

Partnering Opportunity

Profile Status: Published

Research & Development Request

H2020-LC-SC3-NZE-5-2019-2020: Cement factories are sought for the development of a CO2 Capture, Utilization and Storage (CCUS) solution for the cement industry

Summary

A small Cyprus engineering company is looking for cement factories to participate in a Horizon 2020-Energy project proposal aiming at developing an integrated solution for carbon dioxide (CO2) capture, utilisation and storage (CCUS) for the cement industry. The cement factories will have critical role to the success of the project outcomes and impact by providing feedback during the development of the solution (for operational, safety and financial aspects) and the implementation of the project.

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Expiration Date	31 July 2019
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Details

Description

The direct correlation of the increase of greenhouse gases and particularly carbon dioxide (CO2) with global warming and climate change is one of the most urgent problems humanity faces today. The ability, therefore, to develop effective processes that will assist in reducing the CO2 content within the atmosphere is crucial as it will have a massive impact on the atmospheric environment, and subsequently the overall ecosystem and both rural and urban communities.

Despite existing CO2 capture, utilisation and storage (CCUS) technologies being considered mature, it is still an emerging market where significant commercial uptake has not yet been achieved.

The proposed project aims at developing and testing in a relevant environment an innovative carbon capture solution for the industrial sector, more specifically for cement factories, at this stage, and to transform the CO₂ captured in useful products and/or bioproducts.

The project's proposal will be submitted for funding by the European Commission under the "Low carbon industrial production using CCUS" call for proposals of the "Secure, clean and efficient energy" work programme of Horizon 2020:

- Call ID: LC-SC3-NZE-5-2019-2020
- Type of action: Innovation action (IA)
- Deadline Model: Single-stage
- Project Budget: 10-12 million Euros
- Project Duration: 48 months
- Deadline of the Call: 27 Aug 2019
- Deadline for EOI: 31 Jul 2019

The objectives of the proposed project are:

- 1) To develop and implement multiphase continuous intensified reactors/ photobioreactors for the intensive capture of CO₂ and the subsequent utilisation of it to useful products.
- 2) To demonstrate impactful economic and quality (low contamination of syngas by the absorbent) benefits by the use of ionic liquids/ microalgae in the context of industrially-relevant problems.
- 3) To exemplify the general approach in the context of industrial need (intensifying CO₂ capture).

The project's team is diverse, multidisciplinary and focused, thus resulting in an ideal partnership/synergy for delivering the project outcomes. So far the project's consortium consists of partners from the UK, Portugal, Switzerland, Italy, China, USA and Cyprus.

The Technical coordinator of the project is a UK/London based university with vast experience in design & construction of continuous intensified microreactors, computational fluid dynamics (CFD) modelling and optimization and CO₂ applied research, among others expertise elements.

The Cypriot company will be the leader of the Exploitation and Dissemination work package that will include, among others:

1. Summarized specifications of the individual developed units and proposed pilot units
 2. CCUS supply chain definition for the various industrial applications (focusing on cement plants)
 3. Bridging the gap between academia, industry and society
 4. Business modelling investigation
 5. CO₂ Hub establishment in Cyprus
 6. Development of the Strategic business plan for the integrated CCUS solution(s)
- The Cypriot company has expertise in the Engineering Consulting and Vocational Education & Training. Its team members have more than 15 years of collective professional engineering experience in Cyprus, Qatar, Saudi Arabia, the USA, and Greece, in Civil, Structural, Environmental, Chemical, Dairy, Process and Industrial Engineering.

The cement factories role in the project will be critical for the success of the project outcomes and impact. The anticipated role is described in detail in the section 'Type and Role of Partner Sought' below.

Advantages and Innovations

The proposed project aims to deliver an innovative approach for CO₂ capture and utilisation by facilitating intensified membrane reactors using ionic liquids in different forms (liquid, immobilized/supported) as well as photobioreactor with microalgae in order to enhance the absorption process of CO₂ and its conversion to useful products (e.g. methane, methanol, olefins, and higher hydrocarbons).

The project aims also to develop new ionic liquids absorbents, new catalysts and new intensified reactors to address climate change concerns encounter from the high emissions of CO₂ produced by fuel combustion in industry.

Stage of Development

Proposal under development

Keywords

Technology

10002003	Capture and Storage of CO ₂
10002007	Environmental Engineering / Technology
10003007	Waste to Energy /Resource

Market

06004001	Gas, liquid and chemical injection
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NACE

M.71.1.2	Engineering activities and related technical consultancy
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Network Contact

Issuing Partner

ZACHODNIOPOMORSKI UNIWERSYTET TECHNOLOGICZNY W SZCZECINIE

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Open for EOI : **Yes**

Dissemination

Relevant Sector Groups

Intelligent Energy

Client

Type and Size of Organisation Behind the Profile

Industry SME <= 10

Year Established

2017

Turnover

<1M

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
Greek

Client Country

Cyprus

Partner Sought

Type and Role of Partner Sought

The cement factories role in the project will be critical for the success of the project outcomes and impact. More specifically, the cement factories are expected to:

1. provide constructive feedback during the development of the CCUS solution (for operational, safety and financial aspects), and its future integration with the cement factories' operations,
2. Guide the consortium on what shall be the final product(s) of the CCUS solution (e.g. Methanol, gasoline etc.) that will best satisfy the current industry's needs and the society,
3. Provide important information and advices for the strategic business plan that will be developed under the project via online and face-to-face meetings with the cement factories' line

and operations managers (engineering/maintenance, health & safety & environment, financial and governance departments),

4. Be involved in the definition of the reactor design and performance parameters, as well as in the CO2 capture test-sets and the catalyst development.

Cement factories can be mutually benefited of a future full scale implementation of the project's outcomes, reduce dramatically their CO2 emissions and of course their CO2 taxes requirements, have valuable products out of a contaminant process and practically establish a crucial strategic social responsibility plan.

Type and Size of Partner Sought

>500 MNE,251-500,>500

Type of Partnership Considered

Research cooperation agreement

Program - Call

Framework Program

Secure, clean and efficient energy

Call title and identifier

LC-SC3-NZE-5-2019-2020: Low carbon industrial production using CCUS

Submission and evaluation scheme

Single-stage

Anticipated Project Budget

10-12 million Euros

Coordinator Required

No

Deadline for EOI

31 Jul 2019

Deadline of the Call

27 Aug 2019

Project Duration

208 week(s)

Weblink to the Call

<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/lc-sc3-nze-5-2019-2020>

Project Title and Acronym

EnviroCO2