

Study on Pressurized Reforming System for the Application of Hydrogen Permeable Membrane Applying to Proton Exchange Membrane Fuel Cell

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Abstract : Fuel cells are spotlighted in the world for being highly efficient and environmentally friendly. A hydrogen fuel for a fuel cell is obtained from a number of sources. Most of fuel cell for APU(Auxiliary power unit) system using diesel fuel as a hydrogen source. Diesel fuel has many advantages, such as high hydrogen storage density, easy to transport and also well-infra structure. However, conventional diesel reforming system for PEMFC(Proton exchange membrane fuel cell) requires a large volume and complex CO removal system for the lower the CO level to less than 10ppm. In addition, the PROX(Preferential Oxidation) reaction cooling load is needed because of the strong exothermic reaction. However, the hydrogen separation membrane that we propose can be eliminated many disadvantages, because the volume is small and permeates only pure hydrogen. In this study, we were conducted to the pressurized diesel reforming and water-gas shift reaction experiment for the hydrogen permeable membrane application.

Keywords : hydrogen, diesel, reforming, ATR, WGS, PROX, membrane, pressure

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