

Improved performance of WGSR through membrane/catalyst hybrid reactor

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Membrane/catalyst hybrid system was fabricated, and its water-gas shift reaction performance was verified. The reaction performance of the pipe reactor and the hybrid reactor was compared under various pressure and steam/carbon ratio (s/c ratio) conditions. The internal temperature and the outlet gas mole fractions of the pipe reactor and membrane/catalyst hybrid reactor were measured in-situ to observe the reaction performance at the unsteady state. The pressure range of the reactor was from 6 barg to 10 barg and the s / c ratio range was from 1 to 5. It was confirmed that the conversion ratio was improved by about 10% compared to the pipe reactor when using a membrane/catalyst hybrid system.