

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
05 October 2023 (05.10.2023)



(10) International Publication Number
WO 2023/192906 A1

(51) International Patent Classification:

C10G 11/18 (2006.01) C07C 5/327 (2006.01)
C07C 1/20 (2006.01) C07C 5/48 (2006.01)
C07C 1/24 (2006.01)

(21) International Application Number:

PCT/US2023/065100

(22) International Filing Date:

29 March 2023 (29.03.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/325,276 30 March 2022 (30.03.2022) US

(71) Applicant: DOW GLOBAL TECHNOLOGIES LLC

[US/US]; 2211 H. H. Dow Way, Midland, Michigan 48674 (US).

(72) Inventor: PRETZ, Matthew T.; c/o Dow Global Technologies LLC, 2301 North Brazosport Boulevard, Freeport, Texas 77541 (US).

(74) Agent: INGLE, Cory J. et al.; Dinsmore & Shohl LLP, One South Main Street, Suite 1300, Dayton, Ohio 45402 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(54) Title: METHODS FOR FORMING LIGHT OLEFINS UTILIZING HEAT EXCHANGER SYSTEMS

(57) Abstract: A method for forming light olefins may include reacting a feed stream in the presence of a catalyst in a reactor to form a product stream, separating at least a portion of the product stream from the catalyst, and passing the catalyst to a catalyst processing portion of the reactor system and processing the catalyst to produce a processed catalyst and a flue gas. The catalyst may be heated, coke may be removed from the catalyst, or both, in a combustor in the catalyst processing portion. The method may further comprise separating the catalyst from the flue gas, and passing the flue gas through a heat exchanger system to cool the flue gas. Heat may be exchanged from the flue gas to an oxygen-containing gas in an inlet stream. The oxygen-containing gas may exit the heat exchanger system in a first stream and a second stream. The oxygen-containing gas in the first stream may have a temperature greater than that of the oxygen-containing gas in the second stream. The method may further comprise passing the oxygen-containing gas in the first stream directly to the combustor, and passing the oxygen-containing gas in the second stream to one or more of a catalyst transport pipe as a solid transport fluid, or an oxygen treatment zone.

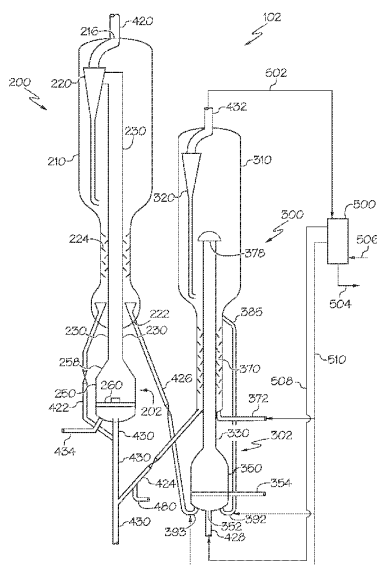


FIG. 1

WO 2023/192906 A1

[Continued on next page]

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*