Special Issue

Co-Optimization of Fuel, Engine and After-Treatment Towards the IMO 2050 Target

Message from the Guest Editors

In July 2023, the International Maritime Organization (IMO) adopted the historic 2050 net-zero greenhouse gas (GHG) target. Using alternative fuels such as ammonia, methanol and biofuel is the most effective way to achieve the IMO target. Additional crucial targets include further improving the thermal efficiency of marine diesel engines and developing onboard carbon capture, utilization, and storage (OCCUS) technology are also crucial contributions to the decarbonization of the maritime sector. Most alternative fuel options have different physicochemical characteristics compared to fuel oil, which has the potential to impact the engine performance and lead to other pollutant emissions that are not properly addressed by the current fuel oil-fueled marine engine and post-treatment systems. As a result, co-optimization of fuel, engine, and aftertreatment is important for next-generation green marine propulsion systems. This Special Issue primarily focuses on the use of alternative fuels, improvement of marine engines and development of relevant after-treatment systems, as well as their co-optimization.

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