enterprise europe network

Partnering Opportunity

Profile status : Published

Research Development Request

HORIZON EUROPE - Looking for partners for a consortium in chemical process optimisation and troubleshooting through chemometric analysis

Summary

Italian SME specialized in petrochemical process industry builds a proposal to develop a methodology to apply chemometrics for chemical processes monitoring and troubleshooting. The goal is to exploit process data to improve process management.The company is looking for industrial partners interested to solve chemical process optimisation and troubleshooting through testing of chemometric analysis.
Call: HEUROPE -Sustainable, secure and competitive energy supply - deadline: 27th October 2022

Creation Date	06 October 2021
Last Update	07 October 2021
Expiration Date	30 September 2022
Reference	RDIT20210811002
Public Link	https://een.ec.europa.eu/tools/services/PRO/Profile/Detail/48e037fa-70f5-4127-aecf-6ccfb42bd38a

Details

Description

An Italian company is working in oil refining, providing process design studies and technical assistance aimed at maximizing operation of process units, considering both energy performance and production yields. With experience in continuous chemical processes, typical of oil refining, petrochemical or chemical industry, ti disposes of good chemical process knowledge and comprehension capability.
Modern chemical processes include sensors constantly producing a considerable amount of data. In addition to

European Commission

data automatically captured by Distributed Control Systems, datasets representing process operation can include laboratory tests for quality control or other characteristic process information.
Data monitored by plant operators are typically automatically stored in historical archives. Sometimes data are used for production monitoring but, in general, they are not much used to improve plant operating performance. The main obstacles to the systematic application of data for the improvement of plant operations are the following:
• Identification of meaningful variables: monitoring a chemical process requires installing a large number of sensors to detect the status of the plant at key process nodes. It is not easy to identify the subset of variables to consider to solve a problem.
• Variable correlation: in case of a process plant, values of variables are highly correlated but it's difficult to exploit this feature systematically and organically to define status of the plant and identify any anomalies.
• Data organisation: data representing the state of a process are sometimes heterogeneous, sampled at different frequencies and produced by diverse sources (e.g. laboratory analytical data, process variable values, feedstock quality). Effective use of data requires pre-processing to generate congruent and representative data sets.
• Data reliability: measured values are not always correct and it is not easy to identify reliable values.
• Variable multiplicity: state of a plant is represented by many variables that the observer should visualise in a holistic and aggregated way. Typical method of analysing one variable at a time or the correlations between two variables limits the understanding the process status.
Proposal aims to investigate application of chemometric methods (i.e. multivariate analysis, experimental design, data models) to study data from chemical processes to extract helpful info for improving plant performance. Possible fields are:
• Process monitoring support: providing operators with aggregated views of variables helpful in predicting the evolution of plant towards sub-optimal operating states.
• Prevention of undesirable conditions: study of critical situations and understanding causes that generated them to prevent them in future.
• Identification of malfunctioning sensors: multivariate analysis for identification of uncorrelated outliers.
• Soft sensors: use process data to develop inferential sensors predicting an unknown variable as a function of other measured variables.
To achieve desired results, it is essential to place statistical analysis tools offered by chemometrics in hands of technicians with in-depth process knowledge who can correctly interpret results and convert them into information or applications useful for process optimisation. The goal is to apply these technologies to solve real industrial problems. The result is developing practices to provide specialised data-driven chemical process troubleshooting consulting.
The consortium consists of an Italian SME, a chemical industry as industrial tester and a Spanish university as scientific partner. Looking for industrial partners to apply these methodologies to solve specific operational problems, providing plant data and working to improve performance or prevent undesirable conditions.
Call: HEUROPE -Sustainable, secure and competitive energy supply -deadline: 27 Oct 2022
EOI deadline: 30 September 2022

Advantages and innovations

The chemometric approach is not new, considering that some fundamental tools (such as principal component analysis) were conceived at the beginning of the last century. These methodologies became applicable in practice due to the increasing computational potential and availability of data.
The company is interested in carrying out this project to develop specific knowledge to be used to provide high-level consultancy services. Applying these methodologies to this sector (which is the chemical and petrochemical process industry) can give the company a competitive advantage as not many companies are providing this type of service. Many operators offer data analysis services, but they do so horizontally across different sectors with the risk of not bringing real added value. Instead, the company approach is vertical and focused on the specific industry sector they are already working on. Chemometric methods they wish to apply can become an additional tool in their hands enabling them to increase their portfolio.
Another expected result of this project is product diversification. The company has a predominant experience in fossil fuel sector. Considering the energy transition that is taking place, it is helpful for them to develop skills

allowing them to work in the future while maintaining their specificities.

Stage of development

Concept stage

IPR Status

Copyright

Comment Regarding IPR status

They are at a preliminary stage and have not deepened yet IPR issues.

Keywords

Technology

01003008	Data Processing / Data Interchange, Middleware
01003010	Databases, Database Management, Data Mining
01003015	Knowledge Management, Process Management
03002	Process Plant Engineering
03004010	Special chemicals, intermediates

Market

02006004	Data processing, analysis and input services
02007011	Manufacturing/industrial software
06006002	Metering and monitoring
08002003	Process control equipment and systems
09003005	Consulting services

NACE

J.62.0.1	Computer programming activities
J.62.0.2	Computer consultancy activities
J.62.0.3	Computer facilities management activities
J.62.0.9	Other information technology and computer service activities

Network Contact

Issuing Partner

ZACHODNIOPOMORSKI UNIWERSYTET TECHNOLOGICZNY W SZCZECINIE

Contact Person

ZEBROWSKI Pawel

Phone number

+48 91 449 43 64

Email

pzebrowski@zut.edu.pl

Open for EOI: Yes

Dissemination

Relevant sector groups

Bio Chem Tech

Client

Type and Size of Organisation Behind the Profile

Industry SME <= 10

Year Established

1986

Turnover

<1M

Already Engaged in Trans-National Cooperation

Yes

Languages Spoken

English
French
Italian

Client Country

Italy

Experience

They have partners and agents outside Europe who support their marketing activities.

Partner Sought

Type and Role of Partner Sought

The consortium consists of an Italian SME, technical solution provider, Italian chemical industry as an industrial tester, and a Spanish university scientific partner supporting the leader to validate the methodology of analysis. The company is looking for new industrial partners interested to solve chemical process optimisation and troubleshooting through the testing chemometric analysis to build a proposal with different applications or use-cases in the framework of Horizon Europe programme.

Type and Size of Partner Sought

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

Type of Partnership Considered

Research cooperation agreement

Program - Call

Framework Program

H2020

Call title and identifier

HORIZON EUROPE - Sustainable, secure and competitive energy supply (HORIZON-CL5-2022-D3-02) or other calls which could be coherent with the project idea.

Submission and evaluation scheme

single stage

Coordinator required

No

Deadline for EOI

30 Sep 2022

Deadline of the Call

27 Oct 2022

Weblink to the call

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2022-d3-02-06;callCode=null;freeTextSearchKeyword=chemical;matchWholeText=true;typeCodes=1,2;statusCodes=31094501,31094502;programmePeriod=null;pr

Attachments