

84-141310/23

E36 H04

UHDE 30.11.82

UHDE F GMBH

*DE 3244-252-A

30.11.82-DE-244252 (30.05.84) C01b-03/38

Gas contg. hydrogen and carbon oxide prodn. from hydrocarbon gas - esp. natural gas by catalytic cracking and partial combustion giving heat for cracking

E(31-A, 31-N5) H(4-B2) N(6-D)

035

C84-059628

CLAIMED PROCESS/APPARATUS

Prodn. of gas (I) contg. H₂ and C oxides from a charge gas (II) consisting mainly of hydrocarbons, esp. natural gas, involves

(a) catalytic endothermal cracking in catalyst-filled reaction tubes to cracked gas (III) and

(b) partial combustion of (III) with (gas contg.) O₂, e.g. air.

The novel feature is that the reaction tubes used in (a) are heated by (I) obtd. in (b).

USE/ADVANTAGES

(I) is useful for making synthesis gas, e.g. for the prodn. of MeOH or NH₃. The process is simple and not harmful to the environment.

No flue gas is formed, eliminating the need for complex heat exchangers and hence saving investment costs, and

also giving considerable energy savings.

PREFERRED

Other suitable gases, e.g. H₂ and/or C oxide, can be added to (II). The partial combustion of (III) after (b) can be completed by adding fuel gas, e.g. hydrocarbons and/or H₂. The process is carried out at elevated pressure, pref. over 3 bar.

APPARATUS

Catalyst-filled reaction tubes are incorporated in a reactor, which has a partition between the upper chamber, which is supplied with (II), and the lower chamber, in which all reactions take place.

The tubes are fixed in the partition with a gas-tight seal and are open to both chambers. Heat transfer from the hot gas side, esp. in the low temp. region, is increased by chicanes connected to the partition and/or reaction tubes. (13pp016RBHDwgNo1/3).

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