



(51) International Patent Classification:
Not classified

(21) International Application Number:
PCT/IN2020/050231

(22) International Filing Date:
13 March 2020 (13.03.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
201911010031 14 March 2019 (14.03.2019) IN

(72) Inventor; and

(71) Applicant: VERMA, Vivek [IN/IN]; Spray Engineering
Devices Limited, Spray House, C-82, Industrial Area, Phase
7, SAS Nagar, Mohali 160055 (IN).

(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, CZ, DE, DJ, DK, DM, DO,

DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP,
KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME,
MG, MK, MN, 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, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, 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, 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: METHOD, PROCESS AND APPARATUS FOR THE VERY LOW TEMPERATURE EVAPORATION SYSTEM

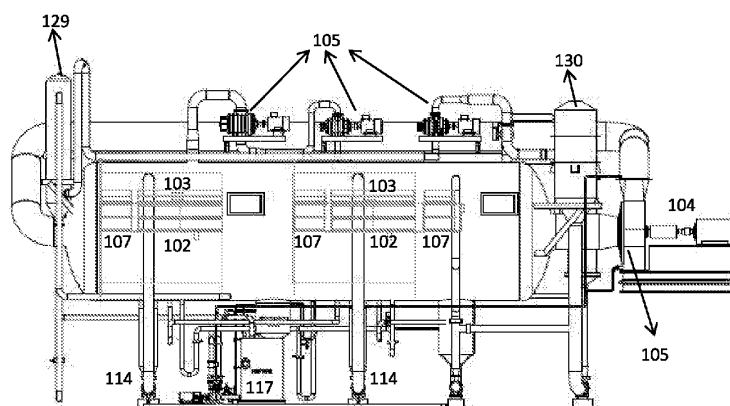


Fig. 10: Front view of horizontal multi-effect low temperature evaporator

(57) Abstract: The method, process and apparatus for very low temperature evaporation system novelty of the invention lies in the concept of method, process and apparatus for evaporation and concentration at very low temperature ranges from 5°C to 80°C to recover water vapour from liquids or solutions or industrial effluents or spentwash or industrial wastewater or juices or syrups or slurry or sludge or brine or sewer or wastewater or any other evaporative liquid materials in single or multiple effect heat exchanger arranged in horizontal or vertical manner with mechanical vapour compression system under vacuum. This very low temperature evaporation system operates at lowest temperature for maximum clean water recovery from liquids or solutions or industrial effluents or industrial wastewater. The apparatus for low temperature evaporation system eliminates or reduces the utilization of heat generation and rejection units along with other benefits like reduces water extraction from earth and energy losses.

Declarations under Rule 4.17:

- *as to the identity of the inventor (Rule 4.17(i))*
- *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))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*