

Optimization of byproduct gas distribution considering green house gas emission in the iron- and steel- making process

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An iron and steel-making process is one of the process that consumes a lot of energy. In order to minimize the energy consumed by an iron- and steel-making process, develop a optimization model that is optimized for the optimal distribution of byproduct gas that occurs in the operation of unit process. Compare with the previous model, proposed model supplies the byproduct gas using heat demand for each process instead of distribute the remaining amount of byproduct gas by using a fixed amount for each process. Because reduction of green house gas emission is the main cause of global warming attracting attention recently, proposed model optimizes the distribution of byproduct gas considering the carbon capture system to reduce the emission of green house gas and carbon dioxide recycling using amounts of carbon dioxide cause by carbon capture system. Case study results show that the proposed model finds optimal point of CCS construction and carbon dioxide recycling according to price fluctuations tax by introducing a carbon tax of the objective function