

**PROJECT TITLE**

# “Organic Rankine Cycle (ORC) technology for low-temperature heat conversion into power”

**CLIENT**

Agricultural sector (greenhouses), industry, residential and commercial sector (hotels, etc.).



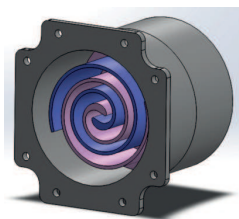
**OBJECTIVES / ENTREPRENEURIAL OPPORTUNITIES**

Increasing energy efficiency significantly contributes towards a low carbon economy. To this context, the exploitation of all possible heat sources becomes a critical issue and especially the low-temperature heat, which is difficult to be recovered and converted to electricity. This is the main scope of the present work, in order to propose efficient and low-cost engines for heat conversion into power and for combined heat and power (CHP).



**SOLUTION**

A very promising technology for low-temperature heat recovery is the organic Rankine cycle (ORC) engine. This engine can convert low-temperature heat sources into electricity. The research group has developed, installed and tested different engines with various configurations, with temperature range 70-130 oC and power capacity 2-10 kW. The developed engines include both subcritical and supercritical cycles, as well as single-stage and two-stage expansion, using advanced expander technology.



**RESULTS**

The ORC technology for small-scale applications and low-temperature heat sources has been tested in the laboratory and under real conditions. The measurements showed that an adequate heat-to-power conversion efficiency is feasible with thermal efficiency up to 12%, while focus is given on improving the control of such concept, as well as reducing its costs close to 3000-4000 €/kW for low pay-back-periods.

**OUR TEAM**

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