

용수 최적재이용을 위한 발전소내 hot/cold utilities 기반 thermal networks 분석 : 물-에너지-기후변화 NEXUS

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Water-energy nexus analysis facilitated performance evaluation of water and energy systems, it cannot solve climate change problems because of its inherent restrictions. A novel water-exergy nexus analysis is proposed to analyze hot and cold utilities. For this, three cold utilities including a once-through, a wet cooling tower (WCT), and a cooling pond as well a furnace fueled by pulverized coal and natural gas are modeled to represent the cold and hot utilities, respectively. A model-based power-cooling cogeneration system is considered as the thermal network coupled with the external utilities. Water for exergy and exergy for exergy concepts are applied to compare performance of each external utility. The results showed that greatest water use occurred allocating WCT and coal cycle as the cold and hot utilities, respectively. Acknowledgements This work was supported by the National Research Foundation (NRF) grant funded by the Korean government (MSIT) (No. NRF-2017R1E1A1A03070713), and Korea Ministry of Environment (MOE) as Graduate School specialized in Climate Change.