

Renewable Energy Penetrated Marine Transportation and Power Network

Abstract-Owing to the huge fuel consumption and serious air pollution caused by the traditional ships, the International Maritime Organization has imposed a series of rules to limit emissions and the ship building industry is encouraged to develop novel solutions to improve shipboard efficiency. Accordingly, many countries make the best effort to introduce the renewable energy generation technology into marine power systems to reduce fuel cost and carbon emissions. However, due to the stochastic nature of renewable energy, energy storage system plays a significant role in the ship power system. As a ship sails in the ocean, the ship always keeps stand-alone and mobile. Therefore, the shipboard power system is also regarded a special mobile microgrid. In this presentation, I will mainly introduce three part that are 1) optimal allocation of multi-energy mobile microgrid, 2) artificial intelligence application into mobile microgrid, and 3) optimal operation of marine transportation and power network with renewables.