Title (en)

A METHOD FOR METHANATION OF GASIFICATION DERIVED PRODUCER GAS ON METAL CATALYSTS IN THE PRESENCE OF SULFUR

Title (de)

VERFAHREN ZUR METHANIERUNG DES AUS GASIFIZIERUNG ABGELEITETEN HERSTELLERGASES AUF METALLKATALYSATOREN IN GEGENWART VON SCHWEFEL

Title (fr)

PROCÉDÉ DESTINÉ À PRODUIRE UN MÉLANGE GAZEUX RICHE EN MÉTHANE À PARTIR DE GAZ DE SYNTHÈSE CONTENANT DU SOUFRE PROVENANT D'UNE GAZÉIFICATION

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Abstract (en)

[origin: EP2684856A1] The present invention discloses a method for catalytic production of a methane-rich gas mixture from sulfur-containing synthesis gas with simultaneous at least partial sulfur removal, thereby: a) producing a synthesis gas mixture; b) bringing said synthesis gas mixture into a contact with a methanation catalyst thereby continuously deactivating the methanation catalyst by sulfur and/or carbon species comprised in the synthesis gas mixture in one part of the methanation process, while a part of said depleted methanation catalyst is simultaneously regenerated by oxidation in a different part of the process; c) the methanation catalyst is a metal, a metal oxide, a metal sulfide or a mixture of metals, metal oxides or metal sulfide/nitride/phosphide on a support; d) said metal or metals are selected from a group comprising Ni, Ru, Mo, Co, Fe, Rh, Pd, Pt, Ir, Os, W, V, wherein the support is an oxide of a group comprising Al 2 O 3 , SiO 2 , TiO 2 , CeO 2 , ZrO 2 , carbides, nitrides, phosphides or a mixture thereof, wherein e) the metal or metals can be promoted by one or more of the following elements: K, P, Na, Ba, Ni, Ru, Rh, Co, Pt, Pd, Ir, W, Os, V, Mn. The method achieves a nearly complete methanation of CO in the presence of both organic and inorganic sulfur compounds, such as olefins, tars etc., combined with an at least partial uptake of sulfur followed by a relatively fast oxidative regeneration of the methanation catalyst (bed material) and sulfur release, preferably at a temperature level near the methanation temperature.

IPC 8 full level

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