



CO₂ Technologies for Energy Conversion and Waste Heat Recovery

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Message from the Guest Editors

The thermophysical properties of CO₂ indeed can bring many advantages in several applications. Compared to conventional technologies, supercritical CO₂ power cycles allow for instance a more efficient exploitation of waste heat sources at higher temperatures and lower scales (down to hundreds of kW), as well as renewables energy sources like solar (Concentrated Solar Power, CSP), geothermal energy and nuclear fusion reactors. Furthermore, they are the most promising candidate for next generation nuclear fission power plants. For heating and cooling, CO₂ represents a much more environmental friendly fluid compared to conventional refrigerants, and it is one of the most suitable fluid candidate for the development of high temperature heat pumps, which may play an important role for energy storage as well as the decarbonisation of heat in industrial applications and buildings.

Many challenges are still hindering the commercialization of such technologies as thermodynamic design and optimisation, turbomachinery development, dynamics and control and suitable auxiliary equipments as bearings, seals and valves.





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Message from the Editor-in-Chief

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