

(51) International Patent Classification:
C07C 51/265 (2006.01) B01D 3/00 (2006.01)(21) International Application Number:
PCT/US2009/005763(22) International Filing Date:
22 October 2009 (22.10.2009)

(25) Filing Language: English

(26) Publication Language: English

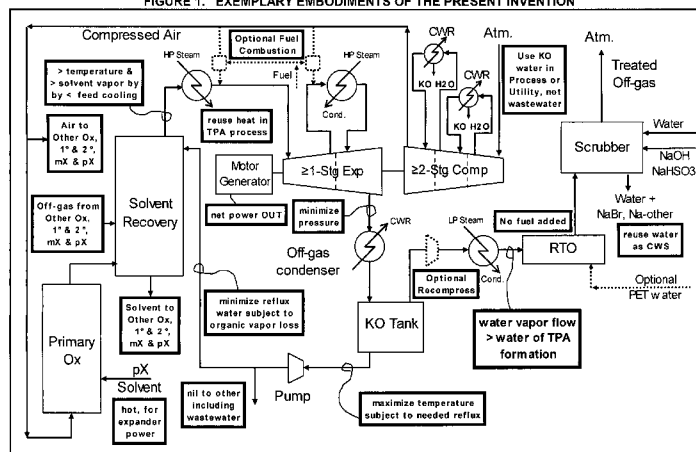
(30) Priority Data:
61/110,245 31 October 2008 (31.10.2008) US
12/556,096 9 September 2009 (09.09.2009) US(71) Applicant: EASTMAN CHEMICAL COMPANY [US/
US]; 200 South Wilcox Drive, Kingsport, TN 37660
(US).(72) Inventors: FOGLE, Raymond, Elbert, III; 8 Wayland
Court, Johnson City, Tennessee 37604 (US). SHEP-
PARD, Ronald, Buford; 1900 Ashfield Drive,
Kingsport, Tennessee 37664 (US). UPSHAW, Timothy,
Alan; 478 Oak Forest Place, Kingsport, Tennessee 37664
(US). WONDERS, Alan, George; 155 Oakland Drive,
Longview, TX 75605 (US).(74) Agent: OWEN, Steven, A.; P.O. Box 511, Kingsport, TN
37662-5075 (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, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP,
KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD,
ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI,
NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD,
SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT,
TZ, UA, UG, UZ, VC, VN, ZA, ZM, ZW.(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ,
TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: DICARBOXYLIC ACID PRODUCTION WITH MINIMAL WASTEWATER GENERATION

FIGURE 1. EXEMPLARY EMBODIMENTS OF THE PRESENT INVENTION



(57) Abstract: The invention provides improved energy content in and shaft power recovery from off-gas from xylene oxidation reactions while at the same time minimizing wastewater treatment cost. More shaft power is produced using off-gas than is required to drive the main air compressor, even with preferred, relatively low oxidation temperatures. Simultaneously, an amount of wastewater greater than byproduct water from oxidation of xylene is kept in vapor form and treated along with off-gas pollutants in a self-sustaining (self-fueling) gas-phase thermal oxidative destruction unit. Optionally, off-gas is combined from multiple xylene oxidation reactors, comprising primary and/or secondary oxidation reactors and forming TPA and/or IPA. Optionally, air compressor condensate and caustic scrubber blowdown are used in a TPA process or as utility water, effectively eliminating normal flow of liquid wastewater effluent from a TPA plant. Optionally, PET off-gas containing the water of PET formation is treated in a shared thermal oxidative destruction unit, effectively eliminating normal flow of liquid wastewater effluent from a combined pX-to-TPA-to-PET plant.