between 20 and 60 cm, although the process is applicable to any size briquettes. Furthermore, the briquette can have any shape, either in brick, cylindrical, tablet-shaped, square or the like.

The research group is looking for companies interested in the exploitation of this technology. Depending on the needs of the company, this technology transfer can be performed by license, R&D or subcontracting agreements.

## Advantages and Innovations

- The new briquetting process from waste furniture solves the current problem of management of this waste.
- The process allows energy recovery and treatment of this waste in a simple and feasible way to avoid the environmental problems associated with disposal in landfills.
- The densification of the material in the shape of briquettes makes the transportation, handling and storage of this waste easier and cheaper.
- The briquettes produced have high energy density and have physicochemical characteristics (resistance to fragmentation and abrasion, durability, density, etc.) similar to conventional ones.
- The briquettes can be used as fuel in thermal power plants or industrial boilers, solving the drawbacks of low density, uniformity of size and shape, as well as the feeding problems in these combustion plants associated with these materials.
- This process can be applied to briquettes of any size and shape.

## Stage of Development

Prototype available for demonstration

## IPR Status

Patent(s) applied for but not yet granted

## Keywords

### Technology

|          |   |
|----------|---|
| 02002005 | Forming (rolling, forging, pressing, drawing) |
| 04005006 | Solid biomass                                 |
| 04005007 | Waste incineration                            |
| 04008001 | Combustion, Flames                            |
| 10003002 | Incineration and Pyrolysis                    |

### Market

|          |                                       |
|----------|---------------------------------------|
| 06007    | Other Energy                          |
| 08004    | Pollution and Recycling Related       |
| 08004002 | Chemical and solid material recycling |
| 09003001 | Engineering services                  |

### NACE

|        |   |
|--------|---|
| M.72.1 | Research and experimental development on natural sciences and engineering |
|--------|---|

**Open for EOI :** **Yes**

## Partner Sought

### Type and Role of Partner Sought

The new process can be used to obtain briquettes with physicochemical characteristics similar to the conventional and high energy density being able to be used as fuel for thermal power plants or industrial boilers.

The research group is looking for companies in waste treatment sector or furniture industry interested in acquiring this technology for use and / or commercial exploitation, through the following:

- License agreements to transfer the patent rights to use, manufacture of the technology to third parties.
- Agreement R&D project (technical cooperation) for the use or application of technology in other waste or in other sectors.
- Subcontracting agreement for technical assistance, training, etc.

## **Type and Size of Partner Sought**

SME 11-50, SME <10, >500 MNE, 251-500, SME 51-250, >500

## **Type of Partnership Considered**

License agreement

Technical cooperation agreement

## Technology Offer

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# Automatic waste sorting system for portable batteries that enables data management possibilities

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## Summary

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*A Swedish SME within waste management, has developed an efficient waste battery sorting system. By using object recognition technology and artificial intelligence, the sorting system enables data collection which can be used for valuable reports and analysis regarding the waste's chemical compound and brand. The SME is interested to find partners within waste management/recycling that wish to implement the system and/or research partners for further development to applications.*

**Creation Date** 03 March 2016  
**Expiration Date** 04 April 2017  
**Reference** TOSE20160303001

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## Details

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### Description

The Swedish company offers an innovative fully automatic sorting solution for waste portable batteries. The system is a complete identification and sorting system for all cylindrical and 9V batteries with a total capacity of more than 600 kg (1200 lbs) per hour. The sorting unit collects information at the same time as the waste is sorted, which makes it a cost-effective system for identifying, registering and sorting waste material.

All chemistries/batteries available today can be sorted and it's also possible to add new sorting fractions, such as different kinds of Lithium batteries.

The identification of every battery is made with a machine vision sensor that captures images of every battery in high speed. The system is self-learning and intelligent, which enables it to recognise batteries even if they are dirty or damaged. After classification the batteries are separated with air jets into each respective fractions which allows for high accuracy under high speed.

The system enables collectors and recyclers to efficiently sort mixed streams of batteries into separate material fractions with minimal labor and expertise required. The collected information about the waste enables waste management companies to squeeze out as much as possible from their collected waste while recyclers benefit from cost-effective sorting and quality control. The collected data and statistics can enable recyclers to easily send accurate reporting data to the environmental authorities upon request. The statistics can also be used to provide producers with valuable market information.

The Swedish company is seeking industrial or/and municipalities/authorities within waste management that are interested to test/implement/validate the automatic sorting system in their waste management operations. They are interested in commercial/technical agreements with industrial/governmental partners as well as research and development projects with industry

and academy/research institutes.

## Advantages and Innovations

- Automatic and accurate
- Integrated data management possibilities
- Cost-effective and low labour cost
- Intelligent and self-learning

## Stage of Development

Already on the market

## IPR Status

Patents granted

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## Keywords

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### Technology

|          |  |
|----------|--|
| 01003012 | Imaging, Image Processing, Pattern Recognition |
| 10003004 | Recycling, Recovery                            |

### Market

|       |           |
|-------|-----------|
| 03002 | Batteries |
|-------|-----------|

### NACE

|          |   |
|----------|---|
| C.28.9.9 | Manufacture of other special-purpose machinery n.e.c. |
| E.38.2.2 | Treatment and disposal of hazardous waste             |
| E.38.3.2 | Recovery of sorted materials                          |

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

- Type of partner sought: Industry or municipalities/authorities
- Specific area of activity of the partner: waste management companies, agencies for environment



- Task to be performed by the partner sought:  
Test/implement the sorting system, validate, adoption to specific needs, integration to waste management systems

## **Type of Partnership Considered**

- Commercial agreement with technical assistance
- Technical cooperation agreement
- Research cooperation agreement

## Technology Offer

# Modelling and simulation of thermolysis (pyrolysis) processes

## Summary

*Lithuanian SME offers its services for computer modeling and simulation (using Monte Carlo methods) of thermolysis (pyrolysis) processes. SME is working in the following fields: -mathematical and computer modeling and simulation of the physical and technological processes; -preparation of techno-economical business (plants) models and detailed business plans based on simulations' scenarios. SME is looking for industrial, R&D partners for commercial, financial or research cooperation agreemen*

|                        |                  |
|------------------------|------------------|
| <b>Creation Date</b>   | 26 February 2016 |
| <b>Expiration Date</b> | 24 March 2017    |
| <b>Reference</b>       | TOLT20160226001  |

## Details

### Description

Lithuanian small scientific research firm is working in the following fields:

- 1) mathematical and computer modeling and simulation of physical and technological processes;
- 2) creation of mathematical and computer business (industry, construction, services, social) models, simulation of various scenarios, and preparation of detailed business plans based on modeling & simulation results.

Technological offer is devoted for the modeling and simulation of the thermolysis (pyrolysis – wide used term) processes.

The main idea for the study of thermolysis processes is to switch from phenomenological kinetics to statistics of direct molecule-molecule processes. There have to be the dynamic picture of evolution of various molecules in time, space and their (molecules) internal structure change.

For the achievement of those purposes there have to be constructed the models of atom-molecule and molecule-molecule elastic and inelastic (non-elastic) collisions of wide spectrum of hydrocarbons.

The destruction, excitation and deformation of those molecules are results of their collisions. The ensembles of large amount of test molecules have to be taken for the simulations of their dynamical evolution.

The Monte Carlo methods (methods of stochastic simulations) will be used for the numerical simulations of all those processes.

Each process and object will be modeled by use of different approaches as follows:

- 1) original phenomenological models;
- 2) models based on interpolation and approximation of experimental data;
- 3) models based on different theoretical approaches;
- 4) numerical models;

5) hybrid models.

For the further simulations of evolution of molecules' ensembles, those mathematical models have to have the simple mathematical forms, or in other cases they have to be interpolated via simple numerical expressions (for example - Pade approximation, etc.).

There will be created the sets of working models with different complexity and accuracy for each physical process and object.

The "Final model" (an integrated model involving all processes and evolution of molecules' ensembles) is dynamic, i.e. there is the permanent development phase (of project) giving the pictures of processes with different accuracy, but giving intermediate results in early phases of researches.

During the TO realization time there will be created a set of "Final models" with different levels of complexity. That R&D strategy enables to shorten the products' creation time.

Those models have to enable to simulate the atom-molecule & molecule-molecule inelastic collisions in wide spectrum of their (atoms and molecules) kinetic energy, i.e. to simulate the processes taken place in wide region of temperatures. So it will be able to simulate the thermolysis (pyrolysis) and gasification processes being the targets of our researches for real applications.

There will be used high-level powerful programming languages – C++ (or FORTRAN).

During this work the fully original special computer software (computer models of molecules collisions; computer models of molecules collisions' generation; molecules' ensembles evolution in time, space and internal structure) will be created.

Using results of various scenarios of simulations the phenomenological kinetic coefficients of thermolysis processes at different conditions (temperature, pressure, type of utilization materials, etc.) will be calculated.

The simulation results (including all intermediate results for each process) will be compared with experimental and theoretical data being published in various journals, monographs and gotten via private communications.

Company is looking for partners being interested in above mentioned results/products.

The searched partners would be active in engineering, industry, business or researches.

## Advantages and Innovations

Current technological offer (TO) is oriented to the following (in the field of thermolysis):

1. Scientific knowledge:

- 1) creation of new original models of physical-chemical processes taken place in thermolysis;
- 2) test of existing models;
- 3) more deep understanding of thermolysis processes via use of various quantum theoretical approaches in modeling and simulation;
- 4) calculation of kinetic coefficients of traditional reactions kinetic equations via use of results of numerical modeling and simulations.

2. Practical applications:

- 1) simulation of processing of real thermolysis reactors at real conditions (geometry, variety of raw materials being utilized, etc.);
- 2) help for real design of thermolysis reactors via simulation of problematic areas by use of created software (being created in the frame of current project);
- 3) creation of empirical numerical models (based on project's simulations) for the fast estimation of various technological situations in practice.

Cooperation/collaboration with engineering and industrial / manufacturing companies has to form the problems being top for them and having to be solved in the frame of TO (via direct modeling and simulation of problematic situations taken place in design and practice).

## Stage of Development

Proposal under development

## IPR Status

Other

## Keywords

### Technology

|          |                                       |
|----------|---------------------------------------|
| 03002    | Process Plant Engineering             |
| 03004010 | Special chemicals, intermediates      |
| 05001002 | Computational Chemistry and Modelling |
| 05004006 | Other Processes                       |
| 10003002 | Incineration and Pyrolysis            |

### Market

|          |                                       |
|----------|---------------------------------------|
| 06001004 | Equipment and instrumentation         |
| 06001006 | Chemicals and materials               |
| 06003009 | Biomass and Biofuels                  |
| 06007001 | Other energy production               |
| 08004002 | Chemical and solid material recycling |

### NACE

|          |   |
|----------|---|
| C.20.5.9 | Manufacture of other chemical products n.e.c.                                   |
| E.38.2.1 | Treatment and disposal of non-hazardous waste                                   |
| E.38.2.2 | Treatment and disposal of hazardous waste                                       |
| J.62.0.1 | Computer programming activities   |
| M.72.1.9 | Other research and experimental development on natural sciences and engineering |

**Open for EOI :** **Yes**

## Partner Sought

### Type and Role of Partner Sought

Type of partner sought:

- researcher, designer, industrialist - business partners (engineering companies, equipment manufacturers, environmental active firms (biomass, MSW, scrap tyres, sewage sludge and other wastes utilization), alternative fuels and chemical intermediate goods production) to cooperate in developing specific software, to test and evaluate it.

Task to be performed by the partner sought:

- to test and evaluate software with a view to considering commercial agreement with technical assistance, financial or research cooperation agreements.

## **Type and Size of Partner Sought**

R&D Institution, 251-500, SME 51-250, >500

## **Type of Partnership Considered**

Financial agreement

Commercial agreement with technical assistance

Research cooperation agreement

## Technology Offer

# Plasma technology for the treatment of hazardous waste offered by a UK company

## Summary

*UK global leader in the supply of environmental technology seeks commercial agreement with technical assistance or licensing of patented direct current plasma arc systems for a range of hazardous waste treatment applications. The technology provides the closest solution to zero waste currently available using ultra-high temperatures to melt, gasify or vaporize waste material to treat, recover or generate useful commercial products and is a "green" sustainable alternative for waste management.*

|                        |                 |
|------------------------|-----------------|
| <b>Creation Date</b>   | 18 March 2016   |
| <b>Expiration Date</b> | 21 March 2017   |
| <b>Reference</b>       | TOUK20160314001 |

## Details

### Description

UK based pioneers in using plasma technology for hazardous/industrial waste treatment offers technology for transfer/licensing opportunities. The multi-faceted, highly qualified research and engineering team have applied their patented technology in a wide range of hazardous/industrial waste treatment challenges with more than 90 installations globally. A sustainable alternative for waste treatment with applications across multiple industries, plasma is a controllable, clean, high temperature and versatile heat source, an ionised or electrically charged gas. The plasma-enhanced process allows material feedstocks to be fed into a sealed furnace and heated in a controlled environment using a plasma arc created by either a single or multiple plasma electrodes/torches. The process chemistry is designed to preferentially separate and recover the valuable metals, minerals and other materials from the feedstock while destroying the hazardous elements leaving behind a non-hazardous vitrified material.

The compact/controllable nature of plasma systems provides unique opportunities for industrial processing and is one of the cleanest thermal processing technologies available. The technology offers versatility to deal with hazardous waste treatment challenges including, but not limited to:

- fly ash/air pollution control residue
- construction waste e.g. asbestos
- chemical waste e.g. organics
- aluminium manufacturing waste e.g. spent potliner
- petrochemical waste e.g. oily sludges
- nuclear/radioactive waste (man-made and naturally occurring)
- chemical and biological waste e.g. warfare agents and their precursors

The plasma process transforms spent materials into substances that are benign to the environment and produces valuable by-products for use elsewhere in industry thereby closing the recycling loop. Plasma waste recovery plants offer a near zero waste outcome and commercial advantages over existing hazardous waste management solutions and in a growing number of applications.

The UK company owns the most comprehensive plasma trials facility in Europe with a unique suite of highly flexible pilot scale furnaces for conducting plasma trials across a wide range of material processes for resource recovery/hazardous material treatment. The advantage of this, comprehensive trials can be undertaken on specific material or waste validating the capital investment in the technology. The furnaces are supported by all the necessary services and utilities under the appropriate regulatory approvals from the UK Environment Agency, backed up by comprehensive data acquisition systems and external chemical analysis services.

The combination of technology and facilities enables further investigation the plasma treatment of an enormous number of materials supporting client and government-sponsored programmes. Where practical, the aim is always to extract additional value from a waste streams. The robust level of construction and minimal number of moving components delivers outstanding plant availability and operational longevity. The process has exceptional environmental/commercial credentials and can be considered a future proof solution, removing the business risk associated with unknown future landfill availability, disposal costs and tightening regulations.

The company seeks collaboration on both commercial agreement with technical assistance and license agreement basis to government agencies, academia, research institutes and industry in relevant sectors.

## Advantages and Innovations

The use of plasma arc technologies especially for treatment of hazardous wastes is set to expand in line with legislative drivers worldwide. Being a recovery as opposed to a disposal process the technology is intermediate within the waste management hierarchy, characterised as an advanced conversion technique with best available techniques attributes. World regulations are tightening leading to:

- more material being classified as hazardous
- a reduction in the availability of landfill
- reduced freedom to transport and export hazardous waste
- increasing and unpredictable cost burden associated with waste treatment
- pressure for recycling and recovery as opposed to disposal and a decline in primary material sources critical in manufacturing processes

Plasma technology overcomes these challenges and benefits include:

- gasification of carbonaceous components which greatly reduces the mass and volume of the waste stream with the potential to generate synthesis gas (a fuel) or steam
- provides a future proof solution to future tax, regulation and gate fee uncertainties removing a key business risk
- vitrification of the inorganic fractions to produce a dense, environmentally stable product that has the ability to generate value as it may be used in a range of building applications
- technology is tolerant of chemically challenging waste feeds and is simple to operate and maintain
- encapsulation of hazardous metallic species
- high destruction and removal efficiencies
- intensive, compact process plant package that can be retrofitted adjacent to existing installations
- control of power input independently of process chemistry



- extremely high destruction and removal efficiency with levels of 99.9999% typically achieved

The high operating performance of plasma technology combined with its unmatched environmental compliance characteristics provides the secure business option for the treatment of/recovery from waste streams.

## Stage of Development

Already on the market

## IPR Status

Patents granted

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## Keywords

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### Technology

|          |                                     |
|----------|-------------------------------------|
| 04005010 | Integrated waste-energy processes   |
| 04005012 | Waste to energy - other             |
| 10003006 | Waste disinfection / detoxification |

### Market

|          |                         |
|----------|-------------------------|
| 06007001 | Other energy production |
|----------|-------------------------|

### NACE

|          |  |
|----------|--|
| E.38.2.1 | Treatment and disposal of non-hazardous waste              |
| E.38.2.2 | Treatment and disposal of hazardous waste                  |
| E.39.0.0 | Remediation activities and other waste management services |

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

The company offers collaboration on both commercial agreement with technical assistance and license agreement basis to government agencies, academia, research institutes and industry in the following sectors:

- chemicals
- construction
- metal manufacturing/metal refining

# Partnering Opportunity

- mining and exploration
- nuclear
- oil and gas
- waste to energy
- waste management

## **Type and Size of Partner Sought**

SME 11-50, University, R&D Institution, SME <10, >500 MNE, 251-500, SME 51-250, >500

## **Type of Partnership Considered**

License agreement  
Commercial agreement with technical assistance

## Technology Offer

# Plasma technology for the recovery of base/precious metals and treatment of electronic waste offered by UK company

## Summary

*UK based global leader in the supply of environmental technology seeks commercial agreement with technical assistance and licensing opportunities of patented direct current plasma arc systems. Resource recovery applications include, but are not limited to, recovery of base/precious metals from spent catalysts e.g. industrial wastes, electronic wastes and mine tailings. The technology provides the closest solution to zero waste and a "green" sustainable alternative for waste management.*

**Creation Date** 23 March 2016  
**Expiration Date** 31 March 2017  
**Reference** TOUK20160314002

## Details

### Description

UK based pioneers in the supply of plasma-enhanced smelting technology for recovery of base/precious metals from spent materials offers technology for transfer/licensing opportunities. The multi-faceted, highly qualified research and engineering team have applied their patented technology in a wide range of resource recovery applications with more than 90 installations globally. A sustainable alternative for resource recovery with applications across multiple industries, plasma is a controllable, clean, high temperature and versatile heat source, an ionised or electrically charged gas. The plasma-enhanced process allows material feedstocks to be fed into a sealed furnace and heated in a controlled environment using a plasma arc created by either a single or multiple plasma electrodes/torches. The process chemistry is designed to preferentially separate and recover the valuable metals, minerals and other materials from the feedstock while destroying the hazardous elements leaving behind a non-hazardous vitrified material.

The compact/controllable nature of plasma a system provide unique opportunities for resource recovery from industrial processing and is one of the cleanest thermal processing technologies available. The technology offers versatility with applications including:

- base metal recovery from steel plant wastes e.g. electric arc furnace dust
- precious metal recovery from electronic wastes, spent catalysts e.g. industrial, automotive, chemical industries, mining wastes.

Precious metals can be extracted from primary sources e.g. ores, naturally occurring solutions /mixtures containing metal ions and secondary sources e.g. wastes, spent catalysts, process residues and mine tailings. The scarcity of some precious metals and the costs/difficulties

involved in extraction of these metals from primary/secondary sources is key to balancing supply and demand. When looking specifically at electronic equipment waste (discarded, surplus, obsolete/broken electrical devices) research shows that informal processing of this waste can cause serious health/pollution problems as they often contain hazardous substances.

The UK company owns the most comprehensive plasma trials facility in Europe with a unique suite of highly flexible pilot scale furnaces for conducting plasma trials across a wide range of material processes both resource recovery/hazardous material treatment. The advantage of this, comprehensive trials on specific material/ waste can be undertaken, validating the capital investment in the technology. The furnaces are supported by the necessary services and utilities under the appropriate regulatory approvals from the UK Environment Agency, backed up by comprehensive data acquisition systems and external chemical analysis services.

The combination of technology, facilities and expertise enables the plasma treatment of an enormous number of materials supporting client and government sponsored programmes. The company offers collaboration on both commercial agreement with technical assistance and license agreement basis to government agencies, academia, research institutes and industry in relevant sectors.

## Advantages and Innovations

The technology uses high temperature plasma smelting technology to recover precious metals as a concentrated metal alloy. This alloy is subjected to further chemical refining (usually by third parties) before the metals re-enters the product supply chain, hence closing the recycling loop. Benefits include:

- higher precious metal recovery than competing technologies - >98% typically achieved
- lower capital/operating costs than competing technologies
- vitrification of the inorganic fraction to produce a dense, environmentally stable by product with the ability to generate value as it may be used in a range of building applications
- rapid precious metal returns in a 'closed loop' systems
- process applicable to a range of different precious metal waste streams
- environmentally compliant – extremely low air-borne emissions
- intensive, modular process with small carbon footprint
- robust, reliable and easy to maintain

Current legislation/directives aim to reduce the amount of electronic equipment being produced and encourage reuse, recycling and recovery. Using plasma-enhanced technology, pre-segregated and crushed electronic waste is fed into a sealed furnace and heated in a controlled environment preferentially separating valuable metals from the less valuable material. The less valuable material is transformed into a disposable vitrified product for resale to the construction industries. Benefits include:

- complete gasification of the plastic and other organic components, greatly reducing the mass and volume of the waste stream and avoidance of reforming persistent organic pollutants
- recovery of metals e.g. copper alloys, iron and tin, including precious metals e.g. gold, platinum and silver.
- robust technology that is tolerant of a challenging chemical environment e.g. chlorine
- encapsulation of hazardous metallic species
- higher precious metal recovery than competing technologies 95-98%
- lower capital/operation costs

## Stage of Development

Already on the market

## IPR Status

Patents granted

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## Keywords

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### Technology

|          |                                     |
|----------|-------------------------------------|
| 04005010 | Integrated waste-energy processes   |
| 04005012 | Waste to energy - other             |
| 10003004 | Recycling, Recovery                 |
| 10003006 | Waste disinfection / detoxification |
| 10003009 | Rare Earths Metals Treatment        |

### Market

|          |                         |
|----------|-------------------------|
| 06007001 | Other energy production |
|----------|-------------------------|

### NACE

|          |  |
|----------|--|
| E.38.2.1 | Treatment and disposal of non-hazardous waste              |
| E.38.2.2 | Treatment and disposal of hazardous waste                  |
| E.38.3   | Materials recovery   |
| E.39.0.0 | Remediation activities and other waste management services |

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**Open for EOI :** **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

The company offers collaboration on both commercial agreement with technical assistance and license agreement basis to government agencies, academia, research institutes and industry in the following sectors:

- chemicals
- construction
- metal manufacturing/metal refining
- mining and exploration
- nuclear
- oil and gas
- waste to energy
- waste management

## **Type and Size of Partner Sought**

SME 11-50, University, R&D Institution, SME <10, >500 MNE, 251-500, SME 51-250, >500

## **Type of Partnership Considered**

License agreement

Commercial agreement with technical assistance

## Technology Offer

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# Opportunities for technical scale experiments generating waste to value innovations at a landfill research center

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## Summary

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*A German university operates an education and research center on a municipal landfill site. New technologies for using waste as a source for energy and raw materials are developed and optimized. It is a unique site where R & D can be carried out in technical scale as well as in large scale. Potential partners from academia and industry are invited for joint application-oriented waste-to-energy research or technical co-operation in technical and large scale.*

**Creation Date** 29 March 2016  
**Expiration Date** 01 April 2017  
**Reference** TODE20160329002

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## Details

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### Description

An interdisciplinary German university operates an education and research center on a German municipal landfill site. Technical plants have been planned and built to transfer municipal waste into energy or raw material.

Presently they operate plants for anaerobic digestion, hydrothermal carbonization and incineration and for the treatment of industrial wastewater. Plants for pyrolysis and gasification will be installed in the future.

The interdisciplinary research includes optimization of processes by latest automation and control technology. These are fields where the German university can contribute special expert know-how and experience.

The key technical parameters of the operating plants, presently in operation, are:

- Incineration for wood chips and pellets with 350 kW heating power
- Fully automated biogas plant with two lines of 3 m<sup>3</sup> reactor volume each
- Hydrothermal carbonization plant (HTC) with 2,3 m<sup>3</sup> volume operating with 32 bar and 240 degrees Celsius
- Fully automated treatment plant for landfill leachate and industrial process water with two parallel lines of three treatment steps each.

The following are in preparation:

- Technical plant for gasification of wood and wood wastes
- Technical plant for pyrolysis of multiple classes of waste

Potential partners may come from industry and research. Examples for technical and research co-operation envisaged are:

- Improvement of anaerobic digestion process



- Treatment of wastewater sludge by hydrothermal carbonization (HTC)
- Optimising plant and process-technologies
- Test and validation of new technical methods for generating raw materials for the chemical industry from wastes

The centre also offers a showroom for the public thus contributing to public acceptance of innovative technologies by demonstration and educational measures.

## Advantages and Innovations

- Unique opportunity for R & D in technical scale as well as in large scale on the municipal landfill (usually this is not so easily combined)
- Interdisciplinary approach from chemical engineering, process-chemistry and automation
- Close co-operation between universities and industry
- Availability of a wide variety of wastes and raw materials in industrial scale at the site

## Stage of Development

Available for demonstration

## IPR Status

Secret Know-how

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## Keywords

### Technology

|          |                                     |
|----------|-------------------------------------|
| 04005    | Renewable Sources of Energy         |
| 04006    | Biogas and anaerobic digestion (AD) |
| 10003    | Waste Management                    |
| 10003007 | Waste to Energy /Resource           |
| 10004003 | Wastewater Recycling                |

### Market

|          |  |
|----------|--|
| 06003    | Alternative Energy                                   |
| 08004003 | Water treatment equipment and waste disposal systems |

### NACE

|      |                                     |
|------|-------------------------------------|
| M.72 | Scientific research and development |
|------|-------------------------------------|

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**Open for EOI : Yes**

## Partner Sought

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### Type and Role of Partner Sought

Industry, e.g., waste management companies or research organizations for joint research projects and technical co-operation.

The partner could be interested or active in planning, building or operating systems and machinery for transforming waste to energy or to new resources.

The partner could be interested in joint and application-oriented research-projects and technical cooperation.

Know-how transfer and exchange with other regions carrying out similar projects or planning to develop sites is also possible.

### Type of Partnership Considered

Technical cooperation agreement  
Research cooperation agreement

## Technology Offer

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# Biological solutions for the re-use of CO<sub>2</sub> from industrial emissions

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## Summary

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*A French research institute developed an innovative approach based on biological solutions for the re-use of CO<sub>2</sub> emitted by industry. They are looking for companies, R&D institution or university in petrochemical industry, cement plant, wine cooperative or food processing industry for technical cooperation, research agreement or license agreement to adapt the solution to specifications of industries.*

**Creation Date** 01 March 2016  
**Expiration Date** 05 April 2017  
**Reference** TOFR20160301001

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## Details

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### Description

CO<sub>2</sub> (carbon dioxide) is the primary greenhouse gas emitted through human activities with 36 Mds tons emitted in 2014. As such, solutions to limit emissions and / or capture and store CO<sub>2</sub> have become a major environmental concern. One possibility is to consider CO<sub>2</sub> emitted from industrial plants as a raw material for chemicals production, turning what was considered as a waste into one of the largest carbon feedstocks for the production of fuel or platform molecule.

Nonetheless, CO<sub>2</sub> has a strong chemical stability provided by the high dissociation energy of C (carbon) =O (oxygen) bond. Therefore, the activation of this molecule requires efficient and selective catalysts that are challenging for industrial.

A french research institute was created in 1994. Its main activities are a pluridisciplinary research focused on the elaboration and characterization of new materials, especially membranes. The area of skills extends to membranes processes in domains such as effluent treatments, gas separation, biotechnology applied in food and health science.

This french research institute propose an innovative approach to this problem based on biological solutions. A nonpathogenic microbial population is used to reduce directly and selectively CO<sub>2</sub> into formate, a basic form of formic acid. Results show that a significant formate production can be obtained at 30°C and atmospheric pressure (soft conditions) and prove that this new bioprocess can be one of the effective solutions for the atmospheric CO<sub>2</sub> problematic. In addition, formate is a particularly interesting molecule since it can be used as a liquid vector for the storage of H<sub>2</sub> (dihydrogen) or as a precursor for the synthesis of biopolymers and methanol.

They are looking for companies, R&D institution or university in petrochemical, cement plant, wine or food processing sector to adapt this innovative solution to specification of partner's

sector unknown by the research institute. The collaboration considered could be a technical cooperation, research cooperation agreement or license agreement.

## Advantages and Innovations

- Biological solutions
- Soft conditions
- Effective solution for the atmospheric CO2 problematic

## Stage of Development

Available for demonstration

## IPR Status

Patent(s) applied for but not yet granted

## Keywords

### Technology

|          |  |
|----------|--|
| 06006012 | Bioprocesses                           |
| 10002003 | Capture and Storage of CO2             |
| 10002007 | Environmental Engineering / Technology |
| 10002013 | Clean Production / Green Technologies  |
| 10003007 | Waste to Energy /Resource              |

### Market

|          |                                  |
|----------|----------------------------------|
| 06003009 | Biomass and Biofuels             |
| 07003    | Food and Beverages               |
| 08001018 | Polymer (plastics) materials     |
| 08001019 | Speciality/performance chemicals |
| 08004    | Pollution and Recycling Related  |

### NACE

|          |   |
|----------|---|
| M.72.1.9 | Other research and experimental development on natural sciences and engineering |
|----------|---|

**Open for EOI :**    **Yes**

## Partner Sought

## **Type and Role of Partner Sought**

- Type of partner sought : companies, R&D institution or university wanting to develop the re-use of CO2 emitted by its own activity
- Specific area of activity of the partner : petrochemical industry, cement plant, wine cooperative, food processing industry
- Task to be performed by the partner sought : Co-development and license agreement of the solution according to specifications of the industrial

## **Type and Size of Partner Sought**

SME 11-50, University, R&D Institution, >500 MNE, 251-500, SME 51-250, >500

## **Type of Partnership Considered**

License agreement  
Technical cooperation agreement  
Research cooperation agreement

## Technology Offer

# Efficient cultivation and harvesting of microalgae

## Summary

*Two Spanish universities developed a more effective method for microalgae cultivation and harvesting, rising its yield up to 85% in comparison to existing photobioreactors on the market. The patented invention (not granted yet) is useful for algae biomass production at industrial scale. This biomass could be used for several applications, e.g. as a carbon source in biogas plants. Although open to technical cooperation, they are mainly interested in licensing the invention to microalgae producers.*

**Creation Date** 29 February 2016  
**Expiration Date** 09 March 2017  
**Reference** TOES20160229001

## Details

### Description

Currently, the cultivation and harvesting of microalgae is a method of obtaining biofuels that is attracting attention. Once microalgae are grown and harvested, the biomass can be converted into different value-added products such as biofuels in a clean, reproducible and sustainable manner by a sequence of chemical processes. In systems known to date, the cultivation of microalgae takes place generally in open ponds or in closed photobioreactors. The main advantages of open ponds are easy operation and low cost of investment and operation, but they are very sensitive to contamination and have low capacity to automate. On the other hand, photobioreactors have high investment costs but they solve the problems associated with contamination and automation. However, despite the great interest and the advance in the cultivation of microalgae, there are still many challenges to be overcome before that cultivation of microalgae can become a viable technology for energy production and large-scale product manufacture. These challenges include, among others: improving the efficiency of algal biomass production and harvesting, the application of an integrated technology, detailed operation (equipment, guideline values for operation) and tested process to enable its implementation on an industrial scale.

Researchers from two Spanish universities have developed a new method for cultivation and harvesting of algae that significantly increases the efficacy compared to current methods. The developed method is an integrated system that allows a continuous and uninterrupted operation of the entire process (cultivation and harvesting), decreasing installation and operating costs. Moreover, since the method has two filtration units (one for pre-harvesting and one for the harvesting), it is possible to separate the concentration of the solids that is maintained in the photobioreactor from the concentration purged from the system. It permits to optimize the concentration in each unit to achieve higher biomass productivity and facilitate the harvesting process. Thus, the developed system overcomes the disadvantages of the up-to-date described procedures.

The invention is applicable in the industrial scale production of algae biomass. This biomass could be used for one or more of the following applications:

- as a CO2 sink;
- as a raw material for industrial production of lipids, proteins and other value-added products associated with the food industry;
- as raw material to produce biodiesel and bio-fertilizers;
- as a carbon source in biogas production plants and;
- as sustainable treatment system for the recovery of the nutrients in the wastewater.

The companies sought should be active in the production of microalgae to be used in fisheries, biogas environments, fuel gas reduction, biological waste water clearing, oil production and pharmaceutical applications. Additional fields are harvesting, downstreaming and extraction of microalgae. The university is mainly interested in licensing this technology. However, the researchers are also open to technical cooperation agreements to further development.

## Advantages and Innovations

The most innovative aspect of this invention is that makes available the production of algal biomass in an efficient way, increasing up to 85% the productivity comparing with a conventional photobioreactor.

While, the main advantages of the invention are the following:

- It allows the production of algal biomass in an efficient way, decreasing the associated production costs, reducing the energy consumption and thus, minimizing the environmental impact associated with such processes.
- It is possible to maximize the recovery of nutrients if it is working with wastewater and to obtain a liquid stream with characteristics that enable its reuse.
- The production of concentrated algal biomass that enables its further use as commercial products.

## Stage of Development

Already on the market

## IPR Status

Patent(s) applied for but not yet granted

## Keywords

### Technology

|          |  |
|----------|--|
| 04005003 | Liquid biofuels                        |
| 04009    | Carbon capture and energy              |
| 10003001 | Biotreatment / Compost / Bioconversion |

### Market

|          |   |
|----------|---|
| 06003    | Alternative Energy  |
| 06003009 | Biomass and Biofuels  |
| 08001022 | Agricultural chemicals  |
| 09005    | Agriculture, Forestry, Fishing, Animal Husbandry & Related Products |
| 09008002 | Water, sewerage, chemical and solid waste treatment plants          |



## NACE

|          |  |
|----------|--|
| E.39     | Remediation activities and other waste management services |
| M.72     | Scientific research and development                        |
| P.85.4.2 | Tertiary education   |

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

Enterprise in the specific area of algae biomass production, for testing of applications, adaptation to specific needs, production and marketing.

### Type and Size of Partner Sought

SME 11-50, SME <10, >500 MNE, 251-500, SME 51-250, >500

### Type of Partnership Considered

License agreement  
Technical cooperation agreement

## Technology Request

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# A Chinese company is looking for solutions for the concentrated liquid caused by the treatment of landfill leachate

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### Summary

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*A Chinese leading environmental solid waste treatment company is looking for solutions for the concentrated liquid caused by the treatment of landfill leachate with membrane method. They want to cooperate with partners through research cooperation agreement and technical cooperation agreement.*

**Creation Date** 02 March 2016  
**Expiration Date** 07 March 2017  
**Reference** TRCN20160302001

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### Details

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#### Description

This Chinese company was established in 2010.

The main products and services include household waste treatment, heavy metal pollution treatment and recycling of various kinds of metals.

The company owns a combination of three platforms, including resource integration platform, technology R&D platform as well as investment and financing platform.

The company is looking for partners for research cooperation agreement and technical cooperation agreement of solutions for the concentrated liquid caused by the treatment of landfill leachate with membrane method. The concentrated liquid is mainly composed of biorefractory organic compound. The volume of the liquid to be treated is about 200 tons per day in cities and 1-10 tons per day in rural areas.

After the treatment of NF/RO (nano filtration/nano filtration) membrane, landfill leachate will produce about 30% highly concentrated liquid. The company is in search of an advanced and feasible technology to deal with the concentrated liquid mentioned above. The running cost of the treatment should be low, with an investment less than 50 thousand per ton, and an operating cost of about 10 euro per ton. The subsequent waste should be disposed easily.

#### Technical Specification or Expertise Sought

Solutions for the highly concentrated liquid caused by the treatment of landfill leachate with membrane method. The technology should be feasible and the operating cost should be low. Waste produced by the treatment should be disposed easily.

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### Keywords

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## Technology

|          |                                |
|----------|--------------------------------|
| 10002011 | Soil and Groundwater Pollution |
| 10003003 | Land and Sea Disposal          |
| 10003004 | Recycling, Recovery            |

## Market

|          |  |
|----------|--|
| 08004003 | Water treatment equipment and waste disposal systems |
| 08004004 | Other pollution and recycling related                |

## NACE

|          |  |
|----------|--|
| E.38.2.1 | Treatment and disposal of non-hazardous waste              |
| E.38.2.2 | Treatment and disposal of hazardous waste                  |
| E.39.0.0 | Remediation activities and other waste management services |

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

The company is looking for R&D institutions, universities or companies involved in advanced technologies of household waste treatment. The company is interested in research cooperation agreement and technical cooperation agreement.

### Type and Size of Partner Sought

University,R&D Institution,>500 MNE

### Type of Partnership Considered

Technical cooperation agreement  
Research cooperation agreement

## Technology Request

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### **Integrated instrument for sewage treatment sought.**

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#### **Summary**

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*A Chinese leading environmental technology company is looking for integrated domestic sewage treatment equipment such as purification tank used in small cities and towns. They want to cooperate through manufacturing agreement, service agreement and technical cooperation agreement.*

**Creation Date** 14 March 2016  
**Expiration Date** 14 March 2017  
**Reference** TRCN20160314001

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#### **Details**

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##### **Description**

This Chinese company was established in 2004.

The company is an eco-friendly hi-tech enterprise mainly engaging in environmental planning, evaluation, operation, test, product research, design, manufacture, marketing and installation. Its application fields include locomotive, automobile, heavy industries, steel, metallurgy, shipbuilding, tobacco, and glass-making.

It has been identified by ISO9001 quality management system and ISO14001 environmental management system.

The company is looking for partners for manufacturing agreement, service agreement and technical cooperation agreement for integrated domestic sewage treatment equipment like purification tank used in small cities and towns. Partners should be willing to develop and manufacture the integrated equipment together.

The treatment capacity of the equipment should reach 10-500t/d. The effluence of the equipment should meet the 1A standard of China's national sewage effluent discharge standard (GB18918—2002). The equipment should operate stably with very few influences from seasonal change and water quantity fluctuation. It should operate at a relatively low cost (best less than €0.06 per ton) with a service life of at least 15 years.

##### **Technical Specification or Expertise Sought**

The company is looking for integrated equipment for domestic sewage treatment. The equipment will be applied mostly in small cities and towns. The effluence of the integrated domestic sewage treatment equipment should meet the 1A standard of GB18918—2002. The treatment capacity of the equipment should reach 10-500t/d. The equipment should be stable and of low operating cost.

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#### **Keywords**

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## Technology

|          |                           |
|----------|---------------------------|
| 10003004 | Recycling, Recovery       |
| 10004002 | Municipal Water Treatment |
| 10004003 | Wastewater Recycling      |
| 10004012 | Water in Buildings        |

## Market

|          |  |
|----------|--|
| 08004003 | Water treatment equipment and waste disposal systems |
| 08004004 | Other pollution and recycling related                |

## NACE

|          |  |
|----------|--|
| E.36.0.0 | Water collection, treatment and supply                     |
| E.38.2.1 | Treatment and disposal of non-hazardous waste              |
| E.38.2.2 | Treatment and disposal of hazardous waste                  |
| E.39.0.0 | Remediation activities and other waste management services |

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**Open for EOI :**    **Yes**

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## Partner Sought

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### Type and Role of Partner Sought

The company is looking for companies, inventors, R&D institutions, universities and companies involved in the creation of mechanized technologies of domestic sewage treatment instrument. The company is interested in manufacturing agreement, service agreement and technical cooperation agreement. The company is interested in developing and manufacturing the integrated equipment together with the partner.

### Type and Size of Partner Sought

University, Inventor, R&D Institution, SME 51-250, >500

### Type of Partnership Considered

Services agreement  
Manufacturing agreement  
Technical cooperation agreement