

Title (en)

CATALYTIC METHANE DECOMPOSITION AND CATALYST REGENERATION, METHODS AND USES THEREOF

Title (de)

KATALYTISCHE METHANZERSETZUNG UND KATALYSATORREGENERIERUNG, VERFAHREN UND VERWENDUNGEN DAVON

Title (fr)

DÉCOMPOSITION CATALYTIQUE DE MÉTHANE ET RÉGÉNÉRATION DE CATALYSEUR, LEURS PROCÉDÉS ET UTILISATIONS

Publication

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Application

EP 19849002 A 20191216

Priority

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Abstract (en)

[origin: WO2020121287A1] The present disclosure relates to a low temperature method for the production of pure hydrogen using a methane rich stream as raw material, and to perform in-situ catalyst regeneration. The process involves the decomposition of methane into CO_x-free hydrogen in an electrochemical/chemical membrane/chemical reactor or chemical fluidised reactor. As the methane decomposition reaction progresses, carbon structures (whiskers) are accumulated at the catalyst surface leading eventually to its deactivation. The catalyst regeneration is achieved using a small fraction of the produced hydrogen to react with carbon formed at the catalyst surface provoking the carbon detachment, thus regenerating the catalyst. This is achieved either by chemical/electrochemical methanation of carbon at the catalyst interface with hydrogen/protons or by rising the temperature of the catalyst, ideally keeping the reactor temperature constant. A single compact device is described, enabling the hydrogen production, hydrogen purification and catalyst regeneration.

IPC 8 full level

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CPC (source: EP)

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Citation (search report)

See references of WO 2020121287A1

Cited by

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