OMSoP Consortium Members

CITY UNIVERSITY LONDON
www.city.ac.uk

ROMA TRE UNIVERSITÀ DEGLI STUDI
www.uniroma3.it

ENEA
old.enea.it

innova APPLIED BRILLIANCE
www.innova.co.it

Compower
www.compower.se

KTH VETENSKAP OCH KONST
www.kth.se

UNIVERSIDAD DE SEVILLA
www.us.es

EUROPEAN TURBINE NETWORK
www.etn-gasturbine.eu

www.omsop.eu

Timeline

Phase	Activities	2013	2014	2015	> 2016
Phase 1	Research and development	●	●		
Phase 2	Proof of principle, component level		●	●	
Phase 3	Proof of concept, demonstration				●
Phase 4	Life cycle assessment, market study, market and academic exploitation			●	●

SEVENTH FRAMEWORK PROGRAMME

Under the EU's 7th Framework Programme for R&D
FP7-ENERGY.2012.2.5.1: RESEARCH, DEVELOPMENT AND TESTING OF SOLAR DISH SYSTEMS
Acronym: OMSoP
Collaborative Project: FP7-308952
Duration: 4 years (2013-2017)
Budget: 5.8 M Euro (4.2 M Euro EU funding)
Co-funded by the European Commission, Directorate-General for Energy

OMSoP Contact

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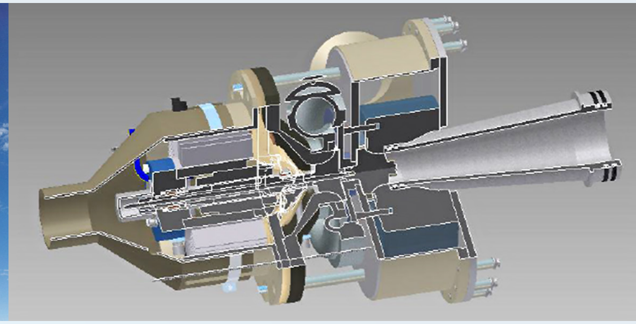
OMSoP

Optimised Microturbine Solar Power system

Project under the European Union's 7th Framework Programme for Research & Technical Development

OMSoP



Objective

The overall objective of the OMSoP project is to provide and demonstrate technical solutions for the use of state-of-the-art concentrated solar power system (CSP) coupled to micro gas turbines (MGT) to produce electricity. The intended system will be modular and capable of producing electricity up to 30 kWe per unit. A 10 kWe unit will be built and tested for demonstration purposes. The aim is to make such a system available to provide energy needs for domestic and small commercial applications. For larger energy needs, the units can be stacked by virtue of their modular nature. It can be integrated with medium and long term energy storage and/or co-firing with conventional fuels or biofuels. The primary technical challenge is to enable the production of small scale cost effective, efficient, reliable and easy to maintain units for either on or off-grid applications.

Vision

To pave the way for commercial deployment of cost effective, efficient, reliable and easy to maintain solar powered micro-turbine systems up to 30 kWe.

The European Commission has recognised the potential role of CSP in Europe's low carbon energy goals, but also acknowledged the challenges associated with the technology, such as the necessary improvement in predictability and dispatchability of CSP plants.

These challenges are addressed in the OMSoP Project. The novel combination of CSP with micro gas turbine technology in this power range is a significant change to the existing "dish-Stirling" systems and is aimed at making the CSP more robust, reliable and cost effective and more suitable for hybridisation.

International knowledge sharing is essential to significantly reduce the time and the cost of bringing this technology to the market. Research findings and results of the OMSoP project will be publicly disseminated at international conferences, in journals and on the OMSoP project's website.

The OMSoP project brings together 8 partners from industry and academia. The relationship will facilitate future co-operative partnership, possibly in the next phase of full scale demonstration of an optimised system. A successful outcome of this project will be an important step towards opening up the market for a commercial implementation of CSP coupled with micro gas turbine technology.

Structure

The technical challenges addressed by the OMSoP project are divided into 3 Work Packages (WPs):

System Component Development (WP1)

There are two main tasks for the WP1. The first is to develop and separately test the components for a demonstration system in the range of up to 10 kWe. The micro gas turbine will be based on improvements to an existing system developed by Compower. Development and testing will be conducted at City University London. KTH will develop and test a receiver in their Solar Lab while INNOVA will develop a solar concentrator based on their solar dish-Sterling technology. The second task is to use the acquired knowledge to develop components for an optimised microturbine solar dish system for the power range up to 30 kWe for future testing and deployment.

System Design and Integration (WP2)

This WP has two main tasks. The first is to integrate the system demonstration components developed in WP1 and perform the tests for the overall system. Data obtained will be used to inform the optimised system design which is the subject of the second task. The second task will coordinate the development of the optimised system components from WP1 and the techno-economic information from WP3 to produce a final design for an optimum system for future testing and deployment.

Techno-economic Analysis (WP3)

Thermodynamic and mechanical models of the system and its components will be developed and used for the analysis and design of both the demonstration system and optimised system in WP2. Further insight into future deployment will be gained by investigating concepts such as medium and long-term storage, hybridisation with other fuels and MGT power augmentation concepts. Market and cost analyses will also be performed in addition to uncertainty, sensitivity and risk studies. The above will provide crucial information to system and component development and will also provide insight into potential future deployment. Finally, a life cycle assessment will be performed to evaluate the environmental aspects and potential impact associated to the solar system.