

Title (en)

METHOD OF PUMPING IN A SYSTEM OF VACUUM PUMPS AND SYSTEM OF VACUUM PUMPS

Title (de)

VERFAHREN ZUM PUMPEN IN EINEM SYSTEM AUS VAKUUMPUMPEN UND SYSTEM AUS VAKUUMPUMPEN

Title (fr)

MÉTHODE DE POMPAGE DANS UN SYSTÈME DE POMPES À VIDE ET SYSTÈME DE POMPES À VIDE

Publication

EP 3161318 B1 20200205 (FR)

Application

EP 14738765 A 20140627

Priority

EP 2014063725 W 20140627

Abstract (en)

[origin: WO2015197138A1] Method of pumping and pumping system (SP, SPP) comprising: a lubricated-vanes main vacuum pump (3) with a gas inlet orifice (2) connected to a vacuum chamber (1) and a gas outlet orifice (4) opening into a pipe (5) before opening into the gas outlet (8) of the pumping system (SP, SPP), a non-return valve (6) positioned in the pipe (5) between the gas outlet orifice (4) and the gas outlet (8), and a lubricated-vanes auxiliary vacuum pump (7) connected in parallel with the non-return valve (6). The lubricated-vanes main vacuum pump (3) is set into operation in order to pump the gasses contained in the vacuum chamber (1) through the gas outlet orifice (4); simultaneously, a lubricated-vanes auxiliary vacuum pump (7) is set in operation and continues to be in operation for all of the time that the lubricated-vanes main vacuum pump (3) is pumping the gasses contained in the vacuum chamber (1) and/or for all of the time that the lubricated-vanes main vacuum pump (3) is maintaining a defined pressure in the vacuum chamber (1).

IPC 8 full level

F04C 25/02 (2006.01); **F04C 18/344** (2006.01); **F04C 28/02** (2006.01)

CPC (source: EP KR RU US)

F04C 2/344 (2013.01 - RU); **F04C 18/34** (2013.01 - US); **F04C 18/344** (2013.01 - EP KR US); **F04C 23/001** (2013.01 - EP KR US); **F04C 25/02** (2013.01 - EP KR RU US); **F04C 28/02** (2013.01 - EP KR RU US); **F04C 28/06** (2013.01 - KR); **F04C 28/24** (2013.01 - US); **F04C 29/0085** (2013.01 - US); **F04C 29/026** (2013.01 - US); **F04C 29/126** (2013.01 - US); **F04C 28/06** (2013.01 - EP US); **F04C 2240/30** (2013.01 - US); **F04C 2240/40** (2013.01 - US); **F04C 2270/185** (2013.01 - US)

Citation (examination)

- US 2005000436 A1 20050106 - MULLER PETER [DE], et al
- EP 1589227 A1 20051026 - CIT ALCATEL [FR]

Citation (opposition)

- Opponent : Edwards Limited
- JP S62233492 A 19871013 - SHIMADZU CORP
- JP 2003139055 A 20030514 - ULVAC CORP
- JP 2003129957 A 20030508 - ULVAC CORP

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

WO 2015197138 A1 20151230; AU 2014398770 A1 20170119; AU 2017100332 A4 20170427; AU 2019204608 A1 20190718; AU 2019204608 B2 20210722; BR 112016030498 A2 20170822; BR 112016030498 B1 20220628; CA 2953455 A1 20151230; CA 2953455 C 20220329; CN 106662108 A 20170510; DK 3161318 T3 20200309; EP 3161318 A1 20170503; EP 3161318 B1 20200205; ES 2774438 T3 20200721; JP 2017523339 A 20170817; JP 6608394 B2 20191120; KR 102223057 B1 20210305; KR 20170028381 A 20170313; PL 3161318 T3 20200810; PT 3161318 T 20200306; RU 2017102492 A 20180727; RU 2017102492 A3 20180727; RU 2666720 C2 20180911; TW 201608135 A 20160301; TW 202043623 A 20201201; TW I710702 B 20201121; TW I734588 B 20210721; US 10760573 B2 20200901; US 11725662 B2 20230815; US 2017122321 A1 20170504; US 2020318640 A1 20201008

DOCDB simple family (application)

EP 2014063725 W 20140627; AU 2014398770 A 20140627; AU 2017100332 A 20170322; AU 2019204608 A 20190628; BR 112016030498 A 20140627; CA 2953455 A 20140627; CN 201480080173 A 20140627; DK 14738765 T 20140627; EP 14738765 A 20140627; ES 14738765 T 20140627; JP 2016574254 A 20140627; KR 20177002586 A 20140627; PL 14738765 T 20140627; PT 14738765 T 20140627; RU 2017102492 A 20140627; TW 104120571 A 20150625; TW 109127956 A 20150625; US 201415321839 A 20140627; US 202016868460 A 20200506