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Experimental Analysis and Numerical Modelling of Heat Transfer and Fluid Flows in Energy Systems II

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Message from the Guest Editors

The thermal management of energy systems plays a key role in attempts to increase overall system efficiency, thus, conversely decreasing pollutant emissions and driving researchers' efforts towards an accurate evaluation of metal temperatures by correctly estimating heat transfer and fluid flow. Newly designed experimental equipment and high-fidelity computational fluid dynamics represent fundamental tools for dealing with such a demanding outcome. Furthermore, optimization methods based on artificial intelligence are now available for the design of complex components with the potential to be realized through additive manufacturing, potentially guaranteeing high aero-thermal efficiency. Still, manufacturing uncertainty must be accounted for.

Finally, the increasing usage of sustainable fuels and energy carriers (e.g., hydrogen) further complicates the situation due to the possible increase in NO_x production. Several projects funded by the industry and public funding bodies have allowed for advancements in the state-of-the-art, with researchers worldwide drawing increasing attention to the issue.

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Message from the Editor-in-Chief

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