

ABSTRACT

METHOD AND SYSTEM FOR CAPTURING AND PURIFYING CARBON DIOXIDE

Disclosed are a method and a system for capturing and purifying carbon dioxide. The method for capturing and purifying the carbon dioxide includes: performing a process of a carbon dioxide capture on a target component by using an alkaline solution to obtain an aqueous solution containing carbonate; mixing at least a part of the aqueous solution containing carbonate with crude oxygen containing carbon dioxide generated during a step of a carbon dioxide separation to obtain oxygen and an aqueous solution containing bicarbonate, a volume content of carbon dioxide in the crude oxygen containing carbon dioxide ranging from 9.7 vol% to 35.9 vol%; performing an electrolysis on the aqueous solution containing bicarbonate to obtain anode gas, hydrogen and a regenerated alkaline solution; and performing the step of the carbon dioxide separation on the anode gas to obtain liquid carbon dioxide and crude oxygen containing carbon dioxide, a purity of carbon dioxide in the liquid carbon dioxide ranging from 98.5 vol% to 99.9999 vol%, and a content of carbon dioxide in the crude oxygen accounting for 5% to 40% of a content of carbon dioxide in the anode gas. In the above method, energy consumption of an electrolysis can be effectively reduced, and a purity of liquid carbon dioxide can be improved.

Figure 1