enterprise europe network

Partnering Opportunity

Profile status : Published

Research Development Request

HORIZON-CL4-2022-TWIN-TRANSITION-01-15: Two Slovenian research organizations and a company are looking for partners with expertise on electrochemical production of hydrogen peroxide

Summary

Two research organizations and a hydrogen peroxide producer from Slovenia are looking for partners with expertise on electrochemical production of hydrogen peroxide in order to establish a prototype electrochemical production of hydrogen peroxide under the call HORIZON-CL4-2022-TWIN-TRANSITION-01-15.

Creation Date	16 November 2021
Last Update	16 November 2021
Expiration Date	31 December 2021
Reference	RDSI20211116001
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/c7ceca34-b40c-4f2e-a8a8-537f82de12b7

Details

Description

Call HORIZON-CL4-2022-TWIN-TRANSITION-01-15 requires to address the following aspects:

- Development of the new electrochemical conversion route towards a product or intermediate of interest for process industries and demonstration at an appropriate scale;
- Optimisation of the reactor design and operation and the electrochemical parameters (mass and charge

transfer) towards an improved electrochemical performance (increased Faradaic efficiency, lower overpotential, etc.);
- Optimisation of the reactor design and operation and the electrochemical parameters towards the increased lifetime or reduced cost of the electrochemical reactor components (electrode, electrolyte, catalyst, membrane);
- Development of suitable electrodes and electrocatalyst for the new conversion route towards a high selectivity and performance;
- Efficient integration of renewable energy sources, considering also their intermittency and the possibility to offer demand-response flexibility;
- Integrated process design, including materials, reactor/cell and separation methods, from the process intensification and cost perspectives;
- Demonstration and validation of the proposed concepts at an appropriate scale under environmental relevant conditions. Industrial feasibility should be proven by techno-economic assessments.

The subject of collaboration is the scalable sustainable process for direct electrochemical route of hydrogen peroxide production (without intermediate water electrolysis for hydrogen production). The goal is to develop a Technology Readiness Level (TRL) 5-6 sub-sized prototype production process.

The present team consists of:
1. A Slovenian public research organization with the expertise in materials, characterisation and engineering, whereas its contributing role is flexible considering the rest of consortium, as well as roles missing;
2. A Slovenian research organization with expertise in process control and optimitzation, modeling of production processes, process automation and electrical engineering;
3. Large Slovenian producer of hydrogen peroxide.

The industrial company partner (an export-oriented renowned producer of hydrogen peroxide products) is strongly motivated for this emerging kind of technology to be able to provide a future carbon dioxide neutral production on their site or remotely at customers, providing engineering or services.

Preferably, the team would like to join existing or emerging consortia, however, the coordination of the whole project is not excluded.

The team is looking for following partners:
- The partners with (high TRL) expertise on electrochemical production of hydrogen peroxide and/or any other chemicals or materials;
- Industrial partners to provide demo sites for the developed electrochemical production processes.

The team is looking forward to cooperate with the partners or a consortium on this specific topic, whereas the options of collaboration are flexible – ideally, Slovenian prototype process would be one of many, coordinated in orchestra, while the lead is not yet irrevocably selected.

Advantages and innovations

Hydrogen peroxide production relies on hydrogen and oxygen as feedstocks, whereas presently, hydrogen is provided from natural gas reforming, which causes carbon dioxide emissions. The goal is to develop direct electrochemical process for hydrogen peroxide production, based on green electricity and thus not generating carbon dioxide emissions.

Stage of development

Proposal under development

IPR Status

Secret Know-how

Keywords

Technology

02004	Plant Design and Maintenance
02007009	Materials Handling Technology (solids, fluids, gases)
03004002	Inorganic Substances
03004004	Electrical Engineering/ Electrical Equipment

Market

08001015	Other speciality materials
08001017	Industrial chemicals
08001021	Other speciality chemicals

NACE

M.72.1.9	Other research and experimental development on natural sciences and engin

Network Contact

Issuing Partner

ZACHODNIOPOMORSKI UNIWERSYTET TECHNOLOGICZNY W SZCZECINIE

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Open for EOI: Yes

Dissemination

Relevant sector groups

Materials

Client

Type and Size of Organisation Behind the Profile

R&D Institution

Year Established

1949

Turnover

20 - 50M

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
Slovenian

Client Country

Slovenia

Partner Sought

Type and Role of Partner Sought

The Slovenian research organizations and a company are looking for:
- The partners with (high TRL) expertise on electrochemical production of hydrogen peroxide and/or any other chemicals or materials;
- Industrial partners to provide demo sites for the developed electrochemical production processes.

Role of partners is to jointly apply to HORIZON-CL4-2022-TWIN-TRANSITION-01-15.

Type and Size of Partner Sought

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

Type of Partnership Considered

Research cooperation agreement

Program - Call

Framework Program

Climate action, environment, resource efficiency and raw materials

Call title and identifier

New electrochemical conversion routes for the production of chemicals and materials in process industry (Processes4Planet Partnership) (RIA)
HORIZON-CL4-2022-TWIN-TRANSITION-01-15

Submission and evaluation scheme

Single-stage submission scheme

Anticipated Project Budget

EUR 8.00 and 12.00 million

Coordinator required

Yes

Duration

208 days

Deadline for EOI

31 Dec 2021

Deadline of the Call

30 Mar 2022

Weblink to the call

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl4-2022-twin-transition-01-15

Attachments