



Guest Editorial

Contemporary Problems of Thermal Engineering (CPOTE2022)

This Special Section of ASME *Journal of Energy Resources Technology* (JERT) presents selected scientific output of the 7th Conference on Contemporary Problems of Thermal Engineering (CPOTE2022), which brings together scientists involved in advanced energy, exergy, and ecological analysis.¹ The main theme of CPOTE2022 was *towards sustainable and decarbonized energy system*. CPOTE2022 was held in Warsaw, Poland, between September 20 and 23, 2022. Since its 1st edition in 1998, the CPOTE conference has become a cyclic event gathering the most recognized scientists in the areas of thermodynamics, energy, and environmental engineering. Compared to other conferences dedicated to thermodynamics and energy, CPOTE focuses among others on exergy analysis to a larger extent. The CPOTE conference is mainly dedicated to contemporary problems of energy systems.²

Most editions of CPOTE were given a special dedication. The 1st edition (1998) was dedicated to the 50th jubilee of Professor Jan Szargut's scientific activity. The 2nd one (2004) celebrated the centenary traditions of the Institute of Thermal Technology reaching back to its origins in the Technical University of Lwów (now Lviv, Ukraine). The 3rd edition (2012) was devoted to the 50th jubilee of Professor Andrzej Ziębik's academic activity. The 4th CPOTE conference (2016) was given a special topic Sustainable Energy Systems for our Common Future, maintained also for the 5th and the upcoming issues. The 5th Conference held in 2018 in Gliwice was a special one, devoted to the memory of Professor Jan Szargut (1927–2017), one of the founders of modern exergy analysis. The 6th edition of the CPOTE conference was devoted to the topic of challenges and opportunities for the energy system development beyond the year 2020.

The CPOTE2022 conference topics included the following areas: nonrenewable energy sources; renewable energy sources (biomass, biogas, wastes, solar, wind, and others); alternative energy sources (e.g., synthetic fuels, nuclear); energy and buildings (e.g., residential, office, municipal); turbomachinery, boilers, heat exchangers, electrical and auxiliary equipment; conventional power and combined heat and power (CHP) plants; low-temperature energy technologies (e.g., ORC, heat pumps, HVAC); industrial processes and technologies; hydrogen production and utilization technologies; energy storage and management; integrated energy systems; materials for energy and energy for materials; and chemical and metallurgical plants.

CPOTE2022 conference was invited to ASME *Journal of Energy Resources Technology* Special Section dedicated to the conference. Finally and after regular review process, seven papers have been accepted for publication in Energy.

The accepted papers for EGY CPOTE2022 Special Section have been dedicated to the important contemporary problems of energy systems. Proniewicz et al. explained the devoted life cycle assessment of selected ammonia production technologies from the perspective of ammonia as a fuel for heavy-duty vehicles. Madejski et al. described the conceptual design of an experimental test rig for research on thermo-flow processes during direct contact condensation in the two-phase spray-ejector condenser. Kushwaha et al. presented problems of modeling and parameter identification of spark plug deposit formation mechanism for different fuel/lubricant combination. While Wądrzyk et al. tackled some problems regarding thermochemical co-liquefaction of fruit pomace's blends in a binary solvent system toward value-added bioproducts. Kuś et al. presented the analysis of the multiphase flow with condensation in the two-phase ejector condenser using computational fluid dynamics modeling. Gorete et al. presented the problems regarding decarbonizing the fertilizers sector: an alternative pathway for urea and nitric acid production. Last but not least, Stasiak et al. selected aspects of the performance of organic Rankine cycles incorporated into bioenergy with carbon capture and storage using gasification of sewage sludge.

We hope the readers will find this CPOTE2022 Special Section Issue a valuable read.

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¹<https://www.s-conferences.eu/cpote2022>

²<https://s-conferences.eu>