

Integration of the Coal-fired Power Plant and CO₂ Capture Process

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Along with the worldwide trend of green growth, carbon capture and storage (CCS) is considered as one of the most promising technologies in South Korea. While many ongoing researches have been focusing on reducing the energy consumption of the process or developing a new type of CO₂ absorbent, this study can contribute to the former approach. The electricity demand in South Korea heavily relies on electric energy generated from coal-fired power plants, and those plants typically produce a large amount of steam that can be recycled for other energy sources. Some previous studies from other countries have shown that excess steam from power plant can be used to mitigate the reboiler heat duty of CO₂ capture process. However, this study utilizes data from existing coal-fired power plant and CO₂ capture process in Korea and integrates them in a way that the energy consumption for CO₂ capture is reduced and electricity generation costs of power plant are somewhat maintained. The authors gratefully acknowledge the Energy Efficiency & Resources and Human Resources Development of the Korea Institute of Energy Technology Evaluation and Planning (KETEP) grant funded by the Ministry of Knowledge Economy(MKE), Republic of Korea.