

Role of Heat Transfer R&D Community in Addressing Interdisciplinary Energy Challenges

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The heat transfer community is well aware that energy is the backbone of our modern societies and living standard. Every good that we produce, every type of transportation, every activity that we carry, every aspect of the comfort that we demand... all require tremendous amounts energy. With the growth of environmental awareness and concerns, energy production and management must not only be cheap, but also performed in a clean, sustainable and socially acceptable way.

Since Joule's experiments demonstrating energy conservation back in the 1840s, we all know that heat is a form of energy, occupying a central place in thermodynamics. Somehow, our desire to control and manage heat is intricately linked with our most remote origins, when clothes, fire, dwellings were invented. Waste heat is also the form of energy in which high-grade energy sources often end up.

In the on-going and challenging energy context described above, the heat transfer community has a significant role to play. In this talk, we will explore some recent energy-related R&D activities, applied and multidisciplinary by nature, from the viewpoint of a researcher primarily educated in heat transfer, thermodynamics and fluid flow. Lessons learned, current challenges and future perspectives will be shared on practical applications such as buildings and its occupants, industrial processes, heat storage and geothermal energy, among others.