기후변화 적응을 위한 통합에너지시스템의 경제성 및 위해성 평가

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A dynamic balance between economic development and human safety has become a global concern. A holistic approach is proposed to investigate performance of integrated energy conversion systems considering economic and safety aspects, simultaneously. Thus, HAZOP study is conducted for human safety impacts for integrated systems. Accordingly, two configurations are proposed integrated a Rankine cycle (RC) and an ejector refrigeration cycle (ERC): a co-generation (CGS) and a mono-generation system (MGS). The comprehensive comparative results are used for deeper insight through energy systems' integration for climate changes, and safety. MGS allocated R365mfc, and steam had least hazardous risk impacts compared to the CGS. The total annual cost of the MGS was less than the CGS by 3.48%, 3.85%, and 13.37% allocating R718, R141b, and R365mfc, respectively. Acknowledgment: 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.