



- (51) **International Patent Classification:**
B01D 19/00 (2006.01) *C02F 1/20* (2006.01)
- (21) **International Application Number:**
PCT/US2012/029218
- (22) **International Filing Date:**
15 March 2012 (15.03.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/452,905 15 March 2011 (15.03.2011) US
- (71) **Applicant (for all designated States except US):** **MKS INSTRUMENTS, INC.** [US/US]; 2 Tech Drive, Suite 201, Andover, MA 01810 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **BRAMMER, Ulrich** [DE/DE]; Malplaquet Strasse 25, D-13347 Berlin (DE). **SEIWERT, Johannes** [DE/DE]; Hochstr. 13, D-13357 Berlin (DE). **GOTTSCHALK, Christiane** [DE/DE]; Antwerpener Strasse 7, D-13353 Berlin (DE).
- (74) **Agent:** **FLOCKHART-SHANKS, Brenda**; Proskauer Rose LLP, One International Place, Boston, MA 02110 (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, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, MK, MT, NL, NO, PL, PT, RO, RS, 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))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) **Title:** SYSTEM TO REMOVE DISSOLVED GASES SELECTIVELY FROM LIQUIDS

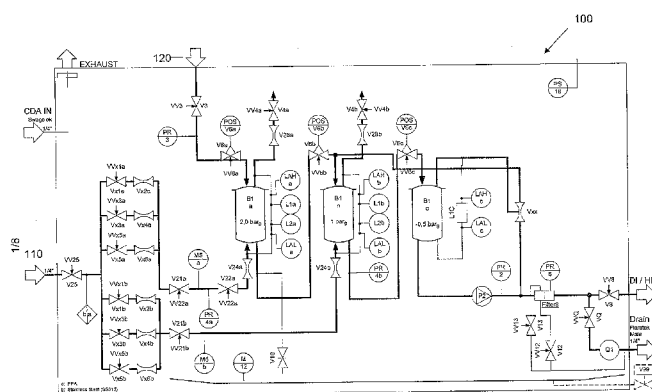


Figure 1

(57) **Abstract:** A system to purge dissolved gases selectively from liquids can include a first contactor having two first contactor inlets and two first contactor outlets. The first contactor can be in fluid communication with a liquid source at a first inlet of the first contactor and an inert gas source at a second inlet of the first contactor. The second inlet of the first contactor can receive inert gas that purges a first portion of gas from the liquid source. The first portion of purged gas can exit the first contactor at a first outlet of the first contactor. The system can also include a second contactor including two second contactor inlets and two second contactor outlets. The second contactor can be in fluid communication with a second outlet of the first contactor and the inert gas source at a second inlet of the second contactor. The second inlet of the second contactor can receive inert gas that purges a second portion of the gas from the liquid source. The second portion of purged gas can exit the second contactor at a first outlet of the second contactor.