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Prodn. of hydrogen and carbon monoxide contg. synthesis gas - by partial oxidn. of gaseous fuel in presence of steam and endothermic reaction of organic cpd.

C86-009372 E(AT BE DE FR IT SE)

E(31-A1) H(4-E4) N(6)

A gas mixt. contg. H_2 and CO is made by
(1) endothermic reaction of one or more organic cpds. (I) with steam and/or CO_2 at a temp. of 700-1500 deg.C and a press. of up to 80 bar and
(2) partial oxidn. of one or more gaseous fuels (II) with an O_2-contg. gas in the presence of steam to form a gaseous prod. and to provide thermal energy for the endothermic reaction (1).

Pref. the gaseous fuel (II) is natural gas and the partial oxidn. is carried out at 1100-1500 deg.C and a press. of 5-100 bar.

USE/ADVANTAGE

The process allows prodn. of synthesis gas containing no ash, slag, soot or tar, so that expensive purification steps are not necessary. The high temp. and pressure and the use of gaseous fuel, lead to a high degree of conversion and a high specific throughput w.r.t. the vol. of the gasification chamber.

The process gives a better yield of synthesis gas, an increased H_2/CO ratio in the synthesis gas produced, a lower usage of O_2 per m^3 synthesis gas obtd., and lower capital plant costs.

PREFERRED EMBODIMENTS

(1) reactions (1) and (2) are carried out in separate zones and the prods. of the partial oxidn. are fed from the partial oxidn. zone into the endothermic reaction zone;
(2) the (I) may be one or more 1-3C satd. or unsaturated hydrocarbons or one or more prods. of the Fischer-Tropsch, methanol or Oxo synthesis, and the (I) may be heated together with steam and/or CO_2 before entering the endothermic reaction zone;
(3) the endothermic reaction between (I) and steam and/or CO_2 is carried out in a fluid bed reactor at 800-950 deg.C, the temp. being maintained by routing the (I) and at least part of the hot product gas from the partial oxidn. reactor together with steam and/or CO_2 through a fluid bed of a particulate catalyst, or the (I) and steam and/or CO_2 are led

through the catalyst bed which is indirectly heated by at least part of the hot product gas from the partial oxidn. reactor, after which it is recirculated to the endothermic fluid bed reactor.

The indirect heating of the catalyst bed is accomplished eg by passing at least part of the hot gas from the partial oxidn. through at least one pipe situated in the fluid catalyst bed.(12pp513RHDwgNo0/0).

(E) ISR: No Search Report.