Partner Search offer in Horizon 2020

Date (2014/08/01)

(*) Description of the expertise offered (up to 1000 characters)

We specialize in applications of alternative fuels for internal combustion engines in cogeneration units. We are able to measure the parameters of engine at three different dynamometers, up to the power 350 kW/5000 min^{-1}. From alternative fuels, we focus on gaseous fuels (process gases), particularly on synthesis gases of various composition. The investigation is conducted on an engine with low displacement and the results are utilised by our partner organizations in industry to build prototypes of larger cogeneration units. We investigate and monitor the impact of optimized compression ratio on engine parameters, the impact of combustion process (knocking combustion) by monitoring pressures in cylinder, the influence of various synthesis gases on fuel consumption, emissions, etc. For the above-mentioned applications we develop a complete control program for a given engine.
The goal of our work is to develop a combustion engine capable of effective burning of alternative fuels, especially synthesis gases of various compositions. Such an engine is able to drive a co-generation unit and thus, via cogeneration, to use RES (wastes) for combined production of electric and heat energy (CHP).

Keywords describing the expertise offered (up to 10 words)

Piston Internal Combustion Engine, Cogeneration Unit, Alternative Fuels, Process gases – Syngases, Renewable Energy Sources

Potential Contribution to the Project Proposal:

- [x] Research development
- [x] Innovation
- [x] Prototype / Model
- [ ] IPR Know-How
- [x] Dissemination and Outreach
- [ ] Capacity Building
- [ ] Hosting/Sending Secondments
- [ ] Networking
- [ ] Other:

(*) Relevant topic in work programme

The relevant topic in work programme is research in the field of improved energy sourcing of process gases, syngases (synthesis gases - alternative fuels) produced from renewable sources of energy (RES), in combustion engines. The goal is to develop a combustion engine capable of effective burning of synthesis gases of various compositions. Such an engine can be used to drive a co-generation unit and thus, via cogeneration, to use RES (wastes) for combined production of electric and heat energy (CHP). Within the planned project we are able to verify the effect of about 20 to 25 different syngas compositions (combination of CH_4, H_2, CO, N_2 and CO_2) and build a prototype of a cogeneration unit for the selected alternative fuel. The contribution to the planned project focuses on strategic priorities of EU and can help also the Slovak Republic in the field of support for utilisation of renewable sources of

energy for needs of the economy. The project outcome will bring the necessary know-how for solutions of tasks integrated with energy revaluation of renewable sources - wastes, by utilising process gases produced from wastes as alternative fuels for combustion engines. The main goal of the project concentrates on optimisation of combustion engine powered by process syngases and on predictive control of the engine.
We would like to join the following forthcoming H2020 calls:

1. H2020-EE-2015-2-RIA (EE-13-2015) Energy efficiency research and innovation.
2. H2020-LCE-2015-2 (LCE-19-2015) Competitive low-carbon energy

Former participation in FP or other international cooperation projects

1."Training in Embedded Predictive Control and Optimization", Initial Training Network (ITN) Nr. 607957, FP7 Marie Curie programme. Time of solution 2014 - 2018.
2."Enhancing NO-SK Cooperation in Automatic Control", project NIL-I-007-d, Time of solution 2009-20011.
3"Stable model based predictive control for constrained systems and processes", Project of British-Slovak joint research collaboration programme between STU and Oxford University supported by British Council.
3. Project submission to the Integrated Project of European Commission (6th Framework Programme) "GAS PATHWAYS TO 2020". Date of preparation: 2003, Coordinator: Gas de France, Number of participants from Europe: 66. The submitted integrated project as a whole was not financially supported.

Organisation information

Organisation and country:
Slovak University of Technology in Bratislava, Faculty of Mechanical Engineering, Slovakia

Type of organisation:

- ☐ Enterprise
- ☐ SME
- x Academic
- ☐ Research institute
- ☐ Public Body
- ☐ Other:

Former participation in FP European projects?

- x YES
- ☐ NO

Web address: www.stuba.sk

Description of the organisation: Slovak University of Technology in Bratislava (STU) is a public technical university and is modern educational and scientific institution. Since its foundation in the year 1937 more than 125.000 students have graduated. In average, 19.000 students study at the STU every year. At present, the STU consists of seven faculties. Faculties realise credit system compatible with the European credit transfer system. In the area of scientific and research activities the STU successfully joints European Union programmes. International cooperation focuses on solutions of joint projects within the EU framework and other international programmes, on mobility of students, teaching staff and researchers.

Target Partner Sought:

- ☐ Are you a coordinator of a project proposal looking for partners?
- x Are you looking for participation in project proposal as a partner?

Organisation details:

x Enterprise
x SME
x Academic
x Research institute
☐ Public Body
☐ Other:

Target Partner Country:

☐ Any Country
☐ Third Country
x Member State or Associated Country
☐ Specific Country:

(*) Contact details

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(*) Mandatory

Please fill in the form and return it to the National Contact Point in charge. For a full list of National Contact Points in Slovakia visit our website http://www.cvtisr.sk/cvti-sr-vedecka-kniznica/podpora-vedy/narodne-kontaktne-body-pre-horizont-2020/kontakty.html?page_id=6725