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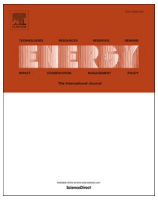

Preface VSI: ORC 2021

The Organic Rankine Cycle (ORC) technology has shown an intense development within the last 20 years. The waste heat potential from the industry together with renewable heat sources such as geothermal has put the ORC at the forefront of the market for efficient low-grade heat conversion. The total ORC installed power capacity is currently higher than 4.5 GW_{el}, highlighting its significance in the market. Innovations in both the ORC and the Supercritical CO_2 (sCO2) power cycles are subject to both academic-research institutes and industrial players.

In this special issue, important research activities and innovation results concerning the ORC and sCO2 technologies are presented, oriented towards small, medium and large-scale applications, thermodynamic and design optimization, but also control strategies for efficient full and part load operation. Apart from energy optimization, special focus is given to life cycle analysis of ORC applications for waste heat recovery from marine engines as well as techno-economic investigations of novel concepts such as the reversible heat pump/ORC. Finally, key cycle components (expansion machines/turbines, heat exchangers) but also working fluid candidates for use in ORC systems are analyzed and evaluated.

Papers selected.

Inventory control assessment for small scale sCO2 heat to power conversion systems
Reversible high-temperature heat pump/ORC for waste heat recovery in various ships: a techno-economic assessment
Dimensional analysis and performance laws for organic vapor flow turbomachinery
Life Cycle Analysis of a waste heat recovery for marine engines Organic Rankine Cycle
A user-friendly pitot probe data reduction routine for non- ideal gas flow applications
Investigation of non-ideal gas flows around a circular cylinder
Comparative thermodynamic analysis of an improved ORC process with integrated injection of process fluid

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Diphenyl-diphenyl oxide eutectic mixture for high temperature waste-heat valorisation by a partially evaporated cycle cascade
Multi-Fidelity Robust Design Optimization of an ORC Turbine for High Temperature Waste Heat Recovery
Part-load efficiency boost in offshore organic Rankine cycles with a cooling water flow rate control strategy
Shock Losses and Pitot Tube Measurements in Non-Ideal Supersonic and Subsonic Flows of Organic Vapors

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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