

decagone

Demonstrator of industrial carbon-free power generation from ORC-based waste-heat-to-energy-systems



CONSORTIUM

16 PARTNERS
10 COUNTRIES



DURATION

4 YEARS



START-END DATE

01/06/2022
31/05/2026



BUDGET

18M€



TECHNOLOGY

ORGANIC
RANKINE CYCLE



OBJECTIVES

Increased Efficiency:

DECAGONE has the objective to increase the efficiency of ORC technology for waste heat recovery applications. In addition, during their lifetime after several years of operation, ORCs are subject to considerable reduction in their performance. DECAGONE proposes technical solutions that aim at reducing the effect of this phenomenon, proposing a technology able to maintain high-performance over 15-20 years of operation.

Lower Total Cost of Ownership:

ORC projects should maintain a competitive LCOE compared to other carbon-free technologies to offer attractive PPA prices and to secure a short payback period. Such targets are reachable by reducing the CAPEX and OPEX of the project, as well as through innovative business models like ESCO models, which will be developed in this project and proposed between the partners to prepare post-project exploitation.

System replicability and market potential:

Apart from iron & steel, for which the DECAGONE project will demonstrate the feasibility and increased profitability in a highly intermittent process with frequent low partial load, the viability of the solution will be studied in other potential use cases, such as natural gas sector, oil & gas industry, glass industry, aluminum industry, cement industry.



INNOVATION

Develop new components architectures, models, and technologies

Validate innovative approaches using new experimental setups and design capacities

Demonstrate real-life operation and validate Life Cycle Assessment models

Prepare the next commercial generation of ORC-based WHR systems derived from the DECAGONE project

Promote benefits of ORC-based WHR to key stakeholder groups and foster broad industrial uptake



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