한국신·재생에너지학회 2007년도 추계학술대회논문집 pp.79

평판형 팔라듐 합금막을 이용한 수소 분리용 모듈 구성에 관한 연구

이 신근[1], 박 종수[2], 김 성현[1], 조 성호[2], 황 경란[2], 김 동원[3], 문 진욱[3]

The study of module design with Disc geometry Pd alloy membrane for hydrogen separation

Shin-Kun Ryi, Jong-Soo Park, Sung-Hyun Kim, Sung-Ho Cho, Kyung-Ran Hwang,
Dong-Won Kim, Jin-Wook Moon

Key words : Porous Nickel Support, Pd Based membrane, Disc Geometry Membrane, Hydrogen Separation, Membrane Module

Abstract : A plate-and-frame type hydrogen purification membrane module was newly designed and constructed to provide easy assembly using a knife-edge sealing method instead of thermal bonding methods such as brazing, soldering, and welding (diffusion bonding). The membrane module is comprised of an housing and a plurality of membrane unit cells. With the developed membrane module, several hydrogen permeable metal membranes can be easily coupled to each other by fittings and the size of the hydrogen purification module can be easily controlled. Two membranes were assembled in one membrane unit cell to verify that the knife-edge sealing could be applied to the membrane gas-tightness and it could be operated properly at a temperature of 773 K and feed side pressure of 0.276 MPa. A hydrogen permeation test and durability test with several repeated temperature cycles were carried out and it was found that the hydrogen permeation flux remained constant after five cycles of alternate gas feed and temperature.

1) 고려대학교
E-mail : pdmembrane@naver.com
Tel : (042)860-3667 Fax : (042)860-3309
2) 한국에너지기술연구원
3) 경기대학교