



Project no.: **232349**

Project acronym: **EFISOL**

Project title: **Solar Thermal Cogeneration Plant based on Organic Rankin Cycle**

Instrument – Research for the benefit of SMEs

### **Final publishable summary report**

This report covers the work on project **EFISOL - Solar Thermal Cogeneration Plant based on Organic Ranking Cycle**, falling under European Commission Framework 7.

European Commission has invested substantial funds in Renewable Energy sources in order to increase the overall efficiency of technology, improve their cost benefit effects and finally gradually reduce incentives on renewables. As a response the Project partners have developed a product that remains profitable even with lower electrical energy incentives

Strategic overall objective of the project was to develop an efficient and cost effective solar energy system for combined **electrical energy power and hot water production** that uses **concentrated beam solar radiation** as the primary energy source.

Heat Storage Tank is capable of storing enough heat energy (1600 kWh, giving two hours storage capability), at the appropriate temperature (of about 110°C to 270°C) during the day to deliver it back continuously, at the correct rate, at the required temperature, during periods of reduces insulation. This heat storage system is a highly important part for the success of the overall system and will demonstrate this technology to provide the longer term objective of storage for continuous production during the hours of darkness.

A concept is based on the highly innovative integration of existing technologies, development of new thermo energetic components and advance guidance and control system implementation. All components were integrated and optimized as an autonomous unmanned power production unit in a form of a new commercial product, the EFISOL, a combination of following key innovative technologies:

- half linear Fresnel lens based concentrators

- ORC (Organic Rankin Cycle) cogeneration unit
- Advanced control system

The system is suitable for various small and medium energy consumers, particularly for those placed in 'sunny areas' such as the Mediterranean. Various types of energy consumers e.g. hotel resorts, campsites, industrial units, housing groups and energy producer entrepreneurs are targeted future users. Final product can produce renewable electrical energy to be sold directly to the power grids or used for internal consumption purposes.

### Market drivers and potentials

A described Hybrid Organic Rankin Cycle plants based on Solar Thermal Concentrators plant has the large market potential on the EU and global market as well. The first targeted area is going to be the EU market, specifically Mediterranean area that is very suitable for this kind of plants having a high number of sunny days.

Main targeted customers (several thousands in each category) for the product are:

- large and medium hotel organizations and chains
- autonomous RES energy producers, entrepreneurs
- residential areas
- industrial (industrial plants), agriculture, and public (hospitals, army sites) organizations

List of all beneficiaries:

Partner	Role in project	Address	Representative
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**The Project public website:** [www.efisol.org](http://www.efisol.org)

**The Project Logo:**



Please refer to technical reports as an integral part of the Project, which are uploaded to [Research Participant Portal](http://ec.europa.eu/research/participants/portal/page/home) <http://ec.europa.eu/research/participants/portal/page/home> .