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Analysis of thermodynamic and technological basics of the marine fresh water generator model

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ABSTRACT

The paper deals with the work of the single-stage vacuum fresh water plant usually used on board cargo ships, namely with the influence of the thermodynamics process and of the technological arrangement on the performances. The distillation method has been well known since the ancient civilization, but there is still room for the improvement of the process depending on the selected criterion. Furthermore, the arrangement of the plant, including all control and regulation elements, has an impact on the process running and, after all, on the quality and quantity of the generated distillate as well as on the price of the installation. As a conclusion, a simple mathematical analysis has pointed to the key parameters that have to be monitored during the work as well as to the possible optimal control system, as it has been proved by simulating the work and registering the changes in the stated parameters during variable working conditions. The result of the paper could lead to a simpler and cheaper governing system, to the better quality of the distillate and more operating hours of the equipment.

Keywords: Analysis; Distillation; Mathematical model; Optimal process; Single-stage vacuum plant; Thermodynamic and technological elements

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