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TREATMENT OF THIN-FILM COMPOSITE MEMBRANE MODULE FOR CARBON DIOXIDE REMOVAL FROM BIOGAS TO KEEP THE SEPARATION PROPERTIES

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The separation of carbon dioxide from a raw biogas is based on the membrane separation using a water-swollen thin-film composite membrane. Carbon dioxide is preferentially transported through the membrane thanks to a significantly higher solubility in water than that of methane. Water is continuously refreshed from a feed stream and diffusing to the permeate stream. In time, the active layer can be over-saturated by a sorbed molecules of carbon dioxide. Furthermore, a partly drying of a membrane can be another problem during continuous running of the separation with time. Therefore, the separation properties of the membrane modules can be lost. However, such a problem can be easily solved by a refresh of a membrane module by a flush out the water over-saturated by carbon dioxide. Biogas purification can be a continuous process when at least two membrane modules are used: one separates raw biogas while another one is refreshed.

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