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(57) Abstract: A hybrid propulsion and energy management system for use in marine vessels and other variable demand propulsion applications monitors and draws energy from various energy sources dynamically to implement multiple operating modes and provide efficient system operation across a range of propulsive demands, altering the operation and output of various energy sources in response to propulsive load demands, hotel loads and auxiliary energy demands. The propulsion system incorporates at least two propulsive sources, including at least one main propulsive engine and at least one motor-generator unit arranged to drive a common output shaft, and the energy management system dynamically shifts operation of each of the two sources to satisfy propulsive demands. The main propulsive engine and the motor-generator unit are capable of driving the common output shaft both independently and simultaneously. The motor-generator unit(s) are available to operate either as a motor driving the output shaft or as a generator supplying energy to the energy distribution system.



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