

Optimal distribution of byproduct gas considering GHG emission and reuse of carbon dioxide 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 iron- and steel-making process. Compare with the previous model, proposed model supplies the byproduct gas using heat demand for each process instead of distributing the remaining amount of byproduct gas by using a fixed amount of byproduct gas for each process. And three byproduct gas emission process was extended to 10 or more 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 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.