

Title (en)

Process and apparatus for hydrocarbon cracking with two successive reaction zones

Title (de)

Verfahren und Einrichtung zum Cracken von Kohlenwasserstoffen in zwei aufeinanderfolgenden Reaktionsstufen

Title (fr)

Procédé et dispositif de craquage d'hydrocarbures mettant en oeuvre deux chambres réactionnelles successives

Publication

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Application

EP 01401737 A 20010629

Priority

FR 0008732 A 20000705

Abstract (en)

The effluents from each chamber are fractionated in a separate part of the same fractionating column (12) which is partially divided and at least one resulting section (13,44a) from the separate fractionating is totally or partially reinjected into the other chamber. Hydrocarbon cracking in a fluidized bed reactor in which the heat bearing particles, which are also catalytic, circulate in two successive reaction chambers (1,16) in each of which they are put in contact with at least one section of hydrocarbons. The reaction effluents from each chamber are sent to the same fractionating unit. The hydrocarbons injected into the first reaction chamber spend less time there than the hydrocarbons injected into the second reaction chamber, with the time in the first chamber being 0.05 to 5 seconds, preferably 0.1 to 1 second and the time in the second chamber being 0.1 to 10 seconds, preferably 0.4 to 5 seconds. The flow through the first chamber is essentially downwards and that in the second is essentially upwards. In the partially divided fractionating column, the heavier effluents from each chamber are fractionated separately whilst the lighter effluents are combined. The section which is reinjected is a slurry or heavy distillate containing HCO and/or a diesel section containing LCO. The heavy effluents from the first chamber are reinjected into the second. Alternatively, the lighter effluents are fractionated separately and the heavy effluents are combined, with the petrol section from the second chamber reinjected into the first. The reinjected fraction can be mixed with other fractions and/or undergo intermediate treatments before reinjection, such as hydrogenation, hydrodearomatization, hydrodesulfurization or hydrodenitrogenation. Upstream of the second chamber particles are injected both from the first chamber and from a regenerator. Device to carry out this process, comprising a partially divided fractionating column with a zone containing two separate fractionating compartments (38,39) and a common compartment (41). This divided zone can be at the top or bottom of the column and the means of division is a flat or cylindrical vertical wall.

Abstract (fr)

L'invention concerne un procédé de craquage en lit fluidisé d'une charge hydrocarbonée dans lequel des particules caloporteuses, éventuellement catalytiques, circulent dans deux chambres réactionnelles successives (1 ; 16), dans chacune desquelles elles sont mises en contact avec au moins une coupe d'hydrocarbures, et les effluents réactionnels issus de chacune desdites chambres sont dirigés vers une même unité de fractionnement. Les effluents de chacune des chambres réactionnelles (1 ; 16) sont fractionnés en partie séparément dans une même colonne de fractionnement (12) partiellement cloisonnée, et au moins une coupe issue (13) du fractionnement séparé des effluents d'une des deux chambres réactionnelles (1 ; 16) est, en tout ou partie, réinjectée dans l'autre chambre. <IMAGE>

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Citation (search report)

- [DA] WO 9812279 A1 19980326 - TOTAL RAFFINAGE DISTRIBUTION [FR], et al
- [DA] EP 0573316 A1 19931208 - INST FRANCAIS DU PETROLE [FR]
- [DA] US 2488713 A 19491122 - JEAN DELATTRE-SEGUY

Cited by

CN111013500A; WO2008134612A1; WO2008127956A1

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