

Title (en)  
PROCESS FOR THE HYDROGENATION OF SOLID CARBON-CONTAINING FEEDSTOCKS

Publication  
**EP 0318694 A3 19900321 (DE)**

Application  
**EP 88117543 A 19881021**

Priority  
DE 3741104 A 19871204

Abstract (en)  
[origin: EP0318694A2] In the known processes for the liquid-phase hydrogenation with downstream gas-phase hydrogenation of solid carbon-containing feed stocks, defined inlet temperatures in the liquid-phase reactor and gas-phase reactor, and a constant phase equilibrium temperature during the cold pasting, must be set in the intermediate separator for direct solvent recycling. This is made more difficult by the variable heat transfer due to fouling of the paste heat exchangers. Heating of the feedstocks to the required inlet temperature into the reaction system of the liquid-phase hydrogenation is effected by means of a heating furnace, operated with external heat, in the feedstock stream. The process conditions, characterised by multi-phase flow of gases, vapours, liquid and solid in the tubes of the heating furnace, make the design and operation of such furnaces difficult. Optimised utilisation of the heat of reaction from the liquid-phase hydrogenation and gas-phase hydrogenation by means of heat exchangers with by-pass operation has resulted, on the one hand, in the process- relevant operating temperatures being set and, on the other hand, an externally heated heating furnace for the feedstock representing a three-phase mixture being no longer necessary, and the supply of external heat being restricted to heating a part stream of the hydrogenation gas in a hydrogenation gas furnace. Under optimised conditions, a process which is self-sufficient in heat, is obtained for normal operation, so that the hydrogenation gas furnace (24) is required only for start-up or in the case of a heavily fouled state of the plant. Hydrogenation and liquefaction of gas-flame coal from the Ruhr area.

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**C10G 1/00**; **C10G 1/06**

IPC 8 full level  
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CPC (source: EP)  
**C10G 1/002** (2013.01); **C10G 1/065** (2013.01)

Citation (search report)  
• [X] EP 0058327 A2 19820825 - BASF AG [DE]  
• [Y] EP 0177676 A2 19860416 - RUHRKOHLE AG [DE]  
• [YD] DE 3505553 A1 19860821 - VEBA OEL ENTWICKLUNGS GMBH [DE]

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