

Search query (2): [SP]: 1. a process for the hydrotreatment of a feed obtained from renewable sources to produce paraffinic hydrocarbons which is carried out in the presence of hydrogen in a fixed bed reactor having a plurality of catalytic zones disposed in series and each catalytic zone comprising at least one hydrotreatment catalyst, said process comprising: a) dividing a liquid feed stream f into a plurality of different part-streams of liquid feed, f1 to fn, respectively, wherein the number of part-streams of liquid feed is equal to the number of catalytic zones n in said fixed bed reactor, z1 to zn, respectively, and n is a whole number in the range of 2 to 10b) injecting a first part-stream of liquid feed f1 into a first catalytic zone z1, and injecting a second part-stream of liquid feed f2 into a second catalytic zone z2 and so on if n is greater than 2c) hydrotreating each part-stream, f1 to fn, in each catalytic zone, z1 to zn, respectively, in the presence of hydrogen at a temperature in the range of 180 degrees centigrade to 400 degrees centigrade, at a pressure in the range of 0.1 mpa to 15 mpa, at an hourly space velocity in the range of 0.1 h⁻¹ to 10 h⁻¹, and with a ratio of flow rate of hydrogen to flow rate of liquid feed in the range of 150 to 1500 nm³/m³ to produce at least one effluent containing paraffinic hydrocarbons discharged from said reactor, wherein the mass flow rate of hydrogen sent to the first catalytic zone z1 represents more than 80 percent by weight of the total mass flow rate of hydrogen used in the hydrotreatment process, hydrotreated product and hydrogen-containing gas are discharged from each catalytic zone, and, except for the nth catalytic zone, the hydrotreated product and hydrogen-containing gas from each catalytic zone are introduced into the next catalytic zone in the series, and the hydrotreated product and hydrogen-containing gas from the nth catalytic zone form said at least one effluent discharged from said reactord) separating said effluent from c) in at least one separation step in order to separate at least one gaseous fraction containing hydrogen and at least one liquid fraction containing paraffinic hydrocarbonse) dividing at least a portion of said at least one liquid fraction containing paraffinic hydrocarbons from d) into a plurality of liquid recycle streams, r1 to rn, and recycling a first liquid recycle stream r1 to the first catalytic zone z1, and recycling a second liquid recycle stream r2 to the second catalytic zone z2 and so on if n is greater than 2 andf) optionally dividing at least a portion of said gaseous fraction containing hydrogen from d) into a plurality of gaseous recycle streams, rg1 to rgn, and optionally recycling a first gaseous recycle stream rg1 to the first catalytic zone z1, and optionally recycling a second gaseous recycle stream rg2 to the second catalytic zone z2 and so on if n is greater than 2wherein each of the catalytic zones has a local recycle ratio which is defined as the weight ratio between (i) the total weight of the liquid recycle stream introduced to the catalytic zone plus any the liquid recycle streams introduced into any previous catalytic zone in the series, if present, and (ii) the part-stream of liquid feed introduced into the catalytic zone, and wherein said local recycle ratio of each catalytic zone is 0 to 2wherein the first catalytic zone of the series receives a liquid diluting stream and optionally a gaseous diluting stream, wherein the optional gaseous diluting stream is the first gaseous recycle stream from f)wherein each of the other catalytic zones, z2 to zn, in the series receives liquid and gaseous diluting streams, wherein said liquid diluting streams are: (1) the part-stream(s) of liquid feed streams introduced into each of the previous catalytic zones in the series, if present, (2) the liquid recycle streams from e) introduced into each of the previous catalytic zones in the series, if present, and (3) the liquid recycle stream from e) introduced into the catalytic zone, and said gaseous diluting streams are: (4) the hydrogen-containing gas discharged from the previous catalytic zone in the series, if present, (5) the optional gaseous recycle streams from f) introduced into each of the previous catalytic zones in the series, if present, and (6) the optional gaseous recycle stream from f) introduced into the catalytic zone andwherein each of the catalytic zones has a local dilution ratio defined as the weight ratio between (i) the total quantity of liquid and gaseous diluting streams introduced into the catalytic zone and (ii) the part-stream of liquid feed introduced into the catalytic zone, and wherein said local dilution ratio of each catalytic zone is 0 to less than 4.2. the process according to claim 1, wherein the liquid feed obtained from renewable sources is selected from vegetable oils, oils from algae or algal oils, fish oils, spent cooking oils, and fats of vegetable or animal origin, and mixtures thereof, and comprises triglycerides, free fatty acids, and/or esters.3. the process according to claim 1, wherein the mass flow rate of hydrogen sent to the first catalytic zone z1 represents more than 90 percent by weight of the total mass flow rate of hydrogen used in the hydrotreatment process.4. the process according to claim 3, wherein 100 percent by weight of the total mass flow of hydrogen used in the hydrotreatment process is sent to the first catalytic zone z1.5. the process according to claim 1, wherein the local recycle ratio of each of the catalytic zones is 0 to 1.7.6. the process according to claim 3, wherein the local recycle ratio of each of the catalytic zones is 0 to 1.5.7. the process according to claim 1, wherein said hydrotreatment catalyst in each catalytic zone comprises at least one metal from group viii selected from nickel and cobalt, used alone or as a mixture, optionally in association with at least one metal from group vib selected from molybdenum and tungsten, used alone or as a mixture, and a support selected from the group formed by alumina, silica, silica-aluminas, magnesia, clays and mixtures thereof.8. the process according to claim 1, wherein separation d) is carried out in a high temperature high pressure separator and wherein said effluent from c) is separated into a gaseous fraction comprising hydrogen, co, co2, h2s, light gases, water, and at least some paraffinic hydrocarbons and a liquid fraction containing paraffinic hydrocarbons, wherein said gaseous fraction is then sent to a low temperature high pressure separator to separate said gaseous fraction into a further gaseous fraction comprising hydrogen, co, co2, h2s, light gases and water and a further liquid fraction containing paraffinic hydrocarbons.9. the process according to claim 1, wherein separation d) is carried out in two separation steps, the first separation step being carried out in a low temperature high pressure separator, followed by a second separation step for separation of at least a portion of water formed during hydrodeoxygenation reactions occurring in said hydrotreatment process.10. the process according to claim 1, wherein said gaseous fraction separated in separation d) is recycled to c).11. the process according to claim 1, further comprising subjecting at least a portion of the liquid fraction containing paraffinic hydrocarbons obtained from separation d) to hydroisomerization in the presence of a hydroisomerization catalyst to produce a hydroisomerization effluent.12. the process according to claim 11, wherein said hydroisomerization is performed at a temperature in the range of 150 degrees centigrade to 500 degrees centigrade, at a pressure in the range of 1 mpa to 10 mpa, at an hourly space velocity in the range of 0.1 h⁻¹ to 10-1, and at a hydrogen flow rate such that the volume ratio of hydrogen/hydrocarbons is in the range of 70 to 1000 nm³/m³ of feed.13. the process according to claim 11, wherein the hydroisomerization catalyst comprises: (a) at least one metal from group viii selected from platinum activated in its reduced form, palladium activated in its reduced form, nickel in its sulphide form, and cobalt in its sulphide form, and/or (b) at least one metal from group vib selected from molybdenum and tungsten, and at least one molecular sieve or amorphous mineral support.14. the process according to claim 11, further comprising subjecting the hydroisomerization effluent to at least one separation step and at least one step for fractionation in order to obtain a gaseous cut, a gasoline cut and at least one middle distillates cut containing kerosene and/or diesel.15. the process according to claim 1, wherein at least a portion of said gaseous fraction containing hydrogen from d) is divided into a plurality of gaseous recycle streams, rg1 to rgn, and a first liquid gaseous recycle stream rg1 is recycled to the first catalytic zone z1, and a second gaseous recycle stream rg2 is recycled to the second catalytic zone z2 and so on if n is greater than 2.16. the process according to claim 1, wherein the local dilution ratio of each of the catalytic zones is 0 to 3.8.17. the process according to claim 1, wherein the local dilution ratio of each of the catalytic zones is 0 to 3.5.18. the process according to claim 1, wherein the local dilution ratio of each of the catalytic zones is 0 t

Results: 11

1) Family number: 64747477 (US2017022424A)

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Title: PROCESS FOR THE HYDROTREATMENT OF RENEWABLE MATERIALS, WITH AN OPTIMIZED GAS RECYCLE

Abstract: A process for the hydrotreatment of a feed obtained from renewable sources in which the total stream of feed F is divided into a number of different part-streams of feed F1 to Fn equal to the number of catalytic zones n, where n is 1 to 10. The mass flow rate of hydrogen sent to the first catalytic zone represents more than 80 percent by weight of the total mass flow rate of hydrogen used. The effluent from the reactor outlet undergoes at least one separation step. A portion of the liquid fraction is recycled to the catalytic zones in a manner such that the local recycle ratio for each of the beds is 2 or less, and the local dilution ratio over each of the beds is less than 4.

Classifications:

International (IPC 8-9): B01J8/00 C10G3/00 C10G45/00 C10G45/02 C10G45/08 C10G45/58 C10G45/62 C10G49/00 C10G65/04 C10G65/16 C10G70/06 C10L1/04 C10L1/06 C10L1/08 (Advanced/Invention); C10G45/10 (Core/Invention)

CPC: C10G3/50 C10L1/04 C10L1/06 C10L1/08 C10G2300/202 C10G2400/04 C10G2400/08 C10G2400/02 C10L2200/0469 C10L2270/023 C10L2270/026 C10L2270/04 C10L2290/10 C10G3/46 C10G45/62 C10G45/02 C10G45/08 C10G65/16 C10G70/06 C10G2300/207 C10G3/52 C10G3/54 C10G3/60 C10G49/002 C10G65/043 C10G2300/1014 C10G2300/1018 C10G2300/4081 C10G2300/42 Y02P30/20

US: 585/303

Publication number	Publication date	Application number	Application date
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PT3121248 T	20180515	PT20160305930T	20160720
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TR201805688 T4	20180521	TR20180005688T	20160720
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FR20150057053 20150724 EP20160305930 20160720 JP20160143954 20160722

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2) Family number: 29954255 (US2004028579A)

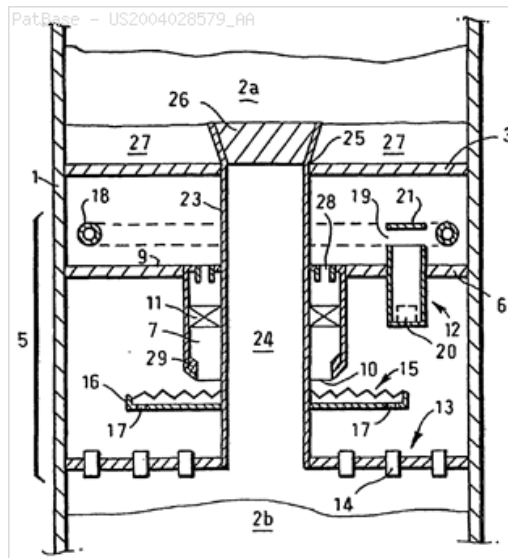
Title: MULTIPLE BED DOWNFLOW REACTOR

Abstract: The invention relates to a multiple bed downflow reactor comprising vertically spaced apart reaction beds (2a, 2b), preferably beds of catalyst particles, and, between adjacent beds, a mixing device (5) for mixing fluids, the mixing device (5) comprising: (i) a substantially horizontal collection tray (6), (ii) a swirl chamber (7) for mixing liquid arranged below the collection tray (6), having an upper end part that is in direct fluid communication with the upper surface (9) of the collection tray (6) and an outlet opening (10) at its lower end, and (iii) a substantially horizontal distribution tray (13) located below the swirl chamber (7), which distribution tray (13) is provided with a plurality of openings or downcomers (14) for downward flow of liquid and gas, in which reactor each reaction bed rests upon a support tray (6) provided with a central opening (25) and which reactor further comprises open-ended pipes (23) extending through each central opening (25) such that a vertical chute (24) is formed from the reaction bed (2a) above the mixing device (5) to the reaction bed (2b) below the mixing device (5), wherein the swirl chamber (7) of the mixing device (5) is arranged around the open-ended pipe (23). The invention further relates to the use of such a reactor in hydrocarbon processing.

Classifications:

International (IPC 8-9): B01F3/02 B01F3/04 B01F3/08 B01F5/00
B01J10/00 B01J8/00 B01J8/02 B01J8/04 C10G45/00
C10G49/00 (Advanced/Invention);
B01J8/04 C10G49/00 (Advanced/Non-invention);
B01J8/04 C10G49/00 (Core/Invention)

International (IPC 1-7): B01F3/02 B01F3/04 B01F3/08 B01F5/00 B01J8/00 B01J8/04 C10G45/00 C10G49/00
CPC: B01F3/04496 B01J8/0085 B01J8/0453 B01J8/0492 B01J8/0496 B01J2208/00132 C10G49/002
European: B01F3/04C4C B01J8/00L2 B01J8/04D2D B01J8/04F B01J8/04H C10G49/00B L01J208/00C2D2C
US: 366/341 422/19 422/190 422/191 422/193 422/194 422/195 422/211 422/211S 422/22 422/220 422/220S 422/224 422/224S 422/605 422/605P 422/607 422/607P 422/632 422/648



Family:

Publication number	Publication date	Application number	Application date
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EP20000311008 20001211 EP20010270583 20011211 EP20010984844 20011211
WO2001EP14737 20011211 WO2001EP14736 20011211 WO2001EP14737 20030611
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VAN D ME ; ZONNERYLLE MARJANNE C ; ZONNEVYLLE MARJANNE CLARA ; ZONNEVYLLE CLARA ; VAN DER MEER WIETZE ; DEN HARTOG SNOEIJ LEGAL REPRES ; ZONNERYLLE JURJEN W VAN DER ME ; MEER JURJEN W VAN DER ; MARJANNE C ZONNERYLLE ; MEER WIETZE VAN D ; DEN HARTOG PIETER

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3) Family number: 34084949 (US2007010682A) © PatBase

Title: PROCESS FOR THE MANUFACTURE OF DIESEL RANGE HYDROCARBONS

Abstract: The invention relates to a process for the manufacture of diesel range hydrocarbons wherein a feed is hydrotreated in a hydrotreating step and isomerised in an isomerisation step, and a feed comprising fresh feed containing more than 5 wt percent of free fatty acids and at least one diluting agent is hydrotreated at a reaction temperature of 200-400 degrees centigrade, in a hydrotreating reactor in the presence of catalyst, and the ratio of the diluting agent/fresh feed is 5-30:1.

Classifications:

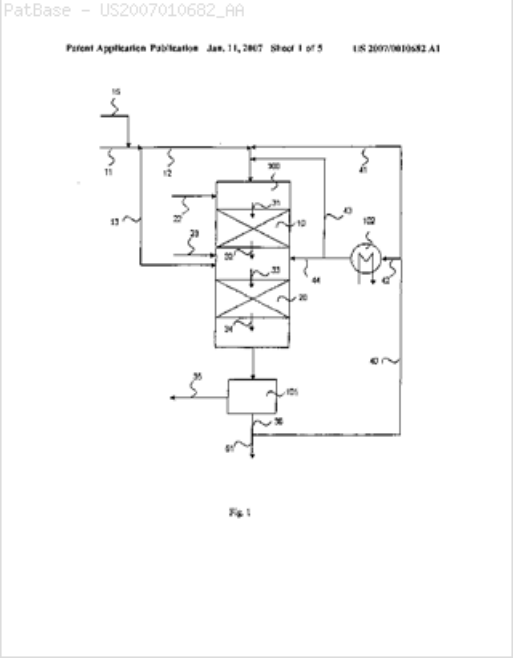
International (IPC 8-9): C07C1/00 C07C1/24 C07C5/03 C07C5/27 C07C51/43 C07C7/10 C07C7/12 C07C7/13 C10G C10G3/00 C10G45/02 C10G45/04 C10G45/08 C10G45/10 C10G45/58 C10G45/60 C10G45/62 C10G45/64 C10G65/04 C10G69/14 C10L1/08 (Advanced/Invention); C10G3/00 C10G45/02 C10G45/58 C10L1/08 (Advanced/Non-invention); C07C51/42 C10G3/00 C10G45/00 C10G45/02 C10G45/58 (Core/Invention); C10G (Subclass/Invention)

International (IPC 1-7): C10G3/00 C10G45/02 C10G45/58

CPC: C10G3/42 C10G3/45 C10G3/48 C10G3/46 C10G3/47 C10G45/62 C10G45/64 C10G2300/1014 C10G2300/1018 C10G2300/205 C10G2300/4006 C10G2300/4081 C10G2300/802 C10G2400/04 C10L1/08 C07C5/2775 C07C7/10 C07C7/12 C07C7/13 C07C5/03 C07C2529/076 C10G65/043 C10G2300/1011 C10G2300/202 Y02E50/13 C10G45/08 C10G45/10 Y02P30/20 C10G2300/207 C10G3/50 C07C1/24 C10G45/58 C10G45/02

European: C10G3/00 C10G45/02 C10G45/08 C10G45/10 C10G45/58 C10G65/04D M10G300/10B M10G400/04 Y02E50/13

US: 44/307 44/308 554/174 554/174P 585/240 585/240P 585/241 585/251 585/310 585/310S 585/733 585/734



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Inventor(s): (std): JUKKA MYLLYOJA ; MYLLYOJA JUKKA ; PEKKA AALTO ; PEKKA SAVOLAINEN ; PUROLA VEH MATTI ; PUROLA VELI MATTI ; SAVOLAINEN PEKKA ; VELI MATTI PUROLA ; VILLE ALOPAEUS ; VILLE ALOPAEUS V ; VELI MATTI PUROLA V M ; PEKKA SAVOLAINEN P ; PEKKA AALTO P ; JUKKA MYLLYOJA J ; JOHAN GROENQVIST J ; GROENQVIST JOHAN ; AALTO PEKKA ; ALOPAEUS VILLE ; GROENQVIST JOHAN ; GROENQVIST JOHAN ; JOHAN GROENQVIST ; MILLIOIA UKKA ; GRIONKVIST JOHAN ; ALOPAEUS WILLE

Inventor(s): JOHAN GROENQVIST ; VELI MATTI PUROLA V

Agent(s): FISHER ADAMS KELLY CALLINANS; SPRUSON AND FERGUSON; CALLINANS; MARKS AND CLERK; BECKER KURIG STRAUS; ZACCO DENMARK A S; VALLEJO JUAN PEDRO; CLT PATENT AND TRADEMARK HK LTD; BIRCH STEWART KOLASCH AND BIRCH; BIRCH STEWART KOLASCH AND BIRCH LLP; FINNEGAN HENDERSON FARABOW GARRETT AND DUNNER LLP

Designated states: AE AG AL AM AT AU AZ BA BB BE BF BG BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD MG MK ML MN MR MW MX MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW

4) Family number: 43046894 (US2009082606A)

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Title: PRODUCTION OF DIESEL FUEL FROM BIORENEWABLE FEEDSTOCKS

Abstract: A process has been developed for producing diesel boiling range fuel from renewable feedstocks such as plant oils, animal fats and oils, and greases. The process involves treating a renewable feedstock by hydrogenating and deoxygenating to provide a diesel boiling range fuel hydrocarbon product. If desired, the hydrocarbon product can be isomerized to improve cold flow properties. A portion of the hydrocarbon product is recycled to the treatment zone to increase the hydrogen solubility of the reaction mixture.

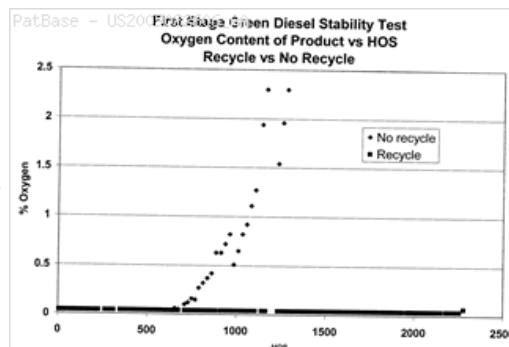
Classifications:

International (IPC 8-9): C07C1/00 C07C1/20 C07C1/22 C07C4/00 C10G21/28 C10G3/00 C10G45/00 C10G49/00 (Advanced/Invention); C07C1/00 C10G49/00 (Core/Invention)

International (IPC 1-7): C10G21/28 C10G3/00 C10G45/08 C10L1/08 **CPC:** C10G3/50 C10G3/46 C10G3/47 C10G2300/1014 C10G2300/1022 C10G2300/1037 C10G2300/4081 C10G2400/04 Y02P30/20

European: C10G3/00 M10G400/04

US: 208/57 208/57P 585/240 585/242 585/266 585/362 585/638 585/733 585/733P



Family:

Publication number	Publication date	Application number	Application date
AR068491 AA	20091118	AR2008P104078	20080919
AU2008302503 AA	20090326	AU20080302503	20080909
AU2014206233 AA	20140814	AU20140206233	20140728
BRPI0816253 A2	20150317	BR2008PI16253	20080909
CA2696399 AA	20090326	CA20082696399	20080909
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CL2008002756 A1	20090828	CL20080002756	20080916
CN101801893 A	20100811	CN200880107977	20080909
CN101801893 B	20131016	CN200880107977	20080909
EP2188235 A2	20100526	EP20080799365	20080909
EP2188235 A4	20130807	EP20080799365	20080909
PE09202009 A1	20090718	PE20080001637	20080919
TH116161 A	20120904	TH20081004776	20080918
TW200923061 A	20090601	TW20080135511	20080916
TWI395810 B	20130511	TW20080135511	20080916
US2009082606 AA	20090326	US20080193149	20080818
US2011024327 AA	20110203	US20100899221	20101006
US7982076 BB	20110719	US20080193149	20080818
US8003836 BB	20110823	US20100899221	20101006
WO09039000 A2	20090326	WO2008US75699	20080909
WO09039000 A3	20090611	WO2008US75699	20080909

Priority:

US20070973797P 20070920 US20080193149 20080818 AU20080302503 20080909
WO2008US75699 20080909 US20100899221 20101006 AU20140206233 20140728

Probable Assignee: UOP LLC

Assignee(s): (std): ABDO SUHEIL F ; KALNES TOM N ; KOKAYEFF PETER ; MARKER TERRY L ; UNIVERSAL OIL PRODUCTS CO ; UOP LLC

Assignee(s): UOP LLC25 EAST ALGONQUIN ROADP.O. BOX 5017DES PLAINESIL60017-5017US

Inventor(s): (std): KALNES TOM N ; MARKER TERRY L ; KOKAYEFF PETER ; ABDO SUHEIL F ; ABDO SUHEIL FARES ; ABDO SUHELL FARES ; MARKER TERRY LOUISE ; PETER KOKAYEFF ; KALNES TOM NELSON

Inventor(s): ABDO SUHEIL FUS ; KALNES TOM NUS ; KOKAYEFF PETERUS ; MARKER TERRY LUS ; TERRY L MARKER ; SUHEIL F ABDO ; TOM N KALNES

Agent(s): HOULIHAN²; HOULIHAN²; HOULIHAN² PTY LTD; MACRAE AND CO; VILLASECA; HAYES ADRIAN CHETWYND; HONEYWELL INTERNATIONAL INC,PATENT SERVICES; HONEYWELL INT INC PATENT SERVICES; HONEYWELL/UOP,PATENT SERVICES; HONEYWELL UOP PATENT SERVICES; MARYANN; UOP LLC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

5) Family number: 44149938 (US2009318737A)

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Title: PRODUCTION OF PARAFFINIC FUEL FROM RENEWABLE FEEDSTOCKS

Abstract: A process has been developed for producing fuel from renewable feedstocks such as plant and animal oils and greases. The process involves treating a first portion of a renewable feedstock by hydrogenating and deoxygenating in a first reaction zone and a second portion of a renewable feedstock by hydrogenating and deoxygenating in a second reaction zone to provide a diesel boiling point range fuel hydrocarbon product. If desired, the hydrocarbon product can be isomerized to improve cold flow properties. A portion of the hydrocarbon product is recycled to the first reaction zone to increase the hydrogen solubility of the reaction mixture.

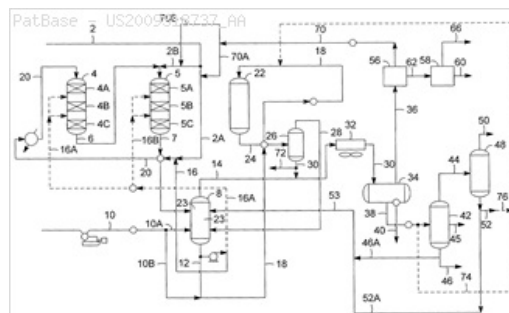
Classifications:

International (IPC 8-9): C07C1/00 C07C1/22 C07C5/00 C10G3/00 C10G45/02 C10G45/04 C10G51/04 C10L1/30 (Advanced/Invention); C07C5/00 C10G45/02 C10G51/00 C10L1/10 (Core/Invention)

CPC: C10G3/46 C10G45/58 C10G45/04 C10G3/50 C10G3/60 C10G2300/1014 C10G2300/1018 C10G2300/4081 C10G2400/02 C10G2400/04 C10G2400/08 Y02P30/20

European: C10G3/00 C10G45/04 M10G300/10B2 M10G300/10B4

US: 585/240 585/251 585/251S 585/253 585/253P 585/265 585/331 585/733



Family:

Publication number	Publication date	Application number	Application date
US2009318737 AA	20091224	US20090469011	20090520
US2013012746 AA	20130110	US20120616915	20120914
US8304592 BB	20121106	US20090469011	20090520
US8766025 BB	20140701	US20120616915	20120914
WO10008686 A2	20100121	WO2009US45363	20090528
WO10008686 A3	20100422	WO2009US45363	20090528

Priority:

Probable Assignee: UOP LLC**Assignee(s):** (std): FREY STANLEY J ; LUEBKE CHARLES P ; UOP LLC**Inventor(s):** (std): FREY STANLEY J ; LUEBKE CHARLES P**Agent(s):** HONEYWELL/UOP,PATENT SERVICES; HONEYWELL UOP PATENT SERVICES; MARYANN; UOP LLC**Designated states:** AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW**6) Family number: 44166643 (US2011166405A)**

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Title: PROCESS FOR PRODUCING PARAFFINIC HYDROCARBONS

Abstract: A process for producing paraffinic hydrocarbons from a feedstock comprising triglycerides, diglycerides, monoglycerides and/or fatty acids, the process comprising the following steps: (a) hydrode oxygenating the triglycerides, diglycerides, monoglycerides and/or fatty acids in the feedstock by contacting hydrogen and the feedstock with a hydrogenation catalyst at a temperature in the range of from 250 to 380 degrees centigrade and a total pressure in the range of from 20 to 160 bar (absolute), to obtain an effluent comprising paraffinic hydrocarbons and water; (b) separating a liquid stream rich in paraffinic hydrocarbons from the effluent obtained in step (a); and (c) hydroisomerising the paraffinic hydrocarbons in the liquid stream rich in paraffinic hydrocarbons by contacting hydrogen and the liquid stream with a hydroprocessing catalyst comprising sulphided Ni and sulphided W or Mo as hydrogenation components on a carrier comprising amorphous silica-alumina and/or a zeolitic compound at a temperature in the range of from 280 to 450 degrees centigrade and a total pressure in the range of from 20 to 160 bar (absolute).

Classifications:**International (IPC 8-9):** B01J B01J23/755 B01J23/883 C07C1/207 C10G C10G45/02 C10G45/08 C10G45/62 C10G45/64 C10G65/04

C10G67/06 (Advanced/Invention);

B01J23/755 B01J23/76 C10G45/02 C10G45/58

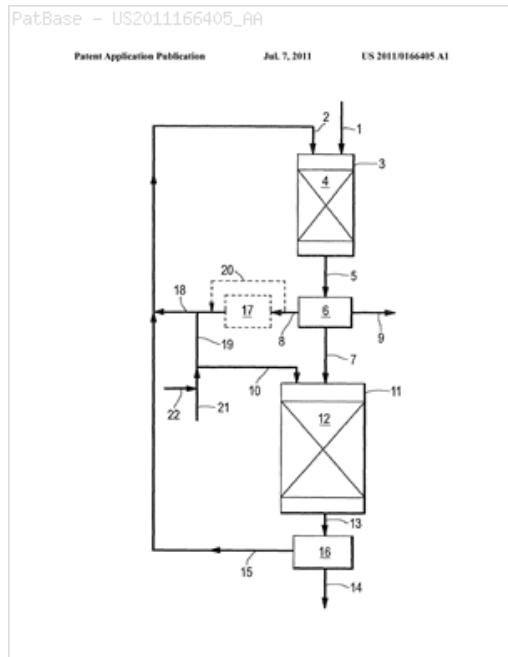
C10G65/00 (Core/Invention)

International (IPC 1-7): B01J23/755 B01J23/883 C10G45/02 C10G45/08 C10G45/62 C10G45/64 C10G65/04**CPC:** Y02P30/20 C10G45/02 B01J21/12 B01J23/883 B01J23/888

B01J29/06 B01J37/20 C10G2300/1011 C10G2400/04

European: C10G45/02 L01J21/12 L01J23/883 L01J23/888 L01J29/06

L01J37/20 M10G300/10B M10G400/04

US: 44/605 585/240 585/733 585/733P 585/734**Family:**

Publication number	Publication date	Application number	Application date
AU2009264210 AA	20091230	AU20090264210	20090624
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CA2728813 C	20160913	CA20092728813	20090624
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EP2296810 A2	20110323	EP20090769301	20090624
IN286175 B	20170811	IN2010DN09192	20101223
MY156291 A	20160129	MY20100006119	20090624
SG192435 A1	20130830	SG20130049192	20090624
US2011166405 AA	20110707	US20090000388	20090624
US8809610 BB	20140819	US20090000388	20090624
WO09156452 A2	20091230	WO2009EP57918	20090624
WO09156452 A3	20100429	WO2009EP57918	20090624
ZA201009040 A	20111228	ZA20100009040	20101215

Priority:

EP20080158917 20080625

EP20090769301 20090624

WO2009EP57918 20090624

Probable Assignee: SHELL OIL CO

Assignee(s): (std): CREYGHTON EDWARD JULIUS ; JANSSEN ANDRIES HENDRIK ; SHELL INT RESEARCH ; SHELL OIL CO ; VAN BEIJNUM JOHANNES

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Inventor(s): (std): ANDRIES HENDRIK JANSSEN ; BEIJNUM JOHANNES VAN ; CREYGHTON EDWARD JULIUS ; EDWARD JULIUS CREYGHTON ; HENDRIK JANSSEN ANDRIES ; JANSSEN ANDRIES HENDRIK ; JOHANNES BEIJNUM VAN ; JOHANNES VAN BEIJNUM ; JULIUS CREYGHTON EDWARD ; VAN BEIJNUM JOHANNES

Agent(s): SPRUSON AND FERGUSON; OGILVY RENAULT LLP SENCRL SRL; NORTON ROSE FULBRIGHT CANADA LLP SENCRL SRL; MATTHEZING ROBERT MAARTEN; DREW AND NAPIER LLC

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

7) Family number: 46784498 (US2010242349A)

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Title: PROCESS FOR THE CONTINUOUS HYDROGENATION OF TRIGLYCERIDE CONTAINING RAW MATERIALS

Abstract: Process for the continuous hydrogenation of triglyceride containing raw materials in a fixed bed reactor system having several catalyst beds arranged in series and comprising hydrogenation catalyst. The raw material feed, hydrogen containing gas and diluting agent are passed together through the catalyst beds at hydrogenation conditions. The raw material feed stream as well as the stream of hydrogen containing gas are divided into an equal number of different partial streams. These are each passed to one catalyst bed in such a manner that the weight ratio of diluting agent to raw material feed is essentially the same at the entrance of all catalyst beds and does not exceed 4:1. The claimed process is preferably conducted at low temperatures and allows the utilization of existing units due to the low recycle ratio. Further, a sufficient excess of hydrogen is used so that no valuable product is lost through decarb-reactions.

Classifications:

International (IPC 8-9): C10G3/00 C10G45/58 C10G45/72

C10L1/19 (Advanced/Invention);

C10G3/00 C10G45/00 C10G45/58 C10L1/10 (Core/Invention)

International (IPC 1-7): C10G3/00 C10G45/02

CPC: C10G2300/1011 C10G3/54 C10G3/46 C10G3/50 C10G3/60

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US: 208/142 208/143 208/144 208/57 44/398 44/398P 585/240 585/638

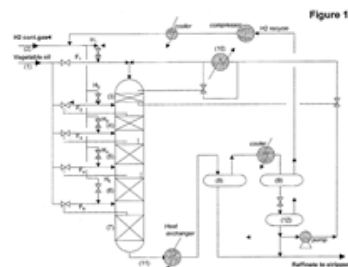
585/639 585/640 585/733

PatBase - US2010242349_AA

Patent Application Publication

Sep. 30, 2010

US 2010/0242349 A1



Family:

Publication number	Publication date	Application number	Application date
AR076079 AA	20110518	AR2010P100649	20100304
CA2751558 AA	20100910	CA20102751558	20100303
CA2751558 C	20170516	CA20102751558	20100303
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CN102439119 B	20141126	CN201080010256	20100303
CO6501137 A2	20120815	CO20110130438	20111004
DE602009006912 D1	20120712	DE200960006912T	20090304
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EP2226375 B1	20120516	EP20090003140	20090304
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IN294986 B	20180330	IN2011CN06994	20110928
JP2012519744 T2	20120830	JP20110552536T	20100303
JP2015007238 A2	20150115	JP20140152541	20140728
JP5914588 B2	20160511	JP20140152541	20140728
MY157009 A	20160415	MY20110004121	20100303
PT2226375 T	20120720	PT20090003140T	20090304
US2010242349 AA	20100930	US20100717403	20100304
US8197559 BB	20120612	US20100717403	20100304

WO10100565 A2	20100910	WO2010IB00694	20100303
WO10100565 A3	20110120	WO2010IB00694	20100303

Priority:

WO2010IB00694 20090303	EP20090003140 20090304	EP20100742238 20100303
WO2010IB00694 20100303	JP20110552536 20100303	JP20110552536T 20100303

Probable Assignee: IFP

Assignee(s): (std): ABE DETLEF ; BOURNAY LAURENT ; CHAPUS THIERRY ; DUPASSIEUX NATHALIE ; ESCHENROEDER FRANK ; INST FRANCAIS DU PETROLE ; PCK RAFFINERIE GMBH ; ESCHENROEDER FRANK ; LABAN DAVID ; IP EN NOUVELLES ; IFP ENERGIES NOUVELLES ; IFP ENERGIES NOW ; SCHUETTER HARTMUT ; SCHUTTER HARTMUT

Assignee(s): IP ENERGIES NOUVELLES ; IFP

Inventor(s): (std): CHAPUS THIERRY ; SCHUETTER HARTMUT ; BOURNAY LAURENT ; ESCHENROEDER FRANK ; DUPASSIEUX NATHALIE ; SCHUTTER HARTMUT ; ESCHENROEDER FRANK ; THIERRY CHAPUS ; FRANK ESCHENROEDER ; NATHALIE DUPASSIEUX ; LAURENT BOURNAY ; HARTMUT SCHUTTER ; DETLEF ABE ; HARTMUT SCHUETTER ; DAVID LABAN ; CHAPUS T ; DUPASSIEUX N ; SCHUETTER HARTMUT DR ; BOURNAY L ; ESCHENROEDER FRANK DR ; LABAN DAVID ; ABE DETLEF

Inventor(s): L BOURNAY ; T CHAPUS ; DR FRANK ESCHENROEDER ; FRANK ESCHENROEDER ; N DUPASSIEUX

Agent(s): ROBIC ; LUZ CLEMENCIA DE PAEZ ; VONNEMANN KLOIBER AND KOLLEGEN ; GUILLAT TERPEND MICHELE ; HIBI NORIHIKO ; KISHIMOTO EINOSUKE ; WATANABE AKIRA ; MATSUMURA NAOTO ; MILLEN WHITE ZELANO AND BRANIGAN PC ; IFP

Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

8) Family number: 50438254 (US2012004479A)

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Title: GAS AND LIQUID PHASE HYDROPROCESSING FOR BIOCOMPONENT FEEDSTOCKS

Abstract: Diesel fuel is produced from a feedstock that is at least partially biocomponent in origin. A feedstock is treated in a reactor including one or more hydrotreating zones having a continuous gas phase. The liquid effluent from the hydrotreating zones is then hydroprocessed in a hydroprocessing zone having a continuous liquid phase, such as a hydroprocessing zone in the same reactor. The hydroprocessing zone can be operated under effective catalytic dewaxing conditions.

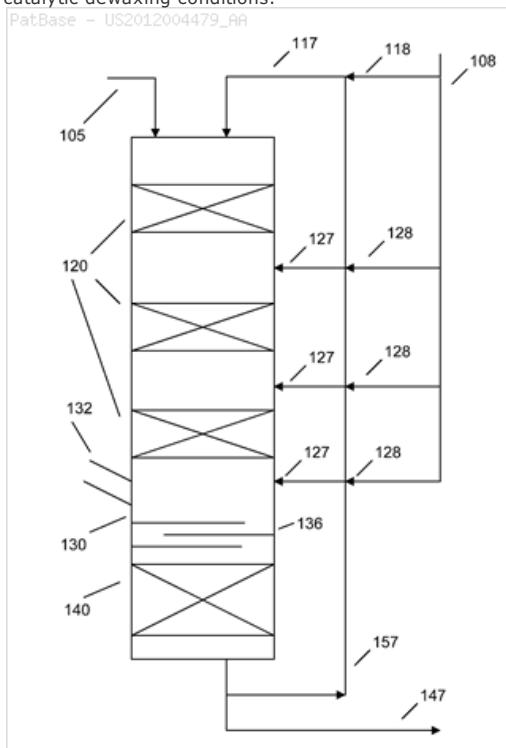
Classifications:

International (IPC 8-9): C07C4/06 C07C5/02 C07C7/00 C10G3/00 C10G45/00 C10G45/58 C10G65/02 C10G65/04 (Advanced/Invention); B01J23/882 B01J29/74 (Advanced/Non-invention)

CPC: C10G65/04 B01J23/882 B01J29/7461 C10G3/42 C10G3/45 C10G3/46 C10G3/47 C10G3/49 C10G3/50 C10G3/60 C10G45/58 C10G65/02 C10G65/043 C10G2300/1014 C10G2300/1018 C10G2300/1037 C10G2300/202 C10G2300/301 C10G2300/304 C10G2300/4006 C10G2300/4012 C10G2300/4018 C10G2300/4081 C10G2400/04 Y02E50/13 Y02P30/20

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US: 208/57 585/256 585/256P 585/264 585/264S 585/841 585/841S



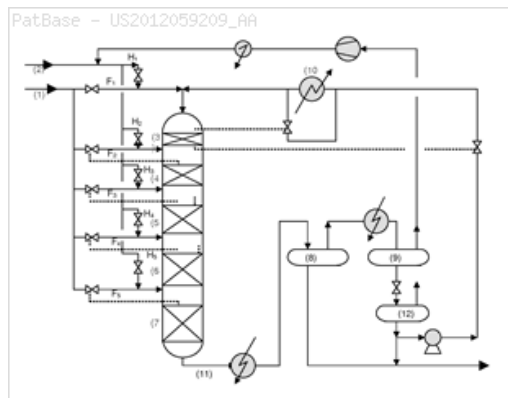
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Publication number	Publication date	Application number	Application date
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EP2588431 A2	20130508	EP20110731198	20110624
SG185577 A1	20121228	SG20120083853	20110624
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US8828217 BB	20140909	US20110168115	20110624
WO12012089 A2	20120126	WO2011US41756	20110624
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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT RO RS RU SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW

US: 502/208 502/210 502/211 502/213 502/300 502/305 502/313
502/315 585/240 585/242 585/250 585/265 585/269 585/270 585/271
585/273 585/274 585/275 585/276 585/315 585/638 585/640
585/733 585/733P



Publication number	Publication date	Application number	Application date
CA2752142 AA	20120308	CA20112752142	20110907
CA2752142 C	20190115	CA20112752142	20110907
CN102399567 A	20120404	CN201110265357	20110908
CN102399567 B	20150819	CN201110265357	20110908
EP2428547 A1	20120314	EP20100290480	20100908
EP2428547 B1	20180905	EP20100290480	20100908
ES2700990 T3	20190220	ES20100290480T	20100908
SG179356 A1	20120427	SG20110064003	20110906
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Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT
RO RS SE SI SK SM TR

Abstract: The invention concerns a process for hydrotreating a feed originating from renewable sources such as vegetable oils to produce paraffinic hydrocarbons in the presence of hydrogen in excess over the theoretical hydrogen consumption and under hydrotreatment conditions in a fixed bed reactor having a plurality of catalytic zones disposed in series and comprising a hydrotreatment catalyst. The total feed flow is divided into a certain number of different part flows equal to the number of catalytic zones in the reactor; the various part flows are injected into the successive catalytic zones in increasing proportions to produce an effluent comprising paraffinic hydrocarbons. The effluent undergoes a separation step in order to separate a gas fraction and a liquid fraction containing the paraffinic hydrocarbons. At least a portion of said liquid fraction is recycled to the first catalytic zone so that the weight ratio between said recycle and the part flow introduced into the first catalytic zone is 10 or more.

Classifications:

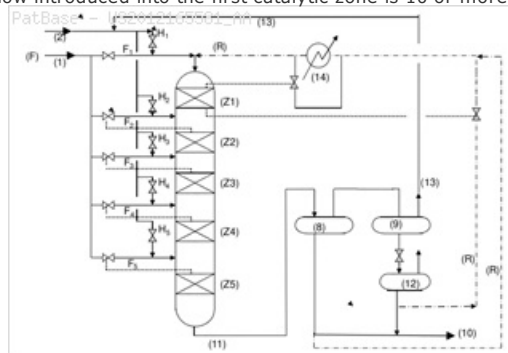
International (IPC 8-9): B01J8/04 C07C1/00 C07C7/00 C10G C10G3/00 C10G45/58 C10G45/60 C10G45/62 C10G45/64 C10G65/04 C10G67/02 C10J3/06 C10L1/04 C10L1/06 C10L1/08 C10L1/19 (Advanced/Invention)

CPC: C10G3/54 C10G3/42 C10G3/44 C10G3/45 C10G3/46 C10G3/50 C10G3/52 C10G3/60 C10G45/60 C10G65/043 C10G2300/1011 C10G2300/1014 C10G2300/1018 C10G2300/1048 C10G2300/4018 C10G2300/4081 C10G2400/02 C10G2400/04 C10L1/04 C10L1/06 C10L1/08 Y02E50/13 Y02E50/32 Y02T50/678 Y02P30/20

European: C10G3/42 C10G3/44 C10G3/50 C10G3/52 C10G3/54

C10G45/60 C10G65/04D C10L1/04 C10L1/08 M10G300/10B M10G400/04

US: 1/1 585/240 585/240P



Family:

Publication number	Publication date	Application number	Application date
AR084527 AA	20130522	AR2011P104868	20111221
BRPI1107127 A2	20130409	BR2011PI07127	20111215
CA2762032 AA	20120622	CA20112762032	20111219
CN102533306 A	20120704	CN201110434966	20111222
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US2012165581 AA	20120628	US20110332442	20111221
US9109168 BB	20150818	US20110332442	20111221

Priority:

FR20100005027 20101222 CA20112762032 20111219

Probable Assignee: IFP ENERGIES NOUVELLES

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Agent(s): ROBIC; LUZ CLEMENCIA DE PAEZ; IFP ENERGIES NOUVELLES; PATRICK MIRANDAH CO S PTE LTD; MILLEN WHITE ZELANO AND BRANIGAN PC

Designated states: AL AT BA BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

11) Family number: 51509644 (US2012184792A)

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Title: METHOD AND ARRANGEMENT FOR FEEDING HEAT-SENSITIVE MATERIALS TO FIXED-BED REACTORS

Abstract: The invention relates to an arrangement for feeding heat-sensitive feedstock to a fixed-bed reactor system comprising means for product recycle and a fixed-bed reactor system comprising a fixed-bed reactor comprising at least one reaction zone having at least one catalyst bed and said reaction zone comprising a cold feed distributor arranged on top of each catalyst bed and a conventional distributor arranged above each cold feed distributor. Also a method is provided for feeding heat-sensitive feedstock to a fixed-bed reactor system wherein said fixed-bed reactor system comprises means for product recycle and a fixed-bed reactor comprising at least one reaction zone having at least one catalyst bed and said reaction zone comprising a cold feed distributor arranged on top of each catalyst bed and a conventional distributor arranged above each cold feed distributor.

Classifications:

International (IPC 8-9): B01D3/00 B01J19/00 B01J8/00 B01J8/02 B01J8/04 C07C1/24 C10G3/00 C10G49/00 (Advanced/Invention)

CPC: B01J8/0492 B01J2208/00283 B01J2219/00247 C10G3/47 C10G49/002 C10G2300/1011 C10G2300/104 C10G2300/1044 C10G2300/1081 C10G2300/4031 C10G2300/4037 C10G2300/4081 C10G2300/802 Y02P30/20

European: B01J8/04F L01J208/00C2D6D L01J219/00B40A

US: 1/1 422/234 422/234S 422/310 422/310S 585/733 585/733P

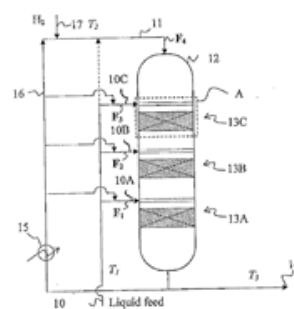


Fig. 1

Family:

Publication number	Publication date	Application number	Application date
DE602011035351 D1	20170413	DE201160035351T	20110118
EP2476482 A1	20120718	EP20110151226	20110118
EP2476482 B1	20170301	EP20110151226	20110118
ES2626658 T3	20170725	ES20110151226T	20110118
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Priority:

EP20110151226 20110118 US20110433884P 20110118 US20120350578 20120113

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Designated states: AE AG AL AM AO AT AU AZ BA BB BE BF BG BH BJ BR BW BY BZ CA CF CG CH CI CL CM CN CO CR CU CY CZ DE DK DM DO DZ EC EE EG ES FI FR GA GB GD GE GH GM GN GQ GR GT GW HN HR HU ID IE IL IN IS IT JP KE KG KM KN KP KR KZ LA LC LI LK LR LS LT LU LV LY MA MC MD ME MG MK ML MN MR MT MW MX MY MZ NA NE NG NI NL NO NZ OM PE PG PH PL PT QA RO RS RU RW SC SD SE SG SI SK SL SM SN ST SV SY SZ TD TG TH TJ TM TN TR TT TZ UA UG US UZ VC VN ZA ZM ZW