Title (en)

PRE-COOLING CIRCUIT AND METHOD FOR SUPPLYING HELIUM REFRIGERATION

Title (de)

VORKÜHLKREIS UND VERFAHREN ZUR HELIUM-KÄLTEVERSORGUNG

Title (fr)

CIRCUIT DE PRÉ-REFROIDISSEMENT ET PROCÉDÉ DE FOURNITURE DE RÉFRIGÉRATION À L'HÉLIUM

Publication

EP 4367449 A1 20240515 (DE)

Application

EP 22737751 A 20220704

Priority

- EP 21020348 A 20210705
- EP 2022025306 W 20220704

Abstract (en)

[origin: WO2023280439A1] The invention relates to a pre-cooling circuit for supplying helium refrigeration to at least one consumer (72) to be cooled, comprising a feed line (30) and a return line (32) which are connected to one another via a refrigerating device (10), said refrigerating device being designed to exchange heat with the at least one consumer to be cooled; a helium cooling system (2), which is designed to dissipate heat to the environment, to compress helium flowing back and to conduct the compressed helium into the feed line; a first and a second cooling bath container (34, 36), the feed line running through a first heat exchanger (40) located in a bottom region of the first cooling bath container (34) and subsequently in the direction of the refrigerating device through a second heat exchanger (42) located in a bottom region of the second cooling bath container (36), and a top region of the first cooling bath container being connected via a recirculation line (18) to the helium cooling system; an ejector (50), a drive flow opening being connected to the return line, an intake opening being connected to a top region of the second cooling bath container, and an ejection opening being connected to the top region of the first cooling bath container, the ejector being designed to use helium flowing back from the refrigerating device as a drive flow in order to draw in helium vapour from the second cooling bath container and to raise it to the pressure of the first cooling bath container.

IPC 8 full level

F25B 9/00 (2006.01); **F25B 1/10** (2006.01); **F25B 5/02** (2006.01); **F25B 9/08** (2006.01); **F25B 9/10** (2006.01); **F25B 40/00** (2006.01); **F25B 41/20** (2021.01); **F25B 41/24** (2021.01)

CPC (source: EP KR US)

F25B 1/10 (2013.01 - EP KR); **F25B 5/02** (2013.01 - EP); **F25B 9/002** (2013.01 - EP KR); **F25B 9/08** (2013.01 - EP KR); **F25B 9/14** (2013.01 - US); **F25B 40/00** (2013.01 - EP KR); **F25B 41/20** (2021.01 - EP); **F25B 41/24** (2021.01 - EP KR); **H05K 7/20354** (2013.01 - US); F25B 2341/0011 (2013.01 - EP KR); F25B 2400/075 (2013.01 - EP KR); F25B 2400/23 (2013.01 - EP KR)

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

Designated extension state (EPC)

BA ME

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

EP 4116639 A1 20230111; CN 117545968 A 20240209; EP 4367449 A1 20240515; JP 2024523917 A 20240702; KR 20240054924 A 20240426; US 2024302081 A1 20240912; WO 2023280439 A1 20230112

DOCDB simple family (application)

EP 21020348 A 20210705; CN 202280044589 A 20220704; EP 2022025306 W 20220704; EP 22737751 A 20220704; JP 2023579098 A 20220704; KR 20237045404 A 20220704; US 202218575596 A 20220704