

**Abstract** Global trend in the maritime industry is achieving carbon-zero and green shipping technology. The demand to design more efficient and low-emission ships has increased the variety of hybrid propulsion and control architectures. Intelligent control strategies are required to improve performance with these architectures. This paper aims to analyze different power and control configurations that can be designed for driving a winch system that will set and furl the sail of a modern ship with hybrid propulsion. All the physical limitations imposed by the position of the winches, maritime rules and regulations, and the goal to achieve an energy-efficient system are considered.

**Keywords** winch system; energy efficient