90-098794/13 H09 (H04) RICH/ 29.07.85
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Synthetic crude oil from heavy oil and coal - in energy integrated process, by coal pyrolysis, and co-processing coal, coal volatiles and heavy oil prod.

C90-043390

Process for the production of a synthetic crude oil by co-processing non-coal heavy oil and coal comprises :

(a) producing coal volatiles and a hydrocarbon residuum by thermal pyrolysis of a first allotment of crushed coal using temps. that avoid thermal degradation of the coal volatiles;

(b) gasifying the hydrocarbon residuum to produce a synthesis gas in first gasifiers moderated by one or more of air, oxygen or oxygen-enriched air;

(c) utilising the sensible heat in the synthesis gas to effect the thermal pyrolysis of the crushed coal and produce coal volatiles;

(d) condensing the condensible coal volatiles from the synthesis gas and mixing the coal volatiles with a second allotment of crushed coal and a non-coal heavy oil to produce an upgrader feedstock; and

(e) upgrading the feedstock by hydrogen addition comprising hydrogenation and catalytic hydrocracking to produce an upgrader lighter crude oil, an upgrading residuum, and an upgrading off gas.

ADVANTAGES

The process can be used to produce steady state, base load electric power for the process itself and for a utility electric power grid in large quantities and will enjoy the benefits of high usage of coal char and other coke residuals with H_2S emission tightly controlled; whilst, the electrolytic hydrogen and oxygen required for the process may be produced economically from off-peak power because electrolysis appts., being static and non-mechanical and having a long low maintenance life, may be "turned down" during peak utility electric power daily demand with minimum penalty.

PROCESS

The process is designed to enable the economic production of synthetic crude oil having characteristics comparable to the world's best light natural crudes, i.e.

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H(4-B3, 4-E4, 4-E8, 8-C, 9-A1, 9-C)

an API of 40 degrees or higher, a sulphur content of less than 0.5% and balanced proportions of benzenoid, napthenic and paraffinic compounds suitably matched to general refinery market demand and capacity. The benzenoid content of coal is a factor to the benzenoid content of the final prod. and contributes synergistically to the hydrogen upgrading.(19pp1684CGDwgNo0/7).

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