

77832 D/43 H09 BERG 13.06.80
 BERGWERKSVERBAND GMBH *BE-889-200

13.06.80-DE-022158 (01.10.81) C10g
 Liquefaction of coal - with recycle of hydrogen-contg. gas to high-temp separator

H(9-A1)

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Hydroliquefaction of coal is carried out by (a) contacting particulate coal with solvent oil and H₂-contg. recycle gas in a liquefaction reactor; (b) passing the effluent from the reactor to a high-temp. separator (HTS) operating at approx. the same temp. and pressure as the reactor; (c) subjecting overhead vapours from the HTS to further sepn. to condensable liquefaction products; (d) withdrawing a pumpable bottoms stream from the HTS; and (e) depressurising the HTS bottoms stream in an atmospheric flash zone.

The improvement comprises maintaining the amt. of recycle gas in contact with the reactor effluent in the HTS at more than 5000 Nm³ per tonne of MAF feed coal.

ADVANTAGES

The improvement eliminates the need for expensive vacuum flashing or centrifugation to recover oil from the HTS bottoms stream.

DETAILS

The HTS (6) is pref. operated at 440-480°C. The recycle gas can be introduced into the HTS along with the effluent from the reactor (5), or part of the recycle gas can be diverted upstream of the reactor and introduced directly into the HTS, pref. after preheating (16) to 300-550°C.

The HTS overhead stream is passed to an intermediate separator (31) to recover recycle solvent (19) and then to a low-temp. separator (9) to recover distillate products (20). The HTS bottoms stream is passed to an atmospheric flash zone (7) and can then be carbonised or coked to recover more hydrocarbons. (20pp367).

