

Thermodynamic and exergoenvironmental analysis based on multi-objective optimization of combined gas turbine and MED-TVC desalination plant

Iman Janghorban, 유창규*
경희대학교
(ckyoo@khu.ac.kr*)

This study deals with a modification methodology of a combined gas turbine and MED-TVC desalination system. The modified system design is suggested by compressor intercooler waste heat recovery to generate steam as well as injection of steam to the combustion chamber. The systems exergy efficiency and thermo-environ-economic functions are suggested as two objective functions. By applying the optimization approach, the thermo-environ-economic objective function is minimized while exergy efficiency is maximized using a genetic algorithm (GA). The optimization results show that the cost of products and environmental cost impact are reduced by 5.2% and 34.4%, respectively, and total exergy efficiency is increased by 7.3%. ACKNOWLEDGEMENTS) This research was supported by Basic Science Research Program through the National Research Foundation of Korea(NRF) funded by the Ministry of Education, Science and Technology(2012-001400) and the National Research Foundation of Korea(NRF) grant funded by the Korea government(MEST)(No. 2012-0000609).