enterprise europe network

Partnering Opportunity

Profile status : Published

Research Development Request

Horizon Europe Cluster 5 Climate, Energy and Mobility - Looking for industrial demonstration partners interested in improving their energy efficiency and reducing their emissions with heat upgrade technologies

Summary

Cyprus IT company, very experienced in EU projects, provider of technologically-advanced software solutions, is looking for industrial demonstration partners for a proposal being prepared for Horizon Europe, to apply innovative heat upgrade technologies, leveraging CSP (Concentrated Solar Power). Proposal to be submitted in HORIZON-CL5-2021-D4-01-04 / HORIZON-CL5-2022-D4-01-04 Calls. Partners can come from any sector (food, chemicals, textiles, polymers, pharmaceuticals, ceramics, cement, etc.)

Creation Date	21 April 2021
Last Update	05 May 2021
Expiration Date	31 July 2021
Reference	RDCY20210421001
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/b7b5b7ae-ee1c-4f3d-a330-9fe083f9520c

Details

Description

Need: European Industry needs to achieve increased energy efficiency and reduce its Greenhouse Gas (GHG) and air pollutant emissions through recovery, upgrade and/or conversion of industrial excess (waste) heat and through electrification of heat generation leveraging renewable energies (e.g. solar thermal). Existing heat upgrade

technologies (e.g. heat pumps) do not cover industrial size installations, are not sufficiently cost-effective and do not perform for high temperatures.

Proposal: The Consortium has developed an innovative solar technology based on Fresnel collectors that can supply temperatures of <400°C with a power range covered <20 MW at pressures of <120 bar. The technology can be integrated into existing energy systems and uses renewable energy.

The proposal is being coordinated by a German organization at the edge of research and innovation in the area of SHIP (Solar Heat for Industrial Processes). The Consortium consists of technological universities and companies with expertise in industrial heat systems, solar energy, process design and optimization, process intensification, techno-economic analysis, life-cycle assessment.

The aim is to apply the technology at pilot/industrial scale, for an industrial heat upgrade system that will supply one or several specific industrial processes with useful heat in the (sink) temperature range of 90–250°C, extracted from renewable heat sources (i.e. solar thermal from Concentrated Solar Power Installation) as well as excess (waste) heat. The technology is suitable for sectors such as food, chemicals, textiles, polymers, pharmaceuticals, ceramics, cement, metals, etc.

The technology proposed will upgrade lower temperature heat flows, from renewable heat sources, possibly ambient heat or industrial excess (waste) heat, as a cost-efficient way to improve energy efficiency and reduce the GHG emissions.

What will be researched / demonstrated - the consortium will:
- Develop innovative architectures for advanced Fresnel collectors
- Integrate Concentrated Solar Power Systems with industrial heat systems

On the industrial side, the projects will focus on:
1. Scale-up innovative heat upgrade technologies
2. Achieve successful integration of renewable heat sources (solar thermal) as the input heat flow to be further upgraded
3. Reduce the cost of heat upgrade technologies, by improving their performance
4. Demonstrate their use at pilot or industrial scale in an industrial context
5. Study the techno-economic feasibility of long-term integration into industrial installations covering multiple industries.

The Consortium will apply to Horizon Europe calls for a 3 year project:
-HORIZON-CL5-2021-D4-01-04: Full-scale demonstration of heat upgrade technologies with supply temperature in the range 90-160°C (deadline 10/2021)
-HORIZON-CL5-2022-D4-01-04: Development and pilot demonstration of heat upgrade technologies with supply temperature in the range 150-250°C (deadline 09/2021) and EoIs will be accepted until the 31/07/2021.

The Consortium is seeking industrial partners from different sectors (e.g. food, chemicals, textiles, polymers, pharmaceuticals, ceramics, cement, metals, etc.) interested in:
-Processes with temperature in the range of 150-250°C, demonstrating the technology in an industrially relevant environment at pilot scale (but not the actual production system). That would be for a small installation (5– 200 kWth only) that would be as similar as possible to a real industrial environment and available for a short period of time, OR
-Processes with temperature in the range of 90-160°C, demonstrate the technology at full scale in their operational facilities (0.5 – 10 MWth) for several months up to a year.

Requirements for industrial partners:
1) >2,000 m² available space (ground space / good roof space)

2) High thermal energy demand
3) Process temperatures in the range 90-250°C)
4) High irradiation
5) High energy costs

Advantages and innovations

The Concentrated Solar Power-based heat upgrade system will be improved both in terms of economic and technical performance in terms of:
- sink output temperature range (90-250°C);
- temperature increase between sink inlet and sink outlet temperatures
- temperature spread between source and sink temperatures;
- flexibility to source input temperature variations;
- higher sink thermal power;
- higher coefficient of performance;
- bigger size;
- lower CAPEX (equipment) and operational costs (higher efficiency and lower maintenance).

Main advantages for industrial partners are:
- Energy savings >> Lower operating expenses (OPEX)
- Greenhouse gases and air pollutant emissions reductions >> Regulatory compliance, lower operating expenses (OPEX)
- Transition to renewable energy
- Access to knowhow on renewable energy
- Access to funding for innovative equipment

Stage of development

Available for demonstration

Comments Regarding Stage of Development

The tech is available for demonstration and already field tested.
The stage of development of the technology depends on the range of temperatures targeted:
- It is tested and evaluated for temperatures in the range 160 to 250°C; the aim of the project will be to test and demonstrate the technology at pilot scale (5 – 200 kWth).
- It is available for demonstration for temperatures in the range 90 to 160°C; the aim of the project will be to demonstrate
- at full scale (0.5 – 10 MWth)

IPR Status

Secret Know-how,Patent(s) applied for but not yet granted,Patents granted

Keywords

Technology

04002007	Heat pump
04005005	Solar/Thermal energy
04007003	Process optimisation, waste heat utilisation

Market

06003001	Solar/thermal energy

NACE

J.62.0.1	Computer programming activities
J.62.0.2	Computer consultancy activities
J.62.0.9	Other information technology and computer service activities

Network Contact

Issuing Partner

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Open for EOI: Yes

Dissemination

Relevant sector groups

Agrofood
Bio Chem Tech
Environment
Intelligent Energy

Client

Type and Size of Organisation Behind the Profile

Industry SME 11-49

Year Established

2005

Turnover

1 - 10M

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
Greek
French

Client Country

Cyprus

Partner Sought

Type and Role of Partner Sought

The Consortium is seeking industrial (SME or large industry) partners from different sectors (e.g. food, chemicals, textiles, polymers, pharmaceuticals, ceramics, cement, metals, etc.) interested in one of the following:
- For processes with temperature in the range of 150-250°C, demonstrating the technology in an industrially relevant environment at pilot scale (but not the actual production system). That would be for a small installation (5– 200 kWth only) that would be as similar as possible to a real industrial environment and available for a short period of time.

OR
- For processes with temperature in the range of 90-160°C, demonstrate the technology at full scale in their operational facilities (0.5 – 10 MWth) for several months up to a year.

The sought partners will take part in the following activities:
- Identifications of needs and review of existing processes
- Providing technical specifications with regards to their installations so as to support the design, development and adaptation of the technology to industrial needs
- Provision of space required for installation of the solar technology
- Support to integration with the demonstration facilities
- Operations of the demonstration facilities (at pilot or at full scale) and collection of data regarding operational performance.
- Support to activities related to techno-economic assessment.

Type and Size of Partner Sought

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

Type of Partnership Considered

Research cooperation agreement

Program - Call

Framework Program

Specific actions

Call title and identifier

HORIZON-CL5-2021-D4-01-04: Full-scale demonstration of heat upgrade technologies with supply temperature in the range 90-160°C
HORIZON-CL5-2022-D4-01-04: Development and pilot demonstration of heat upgrade technologies with supply temperature

Submission and evaluation scheme

Horizon Europe evaluation

Anticipated Project Budget

8-10 million

Coordinator required

No

Duration

156 days

Deadline for EOI

31 Jul 2021

Deadline of the Call

19 Oct 2021

Attachments