

Analysis of compression heat recovery for CO<sub>2</sub> capture process considering exergy efficiency

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Post-combustion capture is considered as the most suitable technique of CCS in the near term due to process maturity, but reducing the energy consumption is essential in order to keep the cost down. When assessing the performance of a chemical process, energetic performance based on first law of thermodynamics, which includes electric power consumption and thermal efficiency, is generally used. However, in recent years, the exergetic performance based on the second law of thermodynamics is also emerging as a useful method in evaluation and optimization of a given process. In this study, a concept of mechanical vapor recompression (MVR) process is applied to post-combustion capture of CO<sub>2</sub> and the exergy analysis is carried out to analyze the effectiveness of such heat recovery. This work was supported by the Energy Efficiency & Resources Core Technology Program of the Korea Institute of Energy Technology Evaluation and Planning (KETEP) granted financial resource from the Ministry of Trade, Industry & Energy, Republic of Korea (No. 2010201020006D)