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 FRAMATOME *EP -153-235-A
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 Synthesis gas prodn. converting by/products by heating crude gas - in second reactor by injecting preheated stream of gas required in synthesis

C85-092145

D/S:- DE FR IT SE

Prodn. of synthesis gas comprises:

(i) gasification in a first reactor (I) of a hydrocarbonaceous substance at a moderate temp., below the m.pt. of the ash, to give CO, H₂ and "inevitable" by-prods. (e.g. C, hydrocarbons and tar); and

(ii) conversion in a second reactor (II) of the impurities to CO and H₂ by blowing into the mixt. from stage (i) a preheated stream of one of the gases taking part in the subsequent synthesis, its flow rate and temp. being regulated as functions of each other and of the flow rate of gas from (I) so as to raise the temp. in (II) sufficiently for the conversion required.

ADVANTAGE

The process is simpler than previous methods of removing the impurities, and allows easier adjustment of the compsn. of

E(31-A) H(4-E4, 9-C) J(4-D)

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the final synthesis gas. The CO₂ content of the prod. and O₂ consumption are less than from processes removing the impurities by oxidn. with O₂.

PROCESS CONDITIONS

The gas preheated and injected may be synthesis gas, H₂ or (if NH₃ is the final synthesis prod.) N₂. H₂ is more advantageous than synthesis gas in that it does not produce more CO₂ in step (ii); and that, where electricity is cheap, it can conveniently be made by electrolysis. A further factor governing the flow rate of the hot gas injected in step (ii) can be the compsn. of the prod. gas required for subsequent synthesis.

EMBODIMENT

Steam and O₂ are injected to a reactor (I) contg. a circulating or fluidised bed of hydrocarbonaceous material, producing a stream of synthesis gas and impurities at 700-800 deg. C. This prod. stream passes to a second reactor (II) where the temp. is raised to 1200-1500 deg. C by injecting H₂, which is produced by high-pressure electrolysis and then preheated to 3000-5000 deg. C in a plasma torch at the

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inlet of (II). The electrolysis also produces O_2 needed in (I).
At the higher temp. of (II), the impurities are destroyed.
Water is condensed from the effluent gas from (II), which is
then used for synthesis. (13pp1402RHDwgNo0/2)
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