

Waste Heat Recovery System

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Abstract : Globalization in the modern era is dependent on the International logistics, the economic and reliable means is provided by the ocean going merchant vessel. The propulsion system which drives this massive vessels has gone through leaps and bounds of evolution. Most reliable system of propulsion adopted by the majority of vessels is by marine diesel engine. Since the first oil crisis of 1973, there is demand in increment of efficiency of main engine. Due to increase in the oil prices ship-operators explores for reduction in the operational cost of ship. And newly adopted IMO's EEDI & SEEMP rules calls for the effective measures taken in this regard. The main engine of a ship suffers a lot of thermal losses, they mainly occur due to exhaust gas waste heat, radiation and cooling. So to increase the overall efficiency of system, we have to look into the solution to harnessing this waste energy of main engine to increase the fuel economy. During the course of research, engine manufacturers have developed many waste heat recovery systems. In our paper we see about additional options to harness this waste heat. The exhaust gas of engine coming out from the turbocharger still holds enough heat to go to the exhaust gas economiser to produce steam. This heat of exhaust gas can be used to heat a liquid of less boiling point after coming out from the turbocharger. The vapour of this secondary liquid can be superheated by a bypass exhaust or exhaust of turbocharger. This vapour can be utilized to rotate the turbine which is coupled to a generator. And the electric power for ship service can be produced with proper configuration of system. This can be included in PMS of ship. In this paper we seek to concentrate on power generation with use of exhaust gas. Thereby taking out the load on the main generator and increasing the efficiency of the system. This will help us to comply with the new rules of IMO. Our method helps to develop clean energy.

Keywords : EEDI-energy efficiency design index, IMO-international maritime organization PMS-power management system, SEEMP-ship energy efficiency management plan

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