enterprise europe network

Business Support on Your Doorstep

Technology Offer - Profile Template

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European Commission

Technology Offer Profile

The following table can be used as a template for drafting a Technology Offer. Please be sure to refer to the Profile Drafting Guidelines for what information you should include in each field.

Please note:

- Fields marked with asterisk (*) are mandatory
- Fields that can be ticked should only have one selection when drafting the profile unless specified under the field title.

FIELD	Field to be populated
Title *	Accumulator with water as heating agent and the capacity up to 200 MW.
Internal Reference	
Summary * **(1-500 characters)**	A small enterprise from Karelia, Russia, is designing a solid-phase heat accumulator with water heating agent and up to 200kW capacity that uses night electric energy to reduce cities' heating cost by 1,5-2 times, to improve safety and performance of the entire energy system and individual power stations. The company seeks partners for joint further development.
Advantages and Innovations * **(50-2000 characters)**	There are no analogues in the world to the heating systems based on this heat accumulator in terms of technical parameters. The proposed heat accumulators have significant advantages in comparison with existing technologies used to equalize the round-day energy load: - low cost of the heat accumulator per 1 kW, as compared to cost of gas-turbine power plant (GTPP) and hydro accumulating power station (HAPS), - small size: high working temperature (+600C) of heat accumulating working medium allows to make these accumulators much more compact than GTPP and several times smaller than HAPS, - high reliability, since the soapstone's service time is over 50 years. The proposed designs of heat accumulators allow easy replacement of electric heating elements and water heat exchanger (with overheating control system). All analogues have much more complicated procedure, - there are no inflammable or explosive elements in the heat accumulator's design, - the heat accumulator is ecologically safe. Use of these heat accumulators will allow to:

	- reduce loss in power grids and improve the power quality, - ensure safety in case of consumers emergency cutoff , due to easy accumulation of surplus energy, - release significant electric power in daytime, - increase the efficiency of power generating devices including nuclear power plants (NPP).
Stage of Development *	☐ Already on the market ☐ Available for demonstration ☐ Concept Stage ☐ Field Tested / Evaluated ☐ Project Already Started ☐ Project in Negotiations - Urgent ☐ Proposal under development ☐ Prototype available for demonstration ☒ Under development / lab tested
Comments regarding Stage of Development	
Description * **(100-4000 characters)**	One of the ways for optimization of energy consumption and reducing buildings' heating costs is utilization of night energy. The company, jointly with a Russian R&D partner, made calculations that prove the possibility of creating heating systems with huge heat capacity based on solid-phase (solid-state) heat accumulators with water heating agent. At the moment, there are no analogues of such heating systems. The designed heat accumulator consists of a heat accumulating working medium made of solid material – soapstone (environmentally friendly natural mineral having high heat capacity, heat resistance, heat transmission properties). Soapstone can withstand multiple temperature drops from -50C to +1000C. A tube heat exchanger for water heat agent and electric heating elements are installed into a solid heat accumulating working medium. The heat accumulator is covered with heat insulation, which ensures heat storage for at least 16 hours. Surplus (night) electric energy of the whole power grid and/or individual power station can be accumulated directly in a heat accumulator of 100-200 MW capacity mounted at the power station, and/or in a heat accumulator of 10-200 MW capacity placed in cities located in 50-100 km from the power station. Heat accumulators of 0.1-10 MW can be used for heating separate blocks of flats, high-rise buildings or a group of small buildings, jointly with existing electric boilers.

	During heating season, water for municipal heat supply system is heated directly in a water circuit of the heat accumulator of 10-200 MW, installed in a place suitable for creation of optimal regime for heating and for grid pumps operation. In summertime, when heat supply grid water is not produced, night (surplus) electric energy can be used for hot water supply; it can be used for heating of feed water and steam as well. Use of these heat accumulators will allow reducing the cost of cities' heating in 1,5-2 times due to low cost of night electric energy. The company has a great experience in development and production of solid-state heat accumulators with different heat agents, which are in a demand among domestic and foreign manufacturers. Company's technologies have a huge potential in the field of energy saving. The company is looking for partners to take part in competitions of scientific and technical programs.
IPR Status * **Note: Multiple fields can be selected.**	☐ Copyright ☐ Design Rights ☐ Exclusive Rights ☐ Other (registered design, plant variety, etc.) ☒ Patent(s) applied for but not yet granted ☐ Patents granted ☐ Secret Know-how ☐ Trade Marks
Comments Regarding IPR Status	4 patents RF 2004, 2004, 2004, 2008
Technology Keywords *	4.1.1. Heat storage 4.1.2. Heat transport and supply, district heating 4.2.7. Heating, ventilation 4.5.10. Wind energy 4.5.8. Unconventional and Alternative Energies
Market Keywords *	.8. Energy Conservation Related 6.5. Alternative Energy 4) Wind energy 8.2. Industrial Automation 1) Energy management 9.3. Services 1) Engineering services

	9.8. Utilities and Related Firms 4) Other utilities and related firms
Responsible *	Spitsyna Olga
Sector Group	☐ Auronautics & space ☐ Agrofood ☐ Automotive, transport and logistics ☐ Bio Chem Tech ☐ Creative Industries ☐ Environment ☐ Healthcare ☐ ICT Industry and Services ☒ Intelligent Energy ☐ Maritime Industry and Services ☐ Materials ☐ Nano – and Microtechnologies ☐ Services and Retail ☐ Sustainable Construction ☐ Textile and Fashion ☐ Tourism and Cultural Heritage ☐ Women entrepreneurship
Restrict Dissemination to specific countries	
Type and Size of Client *	☐ Industry SME <= 10 ☒ Industry SME 11-49 ☐ Industry SME 50 – 249 ☐ Industry 250-499 ☐ Industry >500 ☐ Industry MNE >500 ☐ Inventor ☐ Other ☐ R&D institution ☐ University
Year Established	

	2006
NACE keywords *	E 40.1 : Production and distribution of electricity
Turnover (Euros – Millions)	☒ <1M ☐ 1-10M ☐ 10-20M ☐ 20-50M ☐ 50-100M ☐ 100-250M ☐ 250-500M ☐ >500M
Already Engaged in Trans - national Cooperation?	☒ Yes (In Merlin tick the check box for yes) ☐ No
Additional Comments	
Certification Standards	
Languages Spoken *	Russian, English
Client Country	Russian Federation
Type and Role of Partner Sought *	**Type of partner sought** scientific and research organization, government agencies, large enterprise. **Specific area of activity of the partner** research and control of reliability and efficiency of NPPs and energy systems, production of equipment for NPP. **Tasks to be performed** joint fundraising and creation, testing and certification of models, prototypes of heat accumulators with liquid heat agent with the capacity up to 200 MW.
Profile is Opened for Expressions of Interest?	☒ Yes (In Merlin tick the check box for yes) ☐ No

Type and Size of Partner Sought **Note: Multiple fields can be selected.**	☐ SME < 10 ☐ SME 11-50 ☐ SME 51 – 250 ☐ 251-500 ☐ >500 ☐ MNE >500 ☐ Inventor ☒ R&D institution ☐ University
Type of Partnership Considered * **Note: Multiple fields can be selected.**	☐ Commercial agreement with technical assistance ☐ Financial agreement ☐ Joint venture agreement ☐ License agreement ☐ Manufacturing agreement ☐ Research cooperation agreement ☐ Services agreement ☒ Technical cooperation agreement
Attachments	To be added in Merlin