

Experimental study of CO₂ absorption method

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Abstract

The conventional CO₂ removal systems, such as adsorption method and absorption method, consume a large amount of energy. This study suggests a new CO₂ removal system: an electrochemical CO₂ separation system to reduce the consumption energy for the flue gas of thermal power plants. Figure 1 shows the electrochemical CO₂ separation system which we proposed. First, we calculated energy requirement of the system under ideal condition. The total energy requirement is minimum when CO₂ desorber is 6kPa, which is 27 thousand kW. It corresponds 542 kJ/kgCO₂, and under the ideal condition, we can reduce energy consumption to 1/6 from the conventional method. Next, we conducted the experiment of the electrodialysis in order to compare the theoretical value and experimental value. The experimental value and theoretical value are widely different, we currently working on investigating the difference and aiming to remove it. In the future, it is necessary to suggest the optimal membranous structural design and to make uniform of flow in electrolysis from calculation.

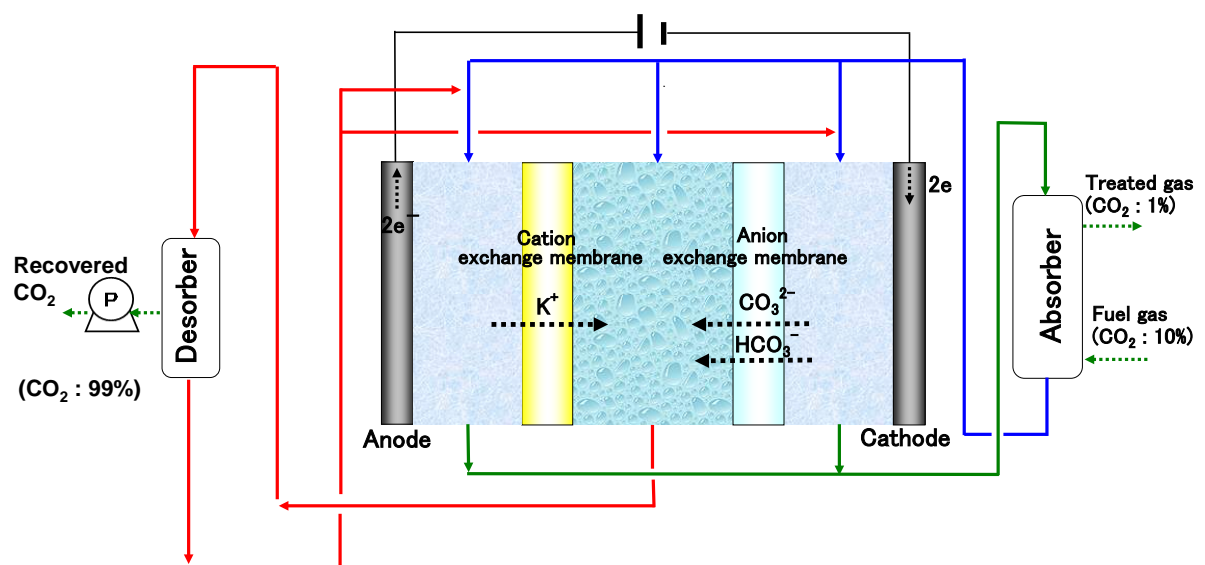


Figure 1