

TECHNOLOGY NEED: MEMBRANE SUPPORTS FOR H₂ SELECTIVE PALLADIUM MEMBRANES MANUFACTURED BY SPUTTERING

OVERVIEW

Description: An increasing demand for alternative fuels has contributed to extensive need for having Pd based membranes for obtaining purified hydrogen. Preparation of crack-free and robust membranes is an issue. H₂-permselective membranes are used in this project for working at low temperature processes (~450-550 °C). The H₂ membrane developed in CARENA was mainly using tubular ceramic support (also PSS supports). The supports were coated (applying sputtering method) with a thin Pd or Pd-alloy (Pd- Ag) layer in which the H₂ transport mechanism is based on H₂ dissociation and transport of H in atomic form by diffusion in the Pd. This mechanism provides a virtual 100% permeoselectivity.

Benefit summary: Having ability to apply coating yielding hydrogen innovative Pd-based permselective stable and cost effective membrane to be operated at medium temperatures.

Development status: Advanced development stage. Pd or Pd-Ag coating are applied on tubular ECN ceramic or other supports.

IP status: Patent application considered towards end of development

NOVELTY

- Technology need description: It is a challenge to prepare palladium based membranes with high permeability and hydrogen selectivity with *thin* defect-free palladium layers which have long term thermal durability and chemical stability.

DEVELOPMENT

- Technology Readiness Level: TRL 1 ; 2 ; 3 ; 4 ; 5 ; 6 ; 7 ; 8 ; 9
- Development status: advanced

INTELLECTUAL PROPERTY PROTECTION

- Technology protection (preferably): Granted patents ; Patent application with International Search Report ; Patent application ; Other, Patent application considered after getting to TRL 8...
- Protection sought in following countries: Europe, USA, Japan

PROVIDER SPECIFICS

- Preferable provider: Company operating the technology ; Equipment provider ; Research Institute ; SME or spin-off company ; Other, ...

LICENSING

- Collaboration type sought: Job coating or delivery of complete membrane
- Support to be provided: -

CONTACT DETAILS

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