

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

(19) World Intellectual Property  
Organization  
International Bureau

(43) International Publication Date  
29 February 2024 (29.02.2024)



(10) International Publication Number  
**WO 2024/042091 A1**

- (51) International Patent Classification:  
*B04B 1/20* (2006.01) *B04B 13/00* (2006.01)
- (21) International Application Number:  
PCT/EP2023/073050
- (22) International Filing Date:  
22 August 2023 (22.08.2023)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
22191526.7 22 August 2022 (22.08.2022) EP
- (71) Applicant: **GEA WESTFALIA SEPARATOR GROUP GMBH** [DE/DE]; Werner-Habig-Str. 1, 59302 Oelde (DE).
- (72) Inventors: **FLACH, Andree**; Spielhagenstr. 13, 30171 Hannover (DE). **LICHA, Holger**; Meisenweg 20, 06526 Sangerhausen (DE). **DEIGHTON, Jake**; Sint-Laurentiusstraat 3, 2440 Geel (BE). **VEYNSHTER, Anton**; Pünnelsberg 18, 32805 Horn-Bad Meinberg (DE).

(74) Agent: **BARDEHLE PAGENBERG PARTNERSCHAFT MBB PATENTANWÄLTE, RECHTSANWÄLTE**; Prinzregentenplatz 7, 81675 München (DE).

(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,

(54) Title: AI CONTROLLED DECANter

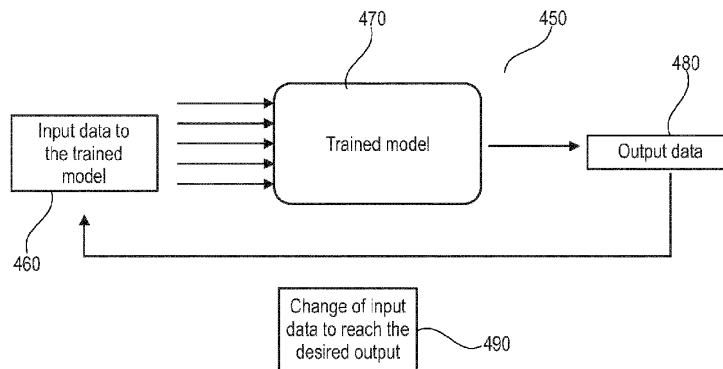


Fig. 4B

(57) Abstract: The present invention, inter alia, relates to a computer-implemented method for optimizing the output of a decanter during operation using a reinforcement artificial intelligence, AI, engine, the method comprises a. operating the decanter according to a plurality of operation parameters; b. processing, by the decanter, a physical input comprising a sludge and a polymer, and producing a physical output comprising a centrate and cake; c. determining a plurality of substance parameters based on the physical output; d. passing, to the reinforcement AI engine, the plurality of substance parameters and the plurality of operation parameters; e. determining, by the reinforcement AI engine, a quality value for each of the plurality of substance parameters; f. predicting, by the reinforcement AI engine, a plurality of adjusted operation parameters; and g. further operating the decanter based on the plurality of adjusted operation parameters.

[Continued on next page]

WO 2024/042091 A1

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).

**Published:**

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