

Kalina power cycle와 MED 통합시스템의 전력 및 정수생산의 에너지분석 및 엑서지 분석

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A model of cogeneration plant for electrical power and water desalination has been developed based on energetic and exergetic analyses using real operational data. The power side is a Kalina power cycle (KC), while the desalination side is a conventional multi-effect desalination plant (MED). The thermodynamic properties of saline water were obtained from the latest published data in the literature. The performance of the cogeneration plant was examined for different ambient temperatures, pressure ratios, loads, feed water temperatures, number of effects and entrainment ratios. The results show that KC could achieve 16% of the thermal efficiency and constitute a major source of irreversibility, which accounts for 68% of the total exergy destruction in the plant. The lowest source of irreversibility is in the boiler due to the type of working fluid and reheating system and the highest source of irreversibilities occurs in the flash tank and absorber. Acknowledgements : This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government(MSIT). (No. NRF-2017R1E1A1A03070713).