Sector Group Intelligent Energy

This technology catalogue has been created by the Enterprise Europe Network to promote opportunities in the field of Renewable Energy around Europe.

The mission of the Network is to support business, innovation and transnational technological co-operation in Europe with a range of specialised business support services. Enterprise Europe services are primarily targeted at small and medium-sized enterprises (SMEs), but are also available to large companies, research institutes, universities, technology centres and innovation agencies.

The Sector Group Intelligent Energy (SGIE) was established to help businesses with cross border cooperation, information on EU legislation, funding opportunities, access FP7 research programmes and feedback SME concerns on EU policies.

The SGIE comprises some 60 members, for whom renewable energy plays a major role for regional business, research or their regional strategy. SGIE can help clients to promote their own business needs, technologies and services, as well as assist them in finding partners.

The Intelligent Energy sector covers a wide range of topics like:

- Energy production / grids / storage
- Solar energy
- Bio energy (inc. biofuels)
- Fuel cells and hydrogen technologies
- Wind energy
- Renewable energy for buildings
- Small hydropower, wave energy
- Geothermal energy

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ENERGY

Renewable Sources of Energy

Photovoltaics

Ref#:	Title:	Technology type:
07 PL WPTS 0IL5	Concentrator of Photovoltaic Arrays (CPV) – modules or devices which concentrate sunlight onto small, efficient solar cell	REQUEST
05 DE HRIM 0DQL	Know-how and optimum solutions for renewable energy projects	OFFER
08 ES MADG 0JGN	Research and innovation in power electronics systems applied to energy management	OFFER
08 FR IAPL 0JGI	Optimisation process of transparent conductive oxides for optoelectronic devices	OFFER
07 LT LTIC 0JBJ	Photovoltaic cells manufacturing technology based on self-formation processes	OFFER
07 IT IRCT 0JBA	Energy-saving automatic window system	OFFER
07 IT ONCA 0JBF	Third-generation photovoltaic solar cells	OFFER
07 IT LADA 0JB9	Know-how/expertise in energy management research activities and complete photovoltaic solutions	OFFER
07 IT LAUR 0JB3	Solid-state masking materials	REQUEST
07 FR IACC 0J9U	Know-how in flexible photovoltaic cells	REQUEST
08 ES MAAH 0JPC	High-technology solar tracking system and its complementary services	OFFER
07 IT LAUR 0J9A	Glass plates for hybrid organic solar cell applications	REQUEST
08 IT LAAP 0JQA	Reinforced self-rechargeable motorised locks	OFFER
07 ES ACIC 0II1	Photovoltaic PVC	REQUEST
07 GR IHND 0HWG	Photovoltaic panels for experimental measurements aiming at capacity improvement	REQUEST
07 IT LAUR 0HC9	Encapsulation techniques and printing technologies for hybrid organic solar cells	REQUEST
07 ES MADG 0HIW	Power inverter for photovoltaic plant and expertise in power control for wind generators	OFFER
07 DE SDTA 0H6L	Self-sufficient modular facade cleaning/maintenance robot	OFFER
06 DE NSNA 0GK8	Photovoltaic solar power plants including all services	OFFER
06 GB EAST 0GRQ	Custom synthesis of formerly unavailable metal alkoxide precursors for advanced materials applications	OFFER
06 ES BCAV 0EHC	Micro-wind-photovoltaic hybrid generator for isolated areas	OFFER
06 IL ILMA 0E9V	New simple and inexpensive method for preparation of corroles (aromatic organic chemicals)	offer
05 IT LAAP 0DYG	Photovoltaic panels and Aeolic generators	REQUEST
07 IT LAUR 0J9Q	Laser scribing for solar cell applications	REQUEST
08 PL 62AP 0IMY	Renewable sources of energy - technologies and cooperation in production, distribution and technical assistance	REQUEST
08 IT 53U1 0JDW	PV-Guardian: antitheft system for the PV Modules	OFFER
08 IT 53U1 0JDU	Pv-intrascan: Integrable system to scan the outdoor performance of PV-flat and PV concentration modules	OFFER
08 DE 1594 0JAL	GIS-based system for the evaluation of high potential areas for the installation of solar panels	OFFER
08 ES 22C4 0J3Q	Silicon Modules for photovoltaic solar panels.	REQUEST
08 CZ 0744 0J74	Photovoltaic roofing system	REQUEST
08 GR 49Q1 0J8U	Solar energy to provide central heating for houses, pools, green houses, etc	OFFER

08 NO 79EK 0J2Q	Self-cooling solar cell module	OFFER
08 LU 70DB 0J1N	A unique microporous PVC-silica membrane as gas humudifier for batteries, ventilators and energy storage devices	OFFER
08 CZ 0744 0IYM	Water heating system combining phototermic/photovoltaic glass tube vacuum collector.	OFFER
07 IT IRAS 0IHZ	Pilot line for the manufacturing of photovoltaic tiles pre-series	REQUEST
08 IT 55X5 0INL	AC e DC Electric Generator for mobile devices based on renouvable sources of energy	REQUEST
08 DE 1271 0J95	Particle-free and contactless transportation and positioning system	OFFER
08 IT 55X5 0IMG	Design a package IP65 with integrated solar cell	REQUEST
08 CZ 0754 0IJE	Development and production of techology and machines for production of nanofiber material for various use	OFFER
08 IT 52T7 0IIO	Third-generation photovoltaic solar cells	OFFER
08 BG 0528 0IH3	Market technology for production of renewable power sources – solar panels and wind energy converters, confirming with applicable EU standards.	REQUEST
08 ES 28F9 0IDD	Solar tracker with two axles on rolling platform	OFFER
08 SK SKND 0K7L	Photovoltaic solar modulus and systems development	OFFER
08 BG BGAR 0K6Q	Photovoltaic panels and systems, solar energy technologies	REQUEST
08 DE HRTH 0K66	Particle-free and contactless transportation and positioning system for ultra-high vacuum and clean room applications	OFFER
08 IT LOCP 0JU6	Sunlight collector	OFFER
08 ES SERT 0JRZ	Pilot plants for the production, storage and use of hydrogen, integrating solar photovoltaic energy and fuel cells	OFFER
08 ES 25E2 0IUV	Double axis solar tracker	OFFER

Photovoltaics

Ref#:	**05 DE HRIM 0DQL**	**Technology type:**	**OFFER**

Title: Know-how and optimum solutions for renewable energy projects

Abstract: A German company is offering its global know-how in planning, projecting, financing and operation of renewable energy projects. Its activities are site assessment (selection/analysis of suitable locations, wind and solar energy measurements/expertise), complete planning of projects and also technical and economic management during the operation period of the renewable energy plant. The company is looking for a joint venture or commercial agreement with technical assistance.

Description: Long-term experience and manifold activities allowed a German company to achieve special knowledge and project know-how concerning the renewable energy branch in the field of following activities:

In the field of wind energy:
• Selection of suitable locations and feasibility studies
• Wind measurements at 10 and 30 m at about 15 locations
• Wind expertise - energy yield calculation
• Wind potential studies for the supply of wind farms with a three-dimensional mesoscale programme
• Calculation of wake effects in wind parks
• Noise emission expertise
• Technical and economical comparison of different types of wind energy converters
• Working out of financing and managing models
• Negotiation with manufacturers of wind energy converters, electricity utilities, banks, property owners and local authorities.
• Projecting and supervision of installation and commissioning of wind energy converters
• Elaboration of financial plans and sensitivity analysis for wind farms
• Consulting activities
• Consulting activities for local administrations, planning groups and authorities
• Operation of wind energy converters

In the field of solar energy (photovoltaic systems):
• Selection of suitable locations and feasibility studies
• Energy yield calculation
• Technical and economical comparison of different types of solar energy systems
• Working out of financing and managing models
• Negotiations with manufacturers of solar energy systems, electricity utilities, banks, property owners and local authorities.
• Projecting and supervision of installation and commissioning of solar energy systems
• Elaboration of financial plans and sensitivity analysis for solar energy systems
• Consulting activities for local administrations, planning groups and authorities
• Operation of solar energy systems Innovative Aspects: • Integration of all related experts in one single procedure
• Straightforward strategy for realisation of renewable energy plants
• Low-cost project development
• Low-cost electricity production
• Quick market penetration in new markets possible

Country: Germany

Ref#:	**05 IT LAAP 0DYG**	**Technology type:**	**REQUEST**
Title:	Photovoltaic panels and Aeolic generators		
Abstract:	A firm located in Rome specialised in research, design and implementation of electrical energy generation systems by a renewable source, is looking for innovative photovoltaic panels and wind generators. A commercial agreement is sought.		
Description:	A firm located in Rome specialised in research, planning and implementation of electrical energy generation systems fuelled by a renewable source, is looking for innovative photovoltaic panels and Aeolic generators in order to improve their systems' performances in terms of duration of the working life, weight, size, management, maintenance and cost. Any other innovative aspect not listed before will be taken into consideration. Technical Specifications / Specific technical requirements: Photovoltaic panels and wind generators must supply an accumulation system for the differentiated production of electrical energy with powers varying from a few tens to 3.500 Watt (and even more).		
Country:	Italy		

Ref#:	**06 IL ILMA 0E9V**	**Technology type:**	**offer**

Title: New simple and inexpensive method for preparation of corroles (aromatic organic chemicals)

Abstract: Israeli researchers developed a new process for corrole preparation using very simple and commercially available starting materials. This new method overcomes their actual complicated synthesis and releases the enormous potential Corroles have for biomedical purposes (cancer and AIDS treatment) - Industrial partners are sought to synthesize the corroles by applying this new technology, and to supply the amounts of material (multi-gram) needed for the increased R&D activity.

Description: Israeli researchers have developed a new process for corrole preparation using very simple and commercially available starting materials involving a one-pot, solvent free condensation of an aldehyde with a pyrrole that provides novel corroles, their salts, optically active enantiomers and metal complexes thereof.
The metal complexes of porphyrin derivatives are involved in the most important of biochemical processes (such as oxygen binding and transportation in blood, electron transfer, and biosynthesis and degradation of foreign compounds). Synthetic porphyrin complexes are extensively utilized as oxidation catalysts and for biomedical purposes such as in cancer and AIDS treatment. Corroles, however, which are slightly contracted porphyrins, are relatively unknown since their synthesis has traditionally been so complicated and thus their potential in biological and biomedical fields has never been explored. Using this new process, corroles can be manufactured and made available for research and development purposes. Innovative Aspects: For the first time, a fast, straight-forward and efficient synthetic approach has been found for corrole production, relying on a one-pot, solvent-free condensation of an aldeyhde with a pyrrole. The structures of the novel corroles are significantly different and much more suitable for most applications than previously known corroles, which were all prepared in more than ten synthetic steps and with very low yield. - Only three reagents are required for the synthesis
- The synthetic procedure is a one-pot synthesis: the reagents are mixed in the same flask with no synthetic step needed prior to the one from which the desired corroles are obtained
- All starting materials are simple and commercially available
-All starting materials are stable at ambient conditions (unlike for the one-pot corrole synthesis developed by Funasaki in 1997)
- The amount of chemicals, other than those which are absolutely required as the basic building blocks of the final material, is heavily reduced compared to all other known methods
- The cost of production is unmatched (at least 100-fold less) than for other corroles
- Even relatively untrained persons (technicians for example) can successfully employ the new method, while all previously known procedures are limited to experts in organic synthesis.

Country: Israel

Ref#:	06 ES BCAV 0EHC	Technology type:	OFFER

Title: Micro-wind-photovoltaic hybrid generator for isolated areas

Abstract: A Spanish technological centre has designed a 2, 5 kW micro-wind generator in conjunction with photovoltaic plates. The hybrid system takes maximum advantage of renewable resources to supply electricity autonomously. Thus, it is an ideal solution for communities distant from the grid. It has easy installation and maintenance, remote control via GRPS and minimum aesthetic impact. Partners for manufacturing or commercial agreement with technical assistance are sought.

Description: The wind system is a triple-bladed generator with a horizontal axis rotor. Each blade is 2.1m long with an aerodynamic profile chosen for working with low Reynolds values - they have a variable angle of torsion running from the base to the tip. In this way, the angle of attack of the wind with respect to the vane is kept constant all along its length. They have a wide base to easily start up and a narrow tip to reduce noises to high-spin speeds. The rotor is directly coupled to a multi-polar electric generator consisting of permanent magnets (PMG) with no intermediate multiplier. The current generated is alternating and with variable voltage and frequency. This current goes to a number of batteries after passing through a voltage regulator that converts the alternating current to direct and eliminates the surplus voltage. Finally, a current inverter adapts the voltage for customary usage.

The wind generator starts to rotate at wind speeds of 3.5m/s and reaches maximum power at 9.5m/s. If the wind exceeds a velocity of 16m/s the passive power control system (side furling) of the wind generator comes automatically into operation: this control system is achieved through an articulated assembly between passive power regulation system and the body of the wind generator, which is situated eccentrically to the axis of the wind generator's truss tower. Thanks to this braking mechanism for the rotor, both the electric surge infrastructure and the mechanical components are protected against excessive centrifugal forces.

The photovoltaic system has 4 plates made of mono-crystalline silicon with 0,5 kW of total power.

The wind-photovoltaic system is monitored and managed by remote control. The communication interface of the remote control has been developed specifically for low-power wind generator by the Spanish technological centre. This interface is more economical than network analysers existing on the market. The remote communication is via GPRS (Global Packet Radio System). One advantage of GPRS is that customers may be charged only for the amount of data that is transported instead of the duration of connection.

This hybrid system is designed to work autonomously, i.e. outside the electric grid system. So, this kind of application is of great use in communities distant from cities or towns such as rural areas or zones under development. These systems can be used as a substitute for the grid in areas where the latter system is prohibitively expensive and, moreover, they promote awareness regarding natural resources. Innovative Aspects: - If they are compared to high-powered wind generators, the main difference is in the simplicity: easy installation and maintenance, minimum aesthetic impact and totally integratable into the environment.

- Lower stress fatigue, less noise and lower variation of aerodynamic torque in the axis than in traditional wind generator.
- Only regulated by wind speed.
- Wind-photovoltaic hybrid system is the optimal solution for isolated generation since photovoltaic system complements energy production in calm periods when micro-wind generator does not work. - Simplicity:
  - no multiplier,
  - minimum number of mobile parts
  - Passive power and orientation control system,

- minimum maintenance.
- Remote control via GPRS.
- Electrogenic groups can be connected to the inverter in order to charge batteries if the renewable resource is not enough.

Country: Spain

Ref#:	06 GB EAST 0GRQ	Technology type:	OFFER

Title: Custom synthesis of formerly unavailable metal alkoxide precursors for advanced materials applications

Abstract: A UK coordination chemistry company offers its expertise in tailored metal alkoxide synthesis and functionalisation for new materials applications in areas such as nanotechnology, thin films, ceramic micro-printing, optics, sensors etc. Aimed at R&D organisations and universities, the company can synthesise precursor compounds not otherwise commercially available. The company seeks R&D partners with specific research requirements, as well as commercial partners in research chemicals.

Description: Coordination chemistry has been recognised for a hundred years. Recently applications based on metal alkoxide synthesis and functionalisation have emerged that can benefit from the niche application of this discipline. However, at present most new material applications (in areas such as nanotechnology, displays, catalysis of renewable feedstocks, optics, sensors and ferroelectrics) are small-scale and speculative, and due to the unique coordination chemistry involved, established custom synthesis organisations have chosen not to become involved.

Now a specialist UK company offers a tailored synthesis service for metal alkoxides precursors and related compounds (www.multivalent.co.uk). (The lability of metal alkoxides means they are easily derivatised and customised for specific purposes, for example sodium metagermanate glasses and zirconium silicate thin films.)

Founded in 2005, they have already made almost 40 different products using 20 different elements to meet the demands of this growing market, and are enjoying repeat sales and a high level of referrals from existing customers. The latter include well-known R&D organisations both public and private, and university departments active in the advanced materials sector. The company offers both the routine synthesis of low-volume established products (e.g. tin isopropoxide & hafnium t-butoxide) and the development of economic methodologies for new products (e.g. iron oxy-ethoxide & nickel isopropoxide).

The company has a thorough understanding of research publications and patents in these fields, and works closely with its clients/partners in the development of new metal alkoxide compounds. In most cases they are the only commercially reliable source globally in terms of quality and delivery. Innovative Aspects: The know-how and expertise to custom synthesise a unique range of formerly unobtainable metal coordination compounds. (The combination matrix between metallic/metalloid elements and aliphatic alcohols extends to several hundred compounds. Derivatisation extends the list to several thousands, and this exploitation has been rolling out for elements such as silicon and titanium for several decades. Each product inhabits a niche where its chemistry is uniquely tuned to the application.). The main advantage for R&D partners is the ability to commercially synthesise previously unobtainable metal alkoxides, metal alkylamides, metal diketonates and their functional derivatives.

Country: United Kingdom

Ref#:	**06 DE NSNA 0GK8**	**Technology type:**	**OFFER**

Title: Photovoltaic solar power plants including all services

Abstract: A German company plans and constructs photovoltaic solar power plants. The electronically subsidiary of the German Company Group exists for over 25 years. This division plans and constructs also high and low voltage plants. They are certified according to DIN EN ISO 9001:2000 and currently completing the VDS certification process.
The Company is looking for a Spanish service partner.

Description: The company plants and constructs professionally and Europe-wide photovoltaic solar power plants.
The whole service includes also:
- system simulation and output forecasting,
- profitability analysis,
- proposal for suited insurances,
- financing plans,
- assembly and execution drawings,
- coordination with authorities and electricity supplier,
- preparation of feeding contracts,
- delivery of all makes,
- professional assembly works,
- periodic maintenance,
- co-investment of the plants.

The Company is looking for a Spanish service partner offering the above-mentioned services in their country. Innovative Aspects: The service of the company includes a calculation of profitability including financing, tax advantages and calculation of interest for all European countries.
An associated investment company helps in the financing or can participate as a co-investor.

Country: Germany

Ref#:	07 DE SDTA 0H6L	Technology type:	OFFER

Title: Self-sufficient modular facade cleaning/maintenance robot

Abstract: A German company has developed a unique self-sufficient facade maintenance robot which can perform cleaning or inspection tasks on large multi-storey buildings with fully enclosed glass facades. With its novel drive concept no safeguard ropes or cable systems are needed. Energy and utility supply is realised by service / dogging stations attached to the building frame construction. The device is available for demonstration. The company is looking for manufacturer / buyer of the patent.

Description: A German engineering company has developed a unique self-sufficient modular facade maintenance device, a robot which can perform cleaning or inspection tasks on large multi-storey buildings with fully enclosed glass facades. Complete glass facades as well as the integration of solar panels into the facade of high office or residential buildings remain a popular architectural trend. The regular cleaning and maintenance of such surfaces is rather challenging for its high technical demands. The proposed facade robot is providing an innovative and efficient answer to many conventional technical problems. The unmanned device is “climbing” along the construction frame of the building by force-locking itself to a pre-installed bolting system. It is thereby moving self-guided along the glass surface and can even move across overhanging facades. Its drive and movement concept is based on a single sliding gripper principle (SSG), therefore no safeguard ropes or cable systems are needed. The necessary supply with energy, utilities and media is realised by service / dogging stations attached to the building frame construction. The facade robot is refilling automatically at these stations on demand. The positions / distances between the service stations are calculated precisely for the specific purpose as well as the type of building construction. They can be integrated into new as well as retrofitted to existing buildings.
Apart from the cleaning function the facade robot can also be equipped to perform technical inspection and even small maintenance and repair tasks. Detecting damages on the surface of the pillars of tall bridges for instance and filling small cracks can be realised.
The facade robot is remotely controlled by an operator. The interface between human and the device consists in a control terminal ensuring permanent control and contact by radio communication. The device with the integrated cleaning module is available for demonstration.

Technical specifications:

Drive system.
Principle: quadruple synchronous 3-axle linear drive.
Engines / pcs: 24V DC with integrated incremental encoder and magnetic brake / 12.
Transmission / pcs: 2-stage, planetary gear and spindle transmission, self-locking / 12.
Sensor / pcs: Distance measuring sensors, magnetic / 12.
Control: Master processor with radio module, engine controller.

Chassis
Frame: Aluminium – lattice frame.
Housing: CFK (carbon fibre reinforced plastic) housing, 5 components.

Grip arm
Principle: Tap grip arm with forced locking by a bolting device.
Engines / pcs: 24V DC with integrated incremental encoder and magnetic brake / 1.
Sensor / pcs: Laser / 3, magnet sensor / 1, force sensor / 1.
Control: Processor, engine controller.

Cleaning system
Principle: 3-axle linear drive, fluid-, brush cleaning, stripper, discharge unit.
Cleaning medium: Water + detergent.
Water / waste water: 5l / 5l.
Engines / pcs: 24V DC / 5.
Sensor / pcs: Laser / 1, ultrasonic / 5, force sensor / 2.
Control: Processor, engine controller.

Performance
Speed: v max 0, 03 m/s.
Cleaning: 6, 5 – 19, 0 m² / h, 28000 m² / a.
Working temperature: + 5 – 50 C°.
Power supply: Accumulator with controller, 24 V /41 Ah.
Power consumption: 350 W.

Dimensions and weight
(h x w x d): 225 x 345 x 70 cm.
Weight: 225 kg.
Protection: IP 65. Innovative Aspects: - Highly efficient tool for the long-term regular maintenance (cleaning or inspection) of the glass or solar panel facade of large/very high buildings, also for overhanging facades.
- Self-sufficient and low-maintenance device with low operational demands after installation.
- Remote controlled, unmanned, no risk of accidents through people working at extreme heights.
- No roof installations required e.g. cable or rope systems.

Country: Germany

Ref#:	07 ES MADG 0HIW	Technology type:	OFFER

Title: Power inverter for photovoltaic plant and expertise in power control for wind generators

Abstract: The Power System Control Group of a Madrid based university has developed a technology that allows the control of power inverters for photovoltaic plants grid connection. The research group has a great deal of experience in R&D projects dealing with the modelling and control of electrical machines, mainly for wind energy and photovoltaic applications, and renewable energy grid integration. They are seeking companies in these energy sectors, for a technical cooperation.

Description: The Power Control Group in a Madrid based Engineering School has expertise in developing new solutions to solve industrial problems related to the control of electrical components and systems in the renewable energy sector.

They are specialists in designing and developing control systems for grid connection of photovoltaic systems. Recently, they have developed an innovative solution of industrial interest for the control of power inverters for photovoltaic plants grid connection. The control system allows for the active and reactive power control of the plant. Maximum power point tracking is achieved by an innovative fuzzy logic control algorithm, and while the output production is maximized, the control system allows for power factor control of the plant, which in the Spanish regulation allows achieving a retribution complement up to 8%. Power factor regulation can be reconfigured into voltage control for the connection to weak grids which has advantages for both the distributor and the photovoltaic plant.

In addition, they are specialists in providing solutions for the control of wind farms with specifications of power-frequency regulation and voltage-reactive power, with the aim of improving the integration of wind energy into the grid. The services they offer in this field, include:

*Designing and developing control systems for variable speed wind energy generators. They have wide and proven experience in developing solutions that allow the connection of electrical energy generated at variable frequency by variable speed wind energy generators to the grid of fixed frequency.

*Designing and developing control systems for electrical drives. They have expertise in field oriented vector control, direct torque control, parameter identification, sensorless control, etc.

*Developing solutions for integration of distributed generation into the grid.

They have the following equipment in their premises:
- Synchronous machine with excitation winding.
- Permanent magnets synchronous machine.
- Asynchronous machine with rotor winding.
- Asynchronous machine with squirrel cage rotor.
- Real time control cards.
- Electronic power converters.

The research group collaborates with companies in the field of generation, transport and distribution of electrical energy, providing integral services of R&D, consulting, assessment, and training. They are members of the Institute of Electrical and Electronics Engineers (IEEE) and participate actively in the activities of the Power Electronics Society. Innovative Aspects: - Their power control systems allow optimizing the production from the wind farms and phoptovoltaics plants.

- The systems are desinged in order to optimize the connection of the electrical energy generated by the aerogenators to the grid.

Country: Spain

Ref#:	**07 IT LAUR 0HC9**	**Technology type:**	**REQUEST**
Title:	Encapsulation techniques and printing technologies for hybrid organic solar cells		
Abstract:	An Italian university research team is looking for a technology concerning encapsulation materials/techniques and layer deposition both rigid and flexible for dye-sensitised and organic solar cells. The team is looking for partners interested in technical collaboration to develop the requested technologies.		
Description:	An Italian team carries out research and development on dye-sensitised and organic solar cells. They are especially interested in encapsulation materials and techniques for both rigid and flexible cells. The technology requested should be compatible with thin-film or solution-processed fabrications. They are also looking for efficient, large-area thin-film printing and scribing techniques for deposition and pattering of cell layers. Technical Specifications / Specific technical requirements: The research team requests a thin-film or solution-processed fabrication. Therefore they are looking for efficient, large-area thin-film printing and scribing techniques for deposition and patterning of layers for both rigid and flexible for dye-sensitised and organic solar cells.		
Country:	Italy		

Ref#:	**07 GR IHND 0HWG**	**Technology type:**	**REQUEST**

Title: Photovoltaic panels for experimental measurements aiming at capacity improvement

Abstract: A newly established Greek SME intends to develop improved photovoltaic systems adapted to Greece's specific climate conditions. The company seeks collaboration with manufacturers/assemblers of photovoltaic panels willing to dispose of waste products of their production line (e.g. semi-finished or broken-up panels), for performing experimental measurements aiming at capacity improvement. Further collaboration could involve pilot manufacturing/testing and mass production of the improved product.

Description: A Greek company active in the field of development of energy from renewable sources is particularly specialised in photovoltaic systems. After the deregulation of the Greek electricity market, the company intends to enter it with the construction of a photovoltaic park with 150-kW total capacity. Progressively the company intends to increase the capacity up to 2 MW.
Up to now, manufacturers of photovoltaic systems produce panels of standard performance. It is well known that the performance of photovoltaic systems depends on climatologic conditions of the location where they are installed. The aim of the company is to customise conventional panels by taking into consideration the particular climatologic conditions of Greece, intending to study thermal and optical improvements of existing modules, in collaboration with a research laboratory. The company seeks collaboration with companies producing and/or assembling photovoltaic modules, willing to dispose of the waste products of their production line (e.g. semi-finished or broken-up panels), for the aforementioned experimental measurements to be performed.
The collaboration also refers to pilot manufacturing and testing of the improved models. Provided the effectiveness of the new product, further collaboration could be established for its mass production. Technical Specifications / Specific technical requirements: The company intends to enter the Greek electricity market with the construction of a photovoltaic park with 150-kW total capacity. Progressively the company intends to increase the capacity up to 2 MW. As a result large grid-connected PV modules are sought for the study of thermal and optical improvements.

Country: Greece

Ref#:	**07 ES ACIC 0II1**	**Technology type:**	**REQUEST**

Title: Photovoltaic PVC

Abstract: An SME located in Navarre in northern Spain, and with some 40 years of experience in the area of manufacturing pre-coated sheet metal is looking for a partner - industrial or technological - with in-depth knowledge of PVC film with photovoltaic properties and its application and behaviour under different circumstances. Partners with knowledge of the construction sector would be of particular interest.

Description: A Spanish SME located in Navarre has some 40 years of experience in the area of manufacturing pre-coated sheet metal. The company is specialised in high-value-added coverings and coatings, and oriented towards continuous innovation in service and quality. Of particular interest are pre-coated materials both with paint or with plastic films, which are used in numerous end products such as domestic appliances, metallic doors, panels for ships and boats, and coverings for buildings and elevators.

At present the company is investigating the application of PVC (Polyvinyl Chloride) films with photovoltaic properties and is interested in collaboration with companies (possibly PVC manufacturers) or research centres with similar interests for the development of a material that would be applied in the construction sector (possibly roofing). The solution should thus be able to sustain wet and humid conditions.

Background:
The company is pursuing a policy of heavy investment in Research and Development through which it has been able to develop new products and technological processes that have crystallised in a new generation of commercial brands recognised and appreciated in the international market. Through a policy of international expansion embarked upon more than 10 years ago, the company has reached 60% of its sales in export; Europe being its most important natural market, while Eastern Europe, North and South America, Maghreb and the Middle East have been progressively incorporated. Technical Specifications / Specific technical requirements: For the product sought, a number of properties have to be complied with:
- Good resistance to roots.
- Resistance to UV exposure.
- Good anti-corrosive properties.
- Very good resistance to moisture.
- Very good resistance to abrasion.
- High flexibility for bending.
- Easy to mechanise.
- PVC, PP (polypropylene) or PE (polyethylene) films should be weldable to other films of the same material.

Country: Spain

Ref#:	**07 PL WPTS 0IL5**	**Technology type:**	**REQUEST**
Title:	Concentrator of Photovoltaic Arrays (CPV) – modules or devices which concentrate sunlight onto small, efficient solar cell		
Abstract:	Fast-growing company from north-west Poland which is dealing with automation and steering control systems especially for military purposes is looking for a Concentrator of Photovoltaic Arrays (CPV) to start another field of commercial activity. SME is looking for devices or know-how to concentrate sunlight on a specific surface to increase the efficiency of the solar system. Company is looking for a license agreement or commercial agreement with technical assistance.		
Description:	Company from north-west Poland, which is dealing with automation and steering control systems, wants to start a new branch of activity which will be connected with solar. Company is looking for modules or devices which will concentrate sunlight onto small solar cell, which will increase efficiency of direct sunlight cells - Concentrator of Photovoltaic Arrays (CPV) or similar equipment. Company is interested in license agreement and commercial agreement with technical assistance. Technical Specifications / Specific technical requirements: Technology should concentrate direct sunlight onto a small solar cell and increase the efficiency of whole solar system. Technology also should reduce cost of generating electricity from the system.		
Country:	Poland		

Ref#:	**07 IT LAUR 0J9A**	**Technology type:**	**REQUEST**

Title: Glass plates for hybrid organic solar cell applications

Abstract: An Italian university research team carries out research and development on dye-sensitised and organic solar cells. They are especially interested in encapsulation materials and techniques for sealing glass substrates together. The technology requested ideally would be compatible with solution-processed fabrication or other low-cost techniques. The team is looking for partners interested in commercial agreement with technical consultancy.

Description: An Italian research team is seeking a technology concerning the encapsulation materials for sealing rigid glass substrates together for dye-sensitised and organic solar cell applications. Technical Specifications / Specific technical requirements: The team needs to seal two glass substrates together maintaining a spacing of around 25 micron - 60 micron between them with a material that encapsulates and protects the inner space extremely well from the outer atmosphere: oxygen and water vapour in particular. The inner space will be filled with an electrolyte based on solvents like methoxyproprionitrile; therefore the encapsulant needs to be highly resistant to it because it is necessary to prevent any leakage of the electrolyte to the outside. Ideally curing temperatures should be lower than about 100°C, but it could be more if the encapsulant is particularly promising.

Country: Italy

Ref#:	**07 IT LAUR 0J9Q**	**Technology type:**	**REQUEST**

Title: Laser scribing for solar cell applications

Abstract: An Italian university research team with expertise in the photovoltaic sector is looking for a technology concerning laser scribing and heating for solar cell fabrication. The partner sought should supply the requested equipment with technical assistance.

Description: The demand for renewable energy is steadily increasing in parallel with the interest of the industrial system in it.
The team is working in the Centre for Hybrid and Organic Solar Energy, and the researchers are looking for thin-film solar-panel laser-scribing machines that should be able to accommodate very large photovoltaic cells and rapidly scribe the conductive film using multiple heads. Technical Specifications / Specific technical requirements: The researchers are looking for an x-y laser machine with at least two laser heads with different photon energy and pulse widths for scribing and heating applications.

Country: Italy

Ref#:	**07 FR IACC 0J9U**	**Technology type:**	**REQUEST**

Title: Know-how in flexible photovoltaic cells

Abstract: Two French inventors creating their company are looking for an innovative flexible photovoltaic cell with a yield better than 15%. The French inventors are first interested in technical cooperation in order to perform some tests and to validate their products and/or prototypes. Then they are interested in a manufacturing or commercial agreement with a technical assistance.

Description: Two French inventors are developing a new product destined to be largely distributed. For this development they are looking for an innovative flexible photovoltaic cell with a yield better than 15%. Moreover, the cell will be able to produce 24 volts with a 1.10m² surface. The French inventors are first interested in a technical cooperation in order to perform some tests and to validate their products and/or prototypes. Then they are interested in a manufacturing or commercial agreement with technical assistance. Technical Specifications / Specific technical requirements: The technology will be a photovoltaic cell on a flexible support. The yield of the cell will be better than 15%.
For a surface of 1.10 m², the solar cell will produce 24 Volts with a yield of 150 Watts.

Country: France

Ref#:	**07 IT LAUR 0JB3**	**Technology type:**	**REQUEST**
Title:	Solid-state masking materials		
Abstract:	An Italian university research team specialised in the photovoltaic sector is looking for a technology concerning solid-state masking materials to deposit pattern masks into glass substrates in any shape desired.		
Description:	An Italian research team carries out research and development on dye-sensitised and organic solar cells. The researchers are interested in easily patterned and deposited masking materials. Technical Specifications / Specific technical requirements: The technology requested should use patterned and deposited masking materials, for example by lamination, and easily peeled away and possibly re-usable. The technology could also be solution-processed or with other low-cost techniques. The masks should be easily patterned and laid into glass substrates, and easy and cheap to deposit (for example laminate) and take (or peel) away. The thickness of the masks should be lower than 20 microns. Later resolutions of the technology should be around 0.2 mm.		
Country:	Italy		

Ref#:	**07 IT LADA 0JB9**	**Technology type:**	**OFFER**

Title: Know-how/expertise in energy management research activities and complete photovoltaic solutions

Abstract: A small Italian consultancy company offers its expertise in the field of energy management and renewable energies, environmental engineering, health and safety at work, GIS and data management, and Web 2.0 applications. The company is interested in providing its services concerning project, research and training on these topics.

Description: An Italian company deals with environmental engineering and offers complete photovoltaic system solutions and energy audit.
The main activity concerns business planning related to renewable energies and integrated solutions for industrial and agriculture sites. Expertise in data processing and multimedia information systems, especially for environmental studies and analysis can be also provided. In particular the company offers cartographic products, GIS, DBMS and Web applications, interactive platform, Report, Video, DVD for planning and communication purposes. Other research activities are on environment themes: energy management, cost/benefit analysis, risk assessment, low-impact technologies, noise pollution, and mobility management. Innovative Aspects: The company can provide partners with its great expertise on EU FP7 research projects, Eco-Management and Audit Scheme (EMAS), Ecolabel regulations, and sustainable development policies. Moreover it collaborates with the University of Rome La Sapienza for development of labs, innovative ICT systems and research programmes. For ISPESL (the technical-scientific body in the National Health Service that reports to the Ministry of Health as regards all aspects of occupational safety, health and prevention) and INAIL (the Workers Compensation Authority) the company operates for the environmental assessment of industrial plants and sustainable development planning.

Country: Italy

Ref#:	07 IT ONCA 0JBF	Technology type:	OFFER

Title: Third-generation photovoltaic solar cells

Abstract: An Italian university with a long experience in thin films and a-Si-based II generation solar cells is devoted to realising a solar cell structure of the photo-electrochemical type and particularly DSSC (Dye Sensitised Solar Cell). The group is looking for technical co-operation with an industry interested in project development and commercialisation.

Description: Efforts will be concentrated towards the design of photo-electrochemical solar cells of Graetzel type, capable of giving a threshold photovoltaic conversion efficiency higher possibly than 10 %, using new materials and new structures in order to escape patent restrictions.

The cell invented by Graetzel represents a really revolutionary concept in photovoltaics:

1) The difficulty of reaching higher efficiency by a gap material (like silicon), characterised by an optical threshold and as a consequence not using the whole wavelength interval of the solar spectrum, is brilliantly solved by particular dyes, which have quantum efficiency with a maximum of 90% and extending over the whole solar AM1 spectrum.

2) The difficulty of reaching larger photovoltages (which imply a higher threshold and a lower conversion efficiency) and thicker active regions, in order to absorb a large amount of light intensity, is also brilliantly solved by very thin film thicknesses, which do not supply large electrical fields and high voltages, but which are in series each other (the concept of a multi-junction solar cell is extended almost to infinite) and which do not need to be extremely pure or trap-free, since carrier path is extremely short.

3) This kind of approach can be (and in fact it is) extended to other structures, like solid-solid (by using ionic or p-type hole conductors), to organic or polymeric materials (with steps toward a simulation of photosynthesis) and can also use more organised nanostructures, like nanowires. Innovative Aspects: Starting costs of silicon technology are very high and this is true also for amorphous silicon. Production costs for technologies that are using either very big vacuum deposition chambers or wide-area electronic devices approach can lean on well-established technologies, but they will never be cheap, as all the history starting from seventies or eighties has demonstrated. New cheaper approaches, like DSSC (Dye-Sensitised Solar Cells) or photo-electrochemical cells, capable of reaching conversion efficiencies of more than 10 %, are the main candidates for the lowest cost indicated by DoE, Department of Energy (0.6 US$/watt).
From the technical point of view, the goals could be related to the advantages of DSSC cells, like: potential to be flexible and transparent, potential to be manufactured in a continuous printing process, fabrication by means of large-area coatings; easy integration in a wide variety of devices; big cost reduction with comparison to traditional photovoltaic devices; substantial ecological and economic advantages.

Country: Italy

Ref#:	**07 IT IRCT 0JBA**	**Technology type:**	**OFFER**

Title: Energy-saving automatic window system

Abstract: An Italian SME with a long experience in the energy saving sector has developed a totally automatic innovative window system that allows to monitor the climatic and temperature balance and provides thermal insulation in a building in every season. The company is seeking partners with the capabilities to collaborate to improvement and diffusion of the technology.

Description: An Italian SME with a long experience in the energy saving sector has developed a totally automatic innovative window system.
The system comprises a frame with two movable window wings, one being an inner wing and the other being an outer wing, and a mechanism that can open and close the above-mentioned wings independently from each other.
Moreover, the system uses glass surfaces with specific physical and optical properties, and it is provided with a motor-driven blind and a curtain located on rollers.
The features described above make the system suitable to automatically reach various positions concerning the two window wings and allow the monitoring of the climatic and temperature balance.
In particular, the window system absorbs solar energy during the cold season and controls such solar radiations in summer, providing thermal insulation and a controlled internal incidence of light and air exchange. Innovative Aspects: The window system offers the possibility to handle all the elements in an automatic and synchronised way.
Consequently, the system fits all the seasons and climatic conditions and assures an optimised temperature balancing and thermal efficiency in a room.

Country: Italy

Ref#:	**07 LT LTIC 0JBJ**	**Technology type:**	**OFFER**

Title: Photovoltaic cells manufacturing technology based on self-formation processes

Abstract: A Lithuanian SME has developed a unique technology for manufacturing photovoltaic (PV) cells, which is based on knowledge and exploitation of self-formation processes available in microelectronics. The company is looking for a PV cells producer that would be willing to implement this new technology in mass production. Commercial agreement with technical assistance is sought.

Description: The new PV cells manufacturing technology and know-how are based on knowledge and exploitation of self-formation processes available in microelectronics. With application of some modelling tools, a smart combination of these processes was obtained allowing to propose novel self-forming structures for high- efficiency PV cells.

The fundamental principle of self-formation is to generate structural growth processes as found in nature by applying smart software. In other words, the company found a way to enable PV cells to form themselves. With this method, with comparison to traditional planar methods, a reduction of more than 50% in manufacturing costs was obtained.

The company already produces PV cells in small quantities and is looking for industrial partners that would be willing to implement the new technology in mass production. Innovative Aspects: * Application of self-formation processes.
* Production costs are lower by more than 50% through optimisation of technological routing card and reduction of the number of technological processes required.
* Possibility to develop PV cells with complex structures leading to higher efficiency of PV cells.

Country: Lithuania

Ref#:	08 FR IAPL 0JGI	Technology type:	OFFER

Title: Optimisation process of transparent conductive oxides for optoelectronic devices

Abstract: A French laboratory has developed a new process to improve transparent conductive oxide surfaces for use in organic devices. The process, applied on organic solar cells using transparent conductive oxide, allows achieving reproducible good-level performance devices. The efficiency is ten times larger than without treatment. For indium tin oxide an increase of at least 25% is reached. They are looking for an industrial or research laboratory partner interested in the corresponding patent.

Description: Organic solar cells consist of either two organic layers or a homogeneous materials mixture.

One of them - either an organic dye or a semi-conducting polymer - donates the electrons.
The other component serves as the electron acceptor. In these devices, Indium Tin Oxide (ITO)-coated substrates are used as transparent anode. ITO, however, is not ideal since indium is the principal component of ITO and it is scarce. Moreover, a difficulty in organic optoelectronic devices is the charge carrier transport between the organic materials and the electrodes.
A common solution is to introduce a thin interlayer that adjusts the electronic behaviour of the adjacent materials. Usually, a thin layer of polyethylene dioxythiophene doped with polystyrene sulphonic acid (PEDOT:PSS), which is a conductive polymer, is deposited by spin coating onto the ITO film before organic deposition.

This buffer layer is very efficient since it allows achieving good adjustment of the work function, passivation of surface defects, and smoothes the ITO surface.
However, PEDOT:PSS is problematic since it degrades under UV illumination, introduces water into the active layer, and is slightly acidic. Moreover, not only the deposition process from aqueous solution introduces impurities but the reproducibility is in need of improvement. Different transparent conducting materials have been probed as alternatives to ITO. For example, many groups have used carbon nanotubes; however, the sheet resistance of nanotubes thin films is higher than that of ITO. An increase of carbon-nanotube thin films thickness to reduce their sheet resistance results in a decrease of their transparency.

A French laboratory shows that the deposition of a specific ultra-thin film (L) onto a transparent conductive oxide (TCO) allows achieving reproducible good-level performance devices.

For instance, in the case of multilayer heterojunction devices, insertion of this layer between an aluminium-doped zinc oxide (ZnO:Al) or a fluorine-doped tin oxide (SnO2:F) anode and an organic electron donor results in a power conversion efficiency ten times larger than the values achieved for same solar cells without interlayer, which means these cells achieved performances of the same order of magnitude than those using ITO as anode.

In the case of ITO the insertion of this ultra-thin layer results in an increase of at least 25% of the cell performance. It suggests that this ultra thin film allows the design of high-efficiency organic devices, which are indium (and/or PEDOT:PSS)-free.

It can be thought that such improvement in organic photovoltaic cells performance can be also encountered in other organic devices such as

organic light emitting devices, flat panels, etc. Innovative Aspects: - In the present innovation proposed here, the process is very simple and reproducible.
- It can be used easily on large surfaces.
- The process allows substituting ITO with another transparent conductive oxide layer while keeping the same efficiency.
- In case of using ITO in organic solar cells, the process allows for design of high-efficiency organic devices.

Country: France

Ref#:	08 ES MADG 0JGN	Technology type:	OFFER

Title: Research and innovation in power electronics systems applied to energy management

Abstract: A Spanish research group offers its experience in consultancy and R&D projects with private & public funding and pre-industrial prototype building in four main topics: energy conversion (design, modelling & prototyping of equipments & systems), magnetic components modelling and design, photovoltaic systems and electromagnetic compatibility (EMC), oriented to companies that require R&D in equipments and systems related to energy management, looking for technical cooperation and license agreement.

Description: The group is formed by an expert team of doctors and engineers with a wide experience in Power Electronics. The group works in consulting activities and R&D projects with private and public funding. Regarding public funding, the group usually participates in national and regional funding programmes, by its own or in association with private companies. Regarding private funding, stable relationships have been established with important companies by means of short-, medium- and long-term projects. The collaborating companies belong to different industrial areas: electric, aeronautic, telecom, medicine, railway, etc.

The current activity is focused on the following topics:
- Modelling, analysis and design of distributed power systems for aircrafts, railways and power systems for critical loads.
- Solar photovoltaic power systems: design of converters with maximum power point tracking and inverters.
- Power systems based on fuel cells, oriented to portable applications, transport and aeronautic.
- New control techniques applied to power supplies: converters with fast dynamic response, digital control based on microcontrollers or programmable devices such as FPGAs, new modulation techniques for three-phase inverters, etc.
- Design, building and testing of pre-industrial prototypes: background in design of switching DC/DC converters and DC/AC inverters with different control techniques.
- Finite element analysis and analytical methods applied to the modelling and design of low- and high-frequency magnetic components and to the modelling of the connecting cables in aircrafts (feeders).
- Diagnosis of power transformers by means of the frequency response analysis.
- Pre-compliance of electronic equipments. Technical assistance to obtain the compliance of these equipments and experience in the design of EMI (Electromagnetic Interference) filters.
- Environment evaluation of electromagnetic field level in cities, factories, airports, etc. Study of the human security risk due to electromagnetic radiation.
- Teaching courses for companies: simulation tools, modelling of systems and converters, etc.
- Development of interactive material for teaching purposes.

Facilities have all the necessary equipment to accomplish the offered projects, from high-reliability instrumentation to medium-size facilities (even an anechoic chamber). Also the latest version of the necessary software is available: electric simulators, finite elements tools, mathematic tools, etc. The results obtained from these projects have obtained national and international acknowledgment by means of its publication in some of the most relevant journal regarding Power Electronics. Some patents have been carried out as well. Innovative Aspects: The group can offer to the companies its background and expertise in design, analysis and modelling of power electronics systems and power electronics circuits, as long as some

of the most actual research topics with maximum industrial interest.

Country: Spain

Ref#:	07 IT IRAS 0IHZ	Technology type:	REQUEST

Title: Pilot line for the manufacturing of photovoltaic tiles pre-series

Abstract: An Italian laboratory for the development of ceramic tiles with functional surface has developed a prototype of a photovoltaic tile with a surface acting as a model panel. They are looking for an industrial partner for technical cooperation and manufacturing agreement, which can foster the development of solar cells production procedure to be performed directly on tiles surfaces possibly replacing the processes routinely applied during the glazing operation.

Description: An Italian laboratory for the development of ceramic tiles with functional surface has focused its R&D activities on the development of innovative ceramic tiles suited to using photovoltaic technology for the generation of electrical energy, with the specific objective of creating “photovoltaic” tiles for building facades.
The laboratory's research involves (1) the analysis of coating materials suitable as photovoltaic cells to be applied onto the tiles, (2) the development of ceramic-oriented technology to produce coating able to transform sunlight into electric power, like that performed contemporaneously the glazing phase, and (3) the development of guidelines for the use of photovoltaic ceramic tiles for the coating of building facades that utilise them.

Currently, the laboratory has:
- Developed a prototype of a photovoltaic surface acting as a model panel.
- Developed ceramic coatings with different functions mainly directed toward to photovoltaic technology.
- Optimised electrical connections for accumulation and transfer of electric power.

The ceramic tiles found a broad range of applications and, mostly noticed on the foreign markets, used to build ventilated building facades. One can presume that in this particular area there will be potentially strong advantage if, aside the primary role of mechanical cladding characterised by good aesthetical appearance, the ceramic tiles transform the sun irradiation into electricity through their own photovoltaic function. Technical Specifications / Specific technical requirements: The research group is now involved in the definition of criteria for industrial production of developed tiles through the realisation of a pilot line for the manufacturing of photovoltaic tiles pre-series.
Because of their lack of competences in industrial processes they are looking for a partner that can foster the development of solar cells production procedure to be performed directly on tiles surfaces, possibly replacing the processes routinely applied during the glazing operation.

Country: Italy

Ref#:	**08 ES MAAH 0JPC**	**Technology type:**	**OFFER**

Title: High-technology solar tracking system and its complementary services

Abstract: A Spanish SME with 35 years experience in manufacturing and installing metallic solutions has developed a solar tracking system. This tracking system is constantly following the sun and increases the production of photovoltaic solar energy by 30% with comparison to fixed installations. The company also offers a complementary service for the tracking system: engineering, project implementation, delivery, coordination of the logistics, and preventive maintenance of the system.

Description: The company is a Spanish SME with 35 years experience in manufacturing and installing metallic solutions applicable to any area in architectural metalwork. The range of products goes from metal ceiling, portioning, roofing, to acoustic insulation.

Due to their experience in metal manufacturing and their solid technician department they have successfully moved towards the photovoltaic sector, offering important developments in products and services for the sector.

One of the products they have developed is a solar tracking system with the following characteristics:
- Very simple design.
- Designed towards ease of maintenance.
- Robust construction from stainless steel and aluminium profile.
- Able to withstand wind speed up to 140 km/h without moving from the correct tracking position (no loss of energy production under windy conditions).
- Easy installation; the total weight of the tracker is 450 kg.
- Grille for panels up to 25 m2.
- No maintenance of assembly required.
- Enhances performance of photovoltaic modules by 30%.

The tracking system increases the production of photovoltaic solar energy by 30% with comparison to fixed installations. This tracking system is constantly following the sun in such a way that a metal structure and grille for panels are placed towards the sunrays direction to maximise energy production. The patent was submitted and accepted.

The company also offers a series of complementary services for this tracking system:
- Engineering services and project implementation.
- Management and support for everything related to the project implementation.
- They schedule tracking system deliveries and coordinate the logistics.
- Preventive maintenance of the system performed as per client-determined time and frequency. Innovative Aspects: Already on the market there are only a few tracking systems. With comparison to these, the tracking system proposed offers a very simple and robust design, easy to install and to maintain; on a first view small advantages, but very important ones. Other important advantages are the complementary services offered for the tracking system, not offered or available for other tracking systems: engineering, project implementation, delivery, coordination of the logistics, and preventive maintenance of the system.

Country: Spain

Ref#:	**08 IT LAAP 0JQA**	**Technology type:**	**OFFER**

Title: Reinforced self-rechargeable motorised locks

Abstract: A SME located in Rome offers a reinforced self-rechargeable motorised lock in stainless steel, which is easy to open & to lock with the pressure of a button or remote control. Particular is its fast mechanical & electrical assembling capability even in areas without electricity; locks can be supplied using photovoltaic array with doors or gates far from electrical links. The SME is looking for distributors, manufacturers & assemblers interested in commercial agreements with technical assistance.

Description: An Italian SME is operating in the energy and other applications sector.
The reinforced self-rechargeable motorised lock in stainless steel is easy to open and to lock with the pressure of a button or remote control. A particularity is its fast mechanical and electrical assembling capability even in areas without electricity (grid); the locks can also be supplied using PV (photovoltaic array) with doors and gates situated far from electrical links.
The length of the lock can be adapted in accordance with the user's wishes. Personalised locks are available with printed names of hotels and restaurants, caravans, yacht, villas and residences, and pieces of jewellery. Different personals locks can be realised with wood-finishing touches, standard designs, or on-request locks with trademarks, or heraldic coat of arms.
The SME is interested in getting in contact with partners to develop a new market for the equipment. The company will offer all technical support needed, and will adapt the technology to the specific needs of the producers.
The SME is looking for commercial agreements including technical assistance concerning assembly, engineering and technical consultancy. Innovative Aspects: - Internal Pb/gel-rechargeable batteries allow a great deal of sequences.
- Opening/closing without needing a grid.
- Opening is allowed even in total absence of energy.
- Incorporated doorbell system: for the application of it neither requested grid nor wires are requested.
- For any necessity a broad supply of standard and personalised accessories.

Country: Italy

Ref#:	08 ES SERT 0JRZ	Technology type:	OFFER

Title: Pilot plants for the production, storage and use of hydrogen, integrating solar photovoltaic energy and fuel cells

Abstract: A Spanish company has developed a pilot plant that produces hydrogen and electricity from photovoltaic energy. The purpose of this system is to provide an energetic independent source that can be used to supply isolated places or as support when the electric commercial net fails. Commercial, technical and/or manufacturing agreements are desired by the company.

Description: Nowadays there is multitude of inventions related to the production of hydrogen from renewable energies, especially from photovoltaic energy. Most of these inventions are characterised by an increase in the efficiency of the energy generated in the solar plates to optimise the production of hydrogen in the electrolyser; there are also inventions related to portable photovoltaic systems or integrated portable generating systems of hydrogen from solar power or across a turbine.

A Spanish company has developed a pilot plant that produces hydrogen and electricity from photovoltaic energy with the purpose of providing an independent energy source.

This plant system includes a module of photovoltaic cells, an electrolyser that generates hydrogen, and at least one fuel cell. This fuel cell produces electricity being fed by the stored hydrogen obtained from the electrolyser.

The module is designed for an average power of 3,5/5 kWp, which is enough for the living conditions of an average family in a developed society. It allows reaching energetic self-sufficiency independently of the existence of electrical networks without the need of fossil and non-renewable fuels.

Depending on the use of the electricity, it will be necessary to adapt the process of compression and storage of hydrogen. It can be used in automotion, medicine, etc.

The plant includes the following components:
- Solar photovoltaic panels transform the solar power into electric power in direct current (CC). They can be measured to work in two different ways:
* One possibility is to use part of the set of photovoltaic panels to generate the electric power needed for consumption and convert it into AC using an investor, and let the other part of the set available to be used to supply directly the electrolyser, in direct current (CC) without passing through the investor.
* The second possibility is to use all the photovoltaic panels for the generation of electric power, supplying with it the electrolyser in order to produce hydrogen that is firstly stored to be afterwards consumed in a fuel cell, generating electric power in direct current, which passes then through an investor to be turned into alternating current (AC), providing finally to the particular application the required energy.
- The investor transforms the energy produced by the photovoltaic field, or by the fuel cell, from direct current (DC) to alternating current (AC), to supply the needs of the application.
- In the electrolyser electric power is used for the electrolysis of water; hydrogen is obtained in the cathode and oxygen in the anode.
- The electrolyser can work with the electric power provided directly from the solar photovoltaic panels or by the electric power proceeding from the commercial electrical network.
- The fuel cell produces electric power from the chemical energy stored in the hydrogen.

The plant has a safety system to stop its operation if there were hydrogen releases.

The plant works as follows:

When there is enough sunlight to generate energy in the photovoltaic panels covering the application needs, the energy DC will be available for the consumption, previously converted into AC by the investor, and for the generation of hydrogen in the electrolyser.
When there is not enough sunlight to generate energy by means of the photovoltaic panels, the energetic needs would be covered the fuel cell. Innovative Aspects: Innovations of the offer:
- The plant improves the energy-efficiency of the photovoltaic facilities. A study of new systems of solar follow-up has been carried out.
- The development of this plant will allow improving the autonomy of the photovoltaic remote facilities; the H2 produced from photovoltaic energy can be stored in the fuel cell, and generate electric power when it is needed.
- The system allows solving the current problems of photovoltaic energy in the electrical net, which is destabilised considerably, and the problems of adequacy between the hours of maximum production that generally coincide with the hours of consumption.

Advantages of the offer:
- The plant is autonomous because during the day the solar panels provide enough energy to supply the needs.
- The plant is completely portable, which is especially useful to give electric power in remote places and places without access to the nets of commercial distribution.

Country: Spain

Ref#:	08 IT LOCP 0JU6	Technology type:	OFFER

Title: Sunlight collector

Abstract: An Italian inventor working within a research institute developed an innovative, efficient system for collection of light rays, allowing reduction of energy loss & enabling energy transmission through optical fibre. The system allows to carry out energy conversion in devices that are distant from the solar source and to match various types of plants with one single source of energy. Industrial partners operating in the solar energy sector & interested in application of the technology are sought.

Description: The system developed represents improvement in the field of solar rays convoy systems based on lenses and parabolic mirrors, and a solution to their typical problems. One of the difficulties encountered in other existing structures is that in order to achieve efficiency of these systems, the exact positioning of the focus point inside the fibre, just behind its end, is fundamental, but at the same time very difficult to obtain and maintain. The relative positioning of lenses and fibres, and consequently the position of the focus point, are strongly affected by dilatations as a consequence of temperature variations caused by conduction, convection and radiation. Another problem is represented by the creation of hotspots due to radiations.
The technology presented is free from these drawbacks thanks to the introduction of a vacuum chamber around the convey area. Presence of vacuum allows to avoid undesired heat propagation to the structure of the collector itself and in the surrounding environment, and to preserve the system, avoiding its dispersion in the space between the lenses and the fibre, where the light rays converge. The connection between the end of the optical fibre and the lenses allows to create continuity between these components and reduce irregularities and inclinations that hinder the entrance of the light rays, increasing thus efficiency of the system.

Construction: the fibre-optic collector comprises at least one collection chamber, a light-focusing system, and one or more optical fibres in correspondence to this base, wherein the collection chamber is under vacuum. The focus of the focusing system is arranged inside the vacuum collection chamber in correspondence to an end of one or more optical fibres. Innovative Aspects: - Improvement in the efficiency of light ray collection.
- Simple construction with the use of conventional materials and technologies.
- Low cost.
- Easy maintenance of the optical system.
- Possibility of application of the system to the already existing focusing systems.
- Energy conversion may be realised separately from the collecting area.
- Particular indication for high-power applications.

Country: Italy

Ref#:	08 DE HRTH 0K66	Technology type:	OFFER

Title: Particle-free and contactless transportation and positioning system for ultra-high vacuum and clean room applications

Abstract: A German SME offers highly customised mechatronic and adaptive solutions for different industries. Its transportation and positioning system suits for ultra-high vacuum and clean room applications. The products to be carried levitate in a magnetic field absolutely contactless. Total elimination of mechanical wear is guaranteed. Key applications are in the coating and semiconductor industry. Technical co-operation, a manufacturing, license or commercial agreements are searched for.

Description: A German SME is specialised in levitation and vibration control. The magnetic bearing units of its new transportation and positioning system are working in a stand-alone mode with all required electronics already integrated in the housing of the bearing and drive, thus producing reasonable costs. Hence, all interfaces are reduced to a minimum. Neither additional power electronics nor control units are required.

The carrier can be designed simple and cheap, it can be constructed from steel, no electrical energy has to be transferred to any moving part. Further advantage of the new technology is that all carriers are individually controllable, leading to more accurate positioning. Due to the high requirements of vacuum or clean room applications the bearing and driving units can entirely be encapsulated. Therefore small desorption rates can be achieved.

As a matter of principle magnetic bearings work absolutely contactless, hence no disturbing particles are generated. The acting magnetic forces do not need any medium to exist. Hence they are perfectly suited for applications in vacuum. Drawback of magnetic bearings usually is the additional need of electronics to control the unstable working conditions, leading to higher costs with comparison to air bearings. These electronics are generally installed in control cabinets outside the vacuum chambers, leading to high numbers of additional installation costs, e.g. large amount of electrical feedthrough, cables and the control cabinets themselves.

Key applications are in the coating and semiconductor industry, where high standards in cleanness are evident. Further applications in other areas are possible. Especially where the elimination of any lubricant and mechanical contact respectively wear is highly desired.

State-of-the-art
State-of-the-art bearing and drive solutions for processes in an area with high cleanness standards are mainly mechanical bearing concepts like roller-drive systems or linear guiding. As for a lot of processes and applications the standards are permanently increasing towards more cleanness, new solutions have to be found. This especially holds for the display manufacturers as well as for the semiconductor market. The production process within these industries takes place either under vacuum conditions or in clean rooms with highest requirements. All kinds of foreign and unwanted particles have to be avoided.

For some kinds of processes air bearings seem to be a solution. This kind of technology mainly avoids the generation of foreign particles, at least. Drawback is that extensive measures have to be installed to evacuate the necessary airflow, especially in applications where ultra-high vacuum is required. Innovative Aspects: The new drive and transportation system is completely contactless, and even neither air nor other medium is required. Hence no particles are generated, and a higher reliability is reached due to the elimination of mechanical wear.

All components of the transportation system are developed as stand-alone units. All necessary electronics are highly integrated. Hence electrical connections and feedthrough are reduced to a minimum. The units only need to be connected to a power supply bus-chain and for communication to a CAN-bus-chain. Lead-through terminals are therefore also reduced to an absolute minimum. All components are entirely encapsulated to meet even the highest vacuum and clean room requirements. The ambient temperature can go up to approximately 100°C.

Conventional transportation systems are usually based on roller-drive systems. The carriers are mounted on the rollers and are driven via mechanical contact/friction. Hence mechanical wear and particles occur. Other applications for positioning systems in vacuum or clean room areas are using air bearings to avoid mechanical contact respectively particles. But it is obvious that air inside vacuum or clean room applications is causing a lot of additional problems, which have to be taken care of otherwise.

Country: Germany

Ref#:	**08 BG BGAR 0K6Q**	**Technology type:**	**REQUEST**

Title: Photovoltaic panels and systems, solar energy technologies

Abstract: A Bulgarian organisation is looking for photovoltaic systems and technologies to be implemented in Bulgaria. The organisation is looking for photovoltaic panels with double functions - construction elements on which photovoltaic systems can be mounted. The organization seeks companies and R&D units with expertise and know-how in the sphere of solar energy systems and technologies, and in particular in the field of photovoltaic technology, for joint venture project development.

Description: A Bulgarian organisation is involved in the development of energy-efficiency projects for SMEs and NGOs, assisting them with processing the technical documentation related thereto, as well as in the process of energy-efficiency technologies and know-how transfer. The organisation provides training in energy-efficiency and Renewable Energy Sources issues, and performs feasibility studies.

The organisation is emphasising on photovoltaic systems and solar energy utilisation in regard to the specific features of the climate in Bulgaria, and has the capacity to develop projects aiming at design of photovoltaic systems.

The organisation works in cooperation with the regional and municipal government bodies in developing and implementation of public-private projects related to enhancing the energy-efficiency in the public, private, and the business sectors. Technical Specifications / Specific technical requirements: The solutions in the sphere of energy-efficiency and renewable energy sources sought by the Bulgarian organisation should comply with applicable EU standards, provide basis for further sustainable development, and feature innovative solutions thereto.

Country: Bulgaria

Ref#:	**08 SK SKND 0K7L**	**Technology type:**	**OFFER**

Title: Photovoltaic solar modulus and systems development

Abstract: A company located in the eastern part of Slovakia has developed a photovoltaic solar modulus and systems for power supply voltage for DC electronic devices of various power as well as batteries with voltage not higher than 48 V. The company is looking partners for joint venture.

Description: A company that was established in 1999 is the Slovakian producer of photovoltaic solar modulus and systems for power supply voltage for DC electronic devices of various power as well as batteries with voltage not higher than 48 V. As an additional program is the development of thin-film nickel chips for temperature sensors.

The company is able to supply:
1. Portable solar modulus of various capacity and voltage for a variety of devices of insignificant power, charging batteries.
2. Solar modulus of high capacity.
3. Integrated solar systems for power supply of houses, suburbia dwellings, gardens, and caravans.

The company develops its products and services in close cooperation with a research laboratory. Innovative Aspects: The company is able to supply:
1. Portable solar modulus of various capacity and voltage for a variety of devices of insignificant power, charging batteries.
2. Solar modulus of high capacity.
3. Integrated solar systems for power supply of houses, suburbia dwellings, gardens, and caravans.

Country: Slovakia

Ref#:	08 ES 28F9 0IDD	Technology type:	OFFER

Title: Solar tracker with two axles on rolling platform

Abstract: A Spanish company of the sector of the photovoltaic energy has developed solar trackers based on the system of rolling platforms.
The principal advantages of these models are their capacity (200 and 274 m ² of panels), the great stability and constructive simplicity of their base platforms, and the rapid and simple assembly of the set. Therefore, a safe and low-cost system.
The society sought companies interested in incorporating these models, through license contract or manufacturing.

Description: The two axis tracker on a rolling platform is constructed from six pillars joined by five lattice girders. The girders, as the rest of the components do not need special transport to the site or to galvanizing.
The system is of maximum simplicity and simplifies its assembly on the site, thanks to its system of mounting lugs and bolts for joining the girders to the pillars, being screwed to the bracings.
Taking advantage of the dimensions of the structure, two boards of panels are placed: One on the front edge and the other on the opposite edge. The criteria of separation and difference in height between both is the same as for the placement of the trackers. The time in the structure diminish considerably (by about 33 %) resulting in a much more efficient structure with: 30 Kg of structure per m ² of panel surface.
The design of the support structure has a certain flexibility in the vertical sense to minimize the requirements of the tracker`s tread.
The adopted configuration is in the shape of letter H, with supports on four ends (rollers) and a center axle. This allows for track irregularities of ±1 cm.
The track is built with low plasticity that will be poured directly into the framework installed at the site, without the need of forms or shuttering.
The central support axle receives between 30 and 50 % of the weight of the tracker, unloading considerable pressure on the wheels and avoiding cracking of the track.

In the boards, the straps are fixed to the longitudinal girders of the frame by means of clamps that make displacement possible to adapt to the different measurements of existing panels on the market. In addition, the straps have a guide which remains open by means of springs for inserting the panels.

Once the panels are in place, the screws are tightened and the panels are held tight avoiding knocking and hammering in stationary guides.

The manufacturing cost of the tracker, included the motorization of itself, is approximately 100€ for m ² of available surface in panels. Innovative Aspects: - Increase of the capacity, optimizing the efficiency of the structure: weight of the tracker of 30 Kg for every m ² of panels.
- Roller track of concrete, without the need of forms or shuttering: Admissible ± 1cm in its leveling.
- Few components with dimensions adapted to conventional transport
- Little concrete in foundations: 10,5 m3-12,7 m3 according to model
- Easy and rapid assembly in the objective place: Unions with pins(bolts) and panels-carrying guides.
- Analogical realignment of every tracker independent of the PLC.

Country: Spain

Ref#:	**08 BG 0528 0IH3**	**Technology type:**	**REQUEST**
Title:	Market technology for production of renewable power sources – solar panels and wind energy converters, confirming with applicable EU standards.		
Abstract:	A Bulgarian private company specialized in production and repairs of electrical turbines and generators is looking for cost effective technology for production of renewable power sources – solar panels and wind energy converters. The company is looking for license or commercial agreement with technical assistance. The company is willing to engage in joint-venture agreement for assembling and maintenance in order to further develop a technological solution related to the technology requested.		
Description:	Cost effective market technology for production of renewable power sources – solar panels or wind energy converters, confirming with applicable EU standards. The photovoltaics produced under such technology must be building-integrated, standalone devices and photovoltaics in transport could be considered also. Co-operation in terms of assembling and maintenance with commercial partner who has access to EU markets. Technical Specifications / Specific technical requirements: Devices produced under such technology must comply with corresponding EU standards. Photovoltaics must be building-integrated, standalone solutions.		
Country:	Bulgaria		

Ref#:	08 IT 52T7 0IIO	Technology type:	OFFER

Title: Third-generation photovoltaic solar cells

Abstract: An Italian university with a long experience in thin films and a-Si-based II generation solar cells is devoted to realising a solar cell structure of the photo-electrochemical type and particularly DSSC (Dye Sensitised Solar Cell). The group is looking for technical co-operation with an industry interested in project development and commercialisation.

Description: Efforts will be concentrated towards the design of photo-electrochemical solar cells of Graetzel type, capable of giving a threshold photovoltaic conversion efficiency higher possibly than 10 %, using new materials and new structures in order to escape patent restrictions.

The cell invented by Graetzel represents a really revolutionary concept in photovoltaics:

1) The difficulty of reaching higher efficiency by a gap material (like silicon), characterised by an optical threshold and as a consequence not using the whole wavelength interval of the solar spectrum, is brilliantly solved by particular dyes, which have quantum efficiency with a maximum of 90% and extending over the whole solar AM1 spectrum.

2) The difficulty of reaching larger photovoltages (which imply a higher threshold and a lower conversion efficiency) and thicker active regions, in order to absorb a large amount of light intensity, is also brilliantly solved by very thin film thicknesses, which do not supply large electrical fields and high voltages, but which are in series each other (the concept of a multi-junction solar cell is extended almost to infinite) and which do not need to be extremely pure or trap-free, since carrier path is extremely short.

3) This kind of approach can be (and in fact it is) extended to other structures, like solid-solid (by using ionic or p-type hole conductors), to organic or polymeric materials (with steps toward a simulation of photosynthesis) and can also use more organised nanostructures, like nanowires. Innovative Aspects: Starting costs of silicon technology are very high and this is true also for amorphous silicon. Production costs for technologies that are using either very big vacuum deposition chambers or wide-area electronic devices approach can lean on well-established technologies, but they will never be cheap, as all the history starting from seventies or eighties has demonstrated. New cheaper approaches, like DSSC (Dye-Sensitised Solar Cells) or photo-electrochemical cells, capable of reaching conversion efficiencies of more than 10 %, are the main candidates for the lowest cost indicated by DoE, Department of Energy (0.6 US$/watt).
From the technical point of view, the goals could be related to the advantages of DSSC cells, like: potential to be flexible and transparent, potential to be manufactured in a continuous printing process, fabrication by means of large-area coatings; easy integration in a wide variety of devices; big cost reduction with comparison to traditional photovoltaic devices; substantial ecological and economic advantages.

Country: Italy

Ref#:	**08 CZ 0754 0IJE**	**Technology type:**	**OFFER**

Title: Development and production of techology and machines for production of nanofiber material for various use

Abstract: A medium sized Czech company developes and produces laboratory and industrial machines for electrospinning technology research to academic and industrial field worldwide. The company is the first and still the only organisation in the world that offers its customers machines for industrial production of nanofibers. Industrial lines and laboratory units – so called Nanospiders produce nanofibers using the electrospinning technology.

Description: The company offers production of laboratory and production equipment - NS Labs and NS Lines, machines enable industrial production of non-woven textiles made up of fibres 200 to 500 nanometres in diameter. The basis of its technology is modified electrospinning based on polymer solutions. Company also continues in development of the technology and focuses on these trends of nanofiber production:
Organic – successful spinning of the following materials: PVA, PVA C, PA 6, PA 6/12, PA 12, PAA, PAN, PEOX, PESO, PS, PUR, PVP, PVP – I, CHITOSAN, GELATINE;
Inorganic – inorganic materials suitable for spinning, developing new properties of nanofibres - SiO2; Al2O3; ZnO;TiO2; ZrO2;
Melts – modification of NS technology lead to the successful spinning of melt polymers.
The main products are as follows: One-of-a-kind; Labs and manufacture equipment (NS Lab, NS Line); Nanofiber materials (AcousticWeb TM; AntimicrobeWeb TM).
The company owns exclusive license for Nanospider TM technology and 19 related patents.
Potential applications of the products are in following fields: filtration, medicine, environment, cosmetics and hygiene, barriers and protective garments, energy and IT, nanocomposites, ... This technology was invented and patented by the regional university. The company became Univeristy's exclusive partner for further development of the technology and was granted the exclusive license for the production and sale of the machine. Innovative Aspects: Above described technology is a unique technology, which enables industrial production of non-woven textiles made up of fibers 200 to 500 nanometers in diameter. Such materials are widely utilized in many fields, e.g. filtration, healthcare, the building and automotive industries, industry, cosmetics and many others.
This technology allows the production of nanofibers textiles on an industrial scale, it has a high production capacity, manufacturing is simple upkeeping and energy-efficient, produces a hihg quality nanofibers layers, allows the modification of technologies and characteristics of nanofibers materials manufactured.

Country: Czech_Republic

Ref#:	08 IT 55X5 0IMG	Technology type:	REQUEST

Title: Design a package IP65 with integrated solar cell

Abstract: An Italian SME, active in the Conservation of Cultural Heritage field, is designing a monitoring system for historical and artistic objects. It is looking for an IP65 package for its sensors, designed to include solar cells over one of its side, and a vacuum valve (that is a valve which allows to make vacuum into the package).

Description: The package requested has to be compliant with IP65 specifications (at least). They are: dust must not enter at all and water jets directed at the enclosure from any direction must not have any harmful effects. This package has to be designed so that one of its sides includes some solar cells (max 30 cm2). Moreover it has have a valve which allows to create vacuum into the package. Technical Specifications / Specific technical requirements: The package requested has to be compliant with IP65 specifications (at least). They are: dust must not enter at all, and water jets directed at the enclosure from any direction must not have any harmful effects.
It must be designed so that one of its sides includes some solar cells (max 30 cm2).
It has have a valve which allows to create vacuum into the package.
The working range of temperature has to be at least [-20o +70 o] , and the percentage of humidity in the air has to be as high as possible.

Country: Italy

Ref#:	**08 PL 62AP 0IMY**	**Technology type:**	**REQUEST**

Title: Renewable sources of energy - technologies and cooperation in production, distribution and technical assistance

Abstract: Polish SME is seeking innovative up-to-date technologies in the field of renewable sources of energy. The company is looking for a partner willing to cooperate mainly in the field of production of renewable sources of energy: solar collectors, heat pumps, wind power stations, photovoltaic cells, biomass et al. and is interested in any collaboration type of: joint venture, manufacturing agreement, license agreement, commercial agreement with technical assistance.

Description: Polish SME is seeking innovative up-to-date technologies in the field of renewable sources of energy. The company is looking for a partner willing to cooperate and/or provide innovative solutions like: solar collectors, heat pumps, wind power stations, photovoltaic cells, and biomass et al. Currently the company is particularly interested in cooperation in the field of production of equipment and systems of renewable energy. Presently the company is providing services in conventional industrial energy sources and also producing and reconditioning spare parts. The great advantage of company is its young dynamic staff consisting of well educated graduates of technical university. The staff is prepared to conduct professionally the launching of products of interest to company on polish market and post-USSR countries in further future. The company has a technical potential, high qualified engineering staff and financial resources which enable cooperation, subcontracts' implementation, installation of devices and servicing them. The firm collaborates with research scientists of local technical university what allows to conduct researches, carry out experiments, and implement innovative products. Technical Specifications / Specific technical requirements: The company is interested in cooperation in the field of renewable sources of energy and/or in purchasing following innovative technology solutions:
- heat pumps,
- solar collectors,
- wind power stations,
- biomass,
- photovoltaic cells,
- other innovative renewable energy sources

Country: Poland

Ref#:	**08 IT 55X5 0INL**	**Technology type:**	**REQUEST**

Title: AC e DC Electric Generator for mobile devices based on renouvable sources of energy

Abstract: An Italian SME, active in the Conservation of Cultural Heritage field, is looking for two kinds of electric generator fuelled by renewable sources of energy: one is a power supply for mobile devices and the other one is an AC generator for portable (but non mobile) devices. All these devices have to be used for the restauration and the monitoring of the historical and cultural heritage.Partner sought can be a SME or an industry that designs,produces and sells electric generator.

Description: Actually the firm uses battery powered devices for diagnostic and monitoring, and electric generators fuelled by diesel for the electric devices used during the process of restoration of historical and artistic objects. (where the electric network is not available). Both these kind of energy sources are pollutant, and not complying with the mission and the corporate image of this little company. Thus the firm is looking for two kinds of power suppliers:

- a power supply that can replace batteries (Direct Current, 1.5V or similar), with similar size (not greater than 6-8 battery). Thus the more suitable generators will be based on solar cells or fuel cell for mobile equipments.
- An electric generator (Alternate Current), without constraints on its size and shape (because it will be used just for the restoration process). Thus the more suitable generators will be based on solar cells, or on fuel cells for non mobile equipments, or on wind energy. Technical Specifications / Specific technical requirements: The power supply (Direct Corrent, 1.5V) has to have size not greater than 10x8x25 cm (as little as possible). The maximum current intensity required is 20 mA for max 10 s, each 10 minutes and 10 µA for remaining time. The working range of temperature has to be at least [-20o +70 o], and the percentage of humidity in the air has to be as high as possible. The electric generator of Alternate Current (220/110V) has no constraints on the size, and has to work in a range of temperature at least of [-20o +70 o].

Country: Italy

Ref#:	**08 ES 25E2 0IUV**	**Technology type:**	**OFFER**

Title: Double axis solar tracker

Abstract: A Catalan company based in Spain has developed a double axis solar tracker system with robustness, double axis movement, large module surface and clever solutions to various technical challenges, including extreme wind conditions. The technology allows an increase (up to 35 to 40%) of photovoltaic energy generation reducing operation & maintenance cost. The company is looking for a commercial relationship with engineering companies as well as a manufacturing agreement with steel industries.

Description: The developer company works into Distributed Generation philosophy. Their main objective is the development of technologies for a sustainable and efficient energy system. Their main area of expertise is tracker systems and IT technologies for controlling, monitoring and managing electrical load, this in order to reduce the consumption-peak.

The company's patent is a new concept of solar tracking. This patent incorporates robustness, double axis movement, large (125 m2) module surface and clever solutions to various technical challenges, including extreme wind conditions.
The new developed double axis system combines an increase (up to 35 to 40%) of photovoltaic energy generation with robustness, counteracting extreme and enduring weather conditions especially wind and hail (both sustained forces and intense storm peaks) reducing operation & maintenance cost through the years.
The patented technology is based on a completely equilibrated triangular structure through which a minimum of energy for rotation is required and no lateral hanging forces occur. The company developed a decentralised rotating system with hydraulic motorized wheels which allows the 'weathervane effect': the double axis solar tracker rotates freely to show the direction of the wind avoiding damage.

Double axis solar tracker is a technology for Solar Farms (from kWn to MWn) in order to maximize financial ratios. Innovative Aspects: - The double axis system combines an increase (up to 35 to 40%) of photovoltaic energy generation reducing operation & maintenance cost.
- The technology has a decentralised rotating system with hydraulic motorized wheels allowing a free rotation and showing the wind direction in order to avoid damage.

Country: Spain

Ref#:	**08 CZ 0744 0IYM**	**Technology type:**	**OFFER**

Title: Water heating system combining phototermic/photovoltaic glass tube vacuum collector.

Abstract: A small Czech company oriented on production, delivery and assembly of solar thermal and photovoltaic collectors has developed water heating system using both phototermic and photovoltaic solar energy. Main goal is to produce water heating system running on solar radiation with minimum operating needs, reliable both for enterprises and households. Company is looking for strategic partners for license or joint venture agreement and business partners for commercial agreement and production.

Description: The system consists of vacuum glass tube photothermic collector for water heating, photovoltaic collector for supply of water circulating pump and a control system and stainless steel boiler with powerful heat exchanger for output water. Combined photothermic and photovoltaic vacuum tube collectors have very high energy efficiency at diffusion radiation. The collectors are designed to be able to work for the whole year – they work also at time when the normal flat - plate collectors does not operate. Vacuum presented inside the tubes significantly reduces heat losses and makes the system protected against various microclimatic condition changes (air temperature, wind etc.). Tubes are resistant against mechanical damage (hail-storm etc.). In case of repair the service exchange procedure is very easy, fast and without any loss of the tube operational quality. Boiler can be situated directly on the collector. Innovative Aspects: Solar system with hybrid collector is independent on the external electrical networks. Solar system is determined for area with more difficult climatic conditions and is working the whole year.

Country: Czech_Republic

Ref#:	**08 LU 70DB 0J1N**	**Technology type:**	**OFFER**

Title: A unique microporous PVC-silica membrane as gas humudifier for batteries, ventilators and energy storage devices

Abstract: A Luxembourg based company has developed a unique microporous PVC-Silica membrane that can be used as separator in various types of batteries and energy storage devices. The unique absorption/desorption capacity offers great potential for use as gas humidifying membrane in various devices. The main advantages of the support are the controllable silica content and pore size distribution. The company can customise the support to the specific needs of the partner's field of application.

Description: The support is a microporous PVC-silica sheet with a porosity in the 70-80% range. The pore size, as determined by mercury intrusion porosimetry, is in the 0,02 to 2,0 micron range. Due to the unique cold extrusion process, the silica aggregates are not embedded in the polymer, but remain fully accessible. Therefore the support is extremely hydrophilic. This material is highly absorptive and non compressible under normal conditions. It has excellent resistance against oxidation and chemical attack and can be used up to 80°C. For alkaline medium, the silica can be replaced by an alternative filler.
The pores are highly tortuous. By changing the filler type or filler content, the pore size distribution can be changed and controlled. Innovative Aspects: The pore volume and pore size distribution can be customised. The developed material is already extensively used as separator in industrial lead-acid batteries but promises to serve the industry in a wide variety of applications, in particular in flow batteries (especially ZnBr technology).

The support is characterised by :
- High porosity
- Controlled pore size distribution
- PVC-Silica matrix
- Good acid, alcohol and hydrocarbon resistance
- Excellent absorption capacity

Country: Luxembourg

Ref#:	**08 NO 79EK 0J2Q**	**Technology type:**	**OFFER**

Title: Self-cooling solar cell module

Abstract: A Norwegian company has developed a solar energy installation solution that will cut the time of field operations, and thus cut the costs of large scale solar energy installations. The invention of self-cooling solar cell module will increase energy production from the solar plant. The Norwegian company is looking for partners for a joint venture or for a commercial agreement.

Description: Photovoltaics Power Plants (PV Power Plants)
The company offers the engineering solar cell power plant development and system integration services, including Electronic Product Code co-ordination (EP co-ordination)services. The company can deliver ready to install sites for solar power plants to investors or also be part owner of the plant in a joint venture.

Mounting Structure Products
The company offers aluminium mounting racks for flat roofs and ground mounted. The mounting racks are optimized for fast large-scale installations. The mounting racks are easy to install, are designed for all weather conditions and comes with 20 years warranty.

High Efficiency Solar Panels
The company offers the first self-cooling high efficiency solar cell module on the market. The module is optimized for warm regions and can achieve 10 – 15% more energy output on sun, than solar panels without cooling. Innovative Aspects: The installation solutions will cut the time of field operations, and thus cut the costs of large scale solar energy installations.
The self-cooling solar cell module will increase energy production from the solar plant.

Country: Norway

Ref#:	08 GR 49Q1 0J8U	Technology type:	OFFER

Title: Solar energy to provide central heating for houses, pools, green houses, etc

Abstract: A Greek inventor, holding 5 patents, offers an innovative use of solar energy to provide central heating for a variety of premises. The design encompasses a solar panel with a single mould polyethylene water tank and photovoltaic panels for capacity compensation. The result is a highly fault tolerant non-polluting structure with minimal maintenance cost. The range of use is very wide (houses, pools, green houses, etc). A license agreement for the transfer of rights is sought.

Description: Currently the main heating systems for homes and public buildings are based on oil or gas burning boilers. These are costly to operate and the fuel is also an expensive raw material with oil burners polluting the environment heavily in winter periods. Solar panels are used mostly in areas with long periods of sunshine and the solar energy is converted into heat and applied to the water in the water tank, thus providing hot water for use in the home. These solar systems do not typically deliver capacity during prolonged cloudy periods.

A Greek inventor of five patented technologies and with extensive know-how in solar energy systems, has conceived the idea of a solar-based system that will also provide a house with central heating at all times, thus eliminating the need for costly and polluting fuel burning that is massively used for heating at winter time even in sunny countries such as Greece.

The invention is based on a customised water boiler made from polyethylene that is produced in a single mould, complete with input and output valves and polyethylene pipes. It provides for a singe sturdy structure that combines longevity with minimal energy loss and high tolerance to extreme weather conditions, thus minimizing structural damage under stress and eliminating the need for recurring maintenance and ultimate replacement due to erosion.

In order to maximize efficiency and supplement the heating capacity of the system, arrays of photovoltaic panels can be employed that can store electrical power during sunny periods to be used as an additional energy source to heat the water that circulates in the system during cloudy periods or at night. This results in a highly effective and efficient central heating system for the home that is self-sufficient, totally “environmentally friendly” and extremely economical to use once installed, since no fuel is required and maintenance is typically not required.

What adds more value to the idea is the fact that most existing installations of legacy heating panels found in houses and buildings today can be utilized in the new heating system with minimal or no alterations, thus reducing replacement and installation costs. Furthermore, the same heating system ca be used to provide heat to multiple areas simultaneously, namely the house, the swimming pool, the green-house, etc.

The innovativeness of this solar heating system is that it combines known technology in a new revolutionary way that can change the way people think about heating, while also lowering fuel consumption and contributing to the reduction of the “green-house” effect in the long run.

The savings in energy and cost can be substantial and the benefits can be reaped across northern and southern areas alike. This is indeed a patent that, although it does not involve advanced technological breakthroughs, can however change the way we use solar energy today and find another use for it that is of higher value and utility. Innovative Aspects: The combination of low-cost existing technology in this heating system, namely a water boiler made from polyethylene, common photovoltaic panels and custom built pipes and input output valves, provides for low cost / high efficiency and the near total elimination of polluting emissions.

The use of polyethylene in the water tank and the piping allows for high tolerance to heat or frosty conditions.

The system can be used equally effectively in southern or northern climates

• The solar heating system provides low maintenance and running cost and high fault tolerance for the main parts. No need for replacement of parts due to fatigue, erosion and stress from excessive heat or frost – problems that are typically encountered in traditional gas/petrol heating systems.
• Total cost of ownership is just the initial cost of installation
• Pollutants and emissions are close to zero.
• The heating effectiveness does not deteriorate in cloudy conditions or at night due to the use of auxiliary power provided and stored through the use of photovoltaic panels in sunlight.

Country: Greece

Ref#:	**08 CZ 0744 0J74**	**Technology type:**	**REQUEST**

Title: Photovoltaic roofing system

Abstract: A Czech engineering company specialized in the field of fotovoltaic systems is looking for partners for acquiring license for photovoltaic roofing system with high efficiency or particulary for an innovative technology of a flexible thin film amorphous silicon photovoltaic cells, roofing membranes or concentrating modules. A manufacturing of the whole Photovoltaic roofing system from previous components is sought.Potential application will be large PV plants in the Czech Republic.

Description: The aim of the company is to become producer of Photovoltaic roofing systems based on a manufacturing agreement with technical assistance or a joint venture with potential partners.The company is also interested in a project for Photovoltaic Research Centre that will consist of Department of innovative manufacturing (photovoltaic roofing systems) and Research centre for photovoltaic technologies. Following technologies towards better energetic effectiveness and low-cost are sought :
- flexible thin film amorphous silicon photovoltaic cells (photovoltaic roofing systems)
- building integrated photovoltaic
- Thermophotovoltaics
- Organic solar cells, photopolymers

All of these technologies are intented to be integrated into solution for new emerging architectonic-urban solutions and trends.

Technical specification : All offered technologies (suppliers of flexible thin film amorphous silicon photovoltaic cells, roofing membrane) must comply with corresponding EU standards. Technical Specifications / Specific technical requirements: PV technologies with better energetic effectiveness and low-cost are sought:
- flexible thin film amorphous silicon photovoltaic cells (photovoltaic roofing systems)
- building integrated photovoltaic
- Thermophotovoltaics
- Organic solar cells, photopolymers

All of these technologies are intented to be integrated into solution for new emerging architectonic-urban solutions and trends.
Technical specification : All offered technologies (suppliers of flexible thin film amorphous silicon photovoltaic cells, roofing membrane) must comply with corresponding EU standards.

Country: Czech_Republic

Ref#:	**08 ES 22C4 0J3Q**	**Technology type:**	**REQUEST**

Title: Silicon Modules for photovoltaic solar panels.

Abstract: A Canarian company with experience in the production of solar panels for sale to the electricity network and autonomous systems (isolated houses, road signs, etc.) is developing a new line of activity for the manufacture of photovoltaic solar panels. The company is looking for manufacturers and/or distributors of silicon cells to make commercial agreements with technical assistance or cooperation agreements for manufacture.

Description: The engineering company carries on its activity in the field of electricity, electronics, safety systems, renewable energies, wind generators and hydraulic generators, supplying the elements necessary to the design and installation of systems using renewable energies.

The company is going to begin a new area of activity for the manufacture of photovoltaic panels using high-efficiency silicon cells to transform the energy from solar radiation into direct-current electricity and is interested in making commercial agreements with technical assistance with manufacturers or distributors of silicon cells as well as possible cooperation agreements for manufacturing. Technical Specifications / Specific technical requirements: Latest-generation silicon cells for the manufacture of photovoltaic solar panels

Country: Spain

Ref#:	**08 DE 1594 0JAL**	**Technology type:**	**OFFER**

Title: GIS-based system for the evaluation of high potential areas for the installation of solar panels

Abstract: A Germany based Geo-Informatics professor has developed a system which helps determine how the use of solar power can be optimised in a given area. It is based on a computer aided analysis method to identify high potential areas for the use of solar power by using GIS (Geographic Information Systems). The system is ready for market application. The service offered is addressed to companies and includes the individual application of this technology for the evaluation of a certain area.

Description: Renewable energies as an additional component to conventional energies are becoming more and more important in environmental politics. Science is able to give innovative impulses to the renewable energy market, especially by supporting new technologies helping to make sure that renewable energies can run without any subsidy in the near future.

This offered GIS based System finds out how the use of solar power can be optimised. It develops a computer aided analysis method to identify high potential areas for the use of solar power based on laser scanner data and plan view data. It precisely calculates every roof´s potential as a solar collector by airborne surveying and mapping. Thereby the main function is to interpret exactly the style of the roofs using new sensor in laser scanning.

An automatic sequence of algorithms utilising grid and vector GIS functions is able to identify all necessary data, such as outer form, inclination, orientation and clouding of each roof. It also considers the path of the sun across the sky and the shadow cast by a chimney in the course of the day. The seasonal change in hours of sunlight is also included. The final intersection of all single results creates the basic data, e.g. to find out how much energy it is possible to produce using solar power all over a certain town or in each single household.

The system also gives an answer to the question; how much electricity could be produced it every suitable roof in a certain city were equipped with photovoltaic solar panels?

The Service/Systems was already successfully applied by German cities. In total 120 km2 were scanned which analysed 70.000 buildings in the city. The results of the analysis are online available. The habitants of the city have the opportunity to check online whether their house is suitable for the use of photovoltaic. Innovative Aspects: - The system can analyse the energy-potential of any roof in any city in any county automatically after the first airborne surveying.

- It is the first fully automatic solar-potential-cadastral-registration which gives analyse of large areas.

Country: Germany

Ref#:	**08 IT 53U1 0JDU**	**Technology type:**	**OFFER**

Title: Pv-intrascan: Integrable system to scan the outdoor performance of PV-flat and PV concentration modules

Abstract: An Italian public research institute has developed an innovative system to analize the performance of a photovoltaic system. The system simplifies the electrical connection and allows the synchronized-integrated measurement of various operational parameters for single modules.The system allows the execution of the measurements by avoiding the interruption of the energetic production.The institute is looking for partners in order to develop, manufacture and commercialize the technology proposal.

Description: The performance analysis of a photovoltaic system is based on the operative (I-V) characterization - tension of DC generator and the single PV modules, but taking in account the meteorological and operating parameters such as the incident radiation on the photovoltaic field, the solar spectra, the environmental and PV module temperature. However, in the case of PV Concentrator systems, further parameters need to be taken into account, such as directed incident light, accuracy of the solar tracking and optical alignment, the thermal expansions of the structures and the module housing, the wind speed, the positioning of the module in reference to tracking plane etc.
Currently this type of diagnosis is carried out by using very expensive and complex systems of I-V characterization which allow the acquisition of a limited number of operating parameters and impose the connection of the measurement through complex wirings, thus impliying a not negligible risk of fault due to the intense activities in height and electrical shock risks of the workers.
Moreover, these systems usually require the shut-off of the PV system for the electrical connection of each PV module, with detrimental effects related to energy production and changes in the operative conditions related to the increased thermal dissipation as effect of no electrical power produced.
The new system developed by Italian public research institute not only simplifies the electrical connection but it also allows the synchronized and integrated measure of various operational parameters with a multitude of data acquired in precise and complete way for single modules, parts of PV innovative plants, allowing the execution of the measurements by avoiding the interruption of the energetic production for a fraction of few seconds limited to the characterization. This peculiarity is not only very interesting from a commercial point of view, but it also allows to characterize the Photovoltaic systems in a configuration very close to the real operative conditions. The inventors are currently engaged in an advanced phase of development. Innovative Aspects: The system:
- allows the synchronized and integrated measure of various operational parameters with multitude of data acquired in precise and complete way
- simplifies the electrical connections
- allows the execution of the measurements by avoiding the interruption of the energetic production for a fraction of few seconds limited to the characterization

Country: Italy

Ref#:	**08 IT 53U1 0JDW**	**Technology type:**	**OFFER**

Title: PV-Guardian: antitheft system for the PV Modules

Abstract: An Italian public research institute, specialized in the Renewable Energy field, has developed an innovative antitheft system for the PV modules. This system allows to obtain the information about the new position of the stolen module and to inhibit its energy production. They are looking for partners in order to develop, manufacture and commercialize the technology proposed.

Description: The technology offered consists of a small and thin electronic card self-powered by same PV module and internally rolled inside itself so that it is impossible to remove it without destroying the panel. Thanks to the application of the GPS technology, the antitheft system constantly checks the geographical coordinates of the site in which the panel has been installed; after it compares the data with information which installing operator has been put inside the PV-Guardian electronic card by wired/wireless operation and specific security codes. When a difference between such coordinates is noted, the antitheft system inhibits the energy production of the PV module and so it makes useless the some theft. The production of photovoltaic energy is restored when the module is replaced in the native position or it is codified once again by the installing operator. An GSM card could also be supplied to system to inform about the new position of stolen PV module and to allow the PV module recovery. The expected cost of the technology offered should be less the 3-4% of the PV module cost itself, with the perspective of its strong reduction as effect of the increasing market. Innovative Aspects: - Immediate noticing of the theft and simultaneous inhibition of the energy production;
- Possibility to restore the energy production by specific security codes;
- Modular application of the technology;
- Checking the new position of the stolen module (by using optional GSM technology);
- Low cost – easy assembling – high integrability of the technology.

Country: Italy

Ref#:	08 DE 1271 0J95	Technology type:	OFFER

Title: Particle-free and contactless transportation and positioning system

Abstract: A German SME offers highly-customised mechatronic and adaptive solutions for different industries. Its transportation and positioning system suits ultra-high vacuum and clean room applications. The products to be carried levitate in a magnetic field absolutely contactless. Total elimination of mechanical wear is guaranteed. Key-applications are in the coating and semiconductor industry. A Technical co-operation, a Manufacturing or Commercial Agreement is searched for.

Description: The SME developed a new transportation and positioning system especially suited for ultra-high vacuum and clean-room applications. (It can be used to transport products in clean rooms from one workstation to the other and put them in a predetermined position with extremely high accuracy.)

The SME is specialized in levitation and vibration control. The magnetic bearing units are working in a stand-alone mode with all required electronics already integrated in the housing of the bearing and drive, thus producing reasonable costs.

All electronics for positioning and controlling the individual bearing units of the transportation system are integrated in each unit itself. Hence, no additional central control units are required. This is one of the major differences compared to products of competitors. Nevertheless, some communication/controlling is always/still needed, e.g. adapting to transportation tasks for new production cycles. This kind of adaptation is done via a single CAN-bus connection to which each bearing unit is connected.

The carrier can be designed simply and cost-effectively, it can be constructed from steel, no electrical energy has to be transferred to any moving part. Further advantage of the new technology is that all carriers are individually controllable, leading to more accurate positioning. Due to the high requirements of vacuum or clean room applications the bearing and driving units can entirely be encapsulated. Therefore small desorption rates can be achieved.

As a matter of principle magnetic bearings are working absolutely contactless, hence no disturbing particles are generated. The acting magnetic forces do not need any medium to exist. Hence, they are perfectly suited for applications in vacuum. Drawback of magnetic bearings usually is the additional need of electronics to control the unstable working condition, leading to higher costs compared to air bearings. These electronics are generally installed in control cabinets outside the vacuum chambers leading to high numbers of additional installation costs, e.g. large amount of electrical feedthrough, cables and the control cabinets themselves.

Key-applications are in the coating and semiconductor industry, where high standards in cleanness are evident. Further applications in other areas are possible. Especially where the elimination of any lubricant and mechanical contact respectively wear is highly desired.

State-of-the-art
State-of-the-art bearing and drive solutions for processes in an area with high cleanness standards are mainly mechanical bearing concepts like roller drive systems or linear guiding. As for a lot of processes and applications the standards are permanently increasing towards more cleanness, new solutions have to be found. This especially holds for the display manufacturers as well as for the semiconductor market. The production

process within these industries takes place either under vacuum conditions or in clean rooms with highest requirements. All kind of foreign and unwanted particles have to be avoided.

For some kinds of processes air bearings seem to be a solution. This kind of technology mainly avoids the generation of foreign particles, at least. Drawback is that extensive measures have to be installed to evacuate the necessary airflow, especially in applications where ultra-high vacuum is required. Innovative Aspects: The new drive and transportation system is completely contactless and neither air nor any other medium is required. Hence no particles are generated and a higher reliability is reached due to the elimination of mechanical wear.

All components of the transportation system are developed as stand-alone units. All necessary electronics are highly integrated. Hence electrical connections and feedthrough are reduced to a minimum. The units only need to be connected to a power supply bus-chain and for communication to a CAN-Bus-chain. Lead-through terminals are therefore also reduced to an absolute minimum. All components are entirely encapsulated to meet even the highest vacuum and clean room requirements. The ambient temperature can go up to approximately 100°C.

Conventional transportation systems are usually based on roller drive systems. The carriers are mounted on the rollers and are driven via mechanical contact / friction. Hence mechanical wear and particles occur. Other applications for positioning systems in vacuum or clean room areas are using air bearings to avoid mechanical contact or particles, respectively . But it is obvious, that air inside vacuum or clean room applications is causing a lot of additional problems, which have to be taken care of otherwise.

Country: Germany