

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
13 May 2004 (13.05.2004)

PCT

(10) International Publication Number
WO 2004/039720 A3

(51) International Patent Classification⁷: **C10G 35/04**,
35/12, B01J 8/08

(21) International Application Number:
PCT/US2003/034041

(22) International Filing Date: 24 October 2003 (24.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/421,892 29 October 2002 (29.10.2002) US
10/690,801 22 October 2003 (22.10.2003) US

(71) Applicant: **EXXONMOBIL RESEARCH AND ENGINEERING COMPANY** [US/US]; 1545 Route 22 East, P.O. Box 900, Annandale, NJ 08801-0900 (US).

(72) Inventors: **GOLDSTEIN, Stuart, Scott**; 4233 Sleepy Lake Drive, Fairfax, VA 22033 (US). **THURTELL, John, Harland**; 5267 Tractor Lane, Fairfax, VA 22030 (US). **VIETS, John, Werner**; 3605 Woodhill Place, Fairfax, VA 22031 (US). **MELLI, Tomas, R.**; 5780 Bencrest Way, Haymarket, VA 20169 (US). **VOLLBRACHT, Jason, Robert**; 8759 Silverthorn Road, Largo, FL 33777 (US).

(74) Agents: **KEEN, Malcolm, D.** et al.; Exxonmobil Research and Engineering Company, 1545 Route 22 East, P.O.Box 900, Annandale, NJ 08801-0900 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
1 July 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD FOR REVAMPING FIXED-BED CATALYTIC REFORMERS

(57) **Abstract:** A method for converting a fixed-bed catalytic reformer unit to a moving-bed unit. The fixed bed reactor is converted to a moving bed reactor that has continuous or intermittent catalyst feeding facilities to allow continuous or intermittent addition of fresh or regenerated catalyst to the catalyst inlet of the moving-bed reactor and continuous or intermittent removal of spent catalyst from the catalyst outlet of the moving-bed reactor. The spent catalyst removed from the reactor is regenerated in a non-integrated regenerator which may be an offsite regenerator, a centrally located on-site regenerator which serves several reforming units or a regenerator shared with a second moving bed unit. The moving-bed reactor, the catalyst feeding facilities and the catalyst recovery facilities are operatively connected between themselves and to existing facilities from the fixed bed unit, such as piping, compression and reformer charge handling and heating. The converted unit is operated at an effective reactor pressure to improve reformat quality and yield over the reformat product from the fixed-bed unit before the conversion.



WO 2004/039720 A3