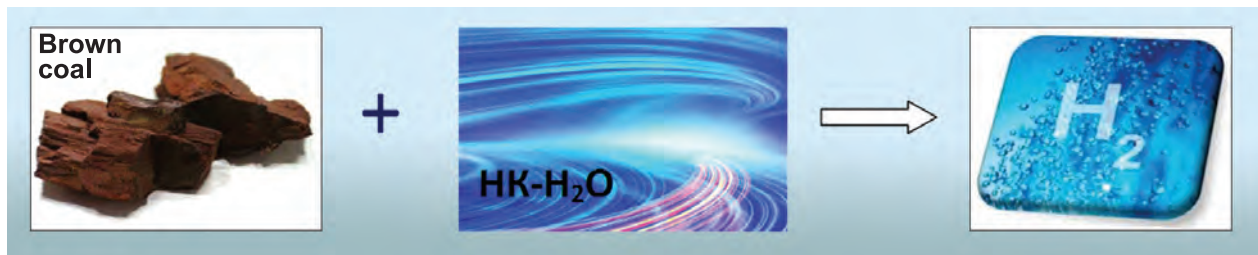


METHOD FOR HYDROGEN PRODUCTION BY HYDROTHERMAL CONVERSION OF BROWN COAL



Hydrogen production by hydrothermal conversion of brown coal aqueous suspension

Areas of Application

The method applies to obtaining of hydrogen containing gas from brown coal for hydrogen production

Specification

Gasification of 30% brown coal aqueous suspension under the supercritical conditions of water with ionic activation of catalysts leads to the formation of gases containing H₂ (60÷82%, vol.), CH₄ (12÷8%), and CO₂ (10÷30%), which can be used for hydrogen extraction

Advantages

The hydrogen production from brown coal is 1.5 cheaper as compared with the electrolysis method. Selective formation of hydrogen at supercritical temperature with ionic activation of catalysts; if necessary, after CO₂ separation the combustible gas can be used as raw material for synthesis of other products. Water used as source of oxygen reduces the cost of oxidising agent as compared with molecular oxygen and the nitrogen content in gaseous products as compared with air.

Operating temperature decreases from 800–1200 °C (conventional processes) down to 330–500 °C. The process is accompanied with desulfurization and recycling of waste into gypsum chips

Stage of Development. Suggestions for Commercialization

IRL3, TRL4
Specification requirements for designing a plant for combustible gas production; ready for the elaboration of business plan

IPR Protection

IPR3

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