DERWENT PUBLICATIONS LTD.

49754C/28 H09 GULO 13.12.78
GULF OIL CORP *WP 8001-278
13.12.78-US-969279 *(26.06.80)* C10g-01 C10j-01 C10j-03

Integrated coal liquefaction-gasification-naphtha reforming - with excess synthesis gas produced to cover fuel requirements

D/S: N(BR, JA, SU)+E(DT, FR, GB, NL).

An integrated coal liquefaction/gasification/naphtha reforming process is claimed, characterised in that the residual slurry from the liquefaction zone product separation system, comprising normally solid dissolved coal and mineral residue, is utilised as the sole carbonaceous feed for the gasification zone which produces synthesis gas some of which is converted to an H_2-rich stream which is recycled and used to cover part of the process H_2 requirements. The amt. of synthesis gas produced in the gasification zone is in excess of the process H_2 requirements; the excess (or a CO fraction of it) is burned to provide a proportion ($\geq$ 5, pref. $\geq$ 50, esp. $\geq$ 70,%) of the fuel requirements of both the liquefaction and naphtha reforming zones. Specifically, the thermal balance is such that the efficiency of the integrated process is no more than 2% (pref. no more than 1%) lower than that of the same process without the reforming step.

H(9-A1, 9-C) N(6).

77

ADVANTAGES

No mineral residue sepn. or drying, no normally solid dissolved coal cooling or handling and no delayed or fluid coking steps are required.

DETAILS

The liquefaction involves an endothermic preheating step and an exothermic dissolving step, the latter being effected at about 840-870°F and an H_2 pressure of 1500-2500 psi to effect hydrogenation and hydrocracking. The gasifier is pref. operated at 2500-3200°F.

The naphtha (generally C_5 to 380°F) will constitute 4-20 (pref. 5-15) wt.% of the feed coal on a dry basis and the reforming will generally be operated with a Pt or Pd on alumina catalyst at 800-975°F and an H_2 pressure of 100-800 psi. The reformer H_2 yield is recycled.

Any excess synthesis gas beyond the process energy requirements may be utilised in methanol synthesis or methane prodn. (45pp920).

(E) ISR: US4075079; US4039424; US3700586; US3518182; US3071536; 1 Journal Reference.

WP8001278