

Title (en)

FREEZING DEVICE, FREEZING SYSTEM, AND CONTROL METHOD OF FREEZING DEVICE

Title (de)

GEFRIERVORRICHTUNG, GEFRIERSYSTEM UND VERFAHREN ZUR STEUERUNG EINER GEFRIERVORRICHTUNG

Title (fr)

DISPOSITIF DE CONGÉLATION, SYSTÈME DE CONGÉLATION ET PROCÉDÉ DE COMMANDE DE DISPOSITIF DE CONGÉLATION

Publication

EP 4113035 A1 20230104 (EN)

Application

EP 22181615 A 20220628

Priority

JP 2021110944 A 20210702

Abstract (en)

Provided is a freezing device (1) that can improve thermal efficiency even in a low outside air temperature and obtain necessary freezing performance. The freezing device includes: a compressor (3) configured to compress a CO₂ refrigerant; a gas cooler (5) configured to cool a CO₂ refrigerant discharged from the compressor (3); and a control unit configured to set a high-pressure target value of the CO₂ refrigerant so that the CO₂ refrigerant in the gas cooler (5) becomes subcritical and perform subcritical control when an outside air temperature is less than a first predetermined temperature, which is lower than the critical point of the CO₂ refrigerant, and a target evaporation temperature in an evaporator to which the CO₂ refrigerant cooled by the gas cooler (5) is guided via an expansion valve (7) is less than or equal to a second predetermined temperature.

IPC 8 full level

F25B 9/00 (2006.01); **F25B 49/02** (2006.01)

CPC (source: EP)

F25B 9/008 (2013.01); **F25B 49/02** (2013.01); **F25B 6/02** (2013.01); **F25B 2500/31** (2013.01); **F25B 2700/1931** (2013.01); **F25B 2700/1933** (2013.01); **F25B 2700/2106** (2013.01); **F25B 2700/21151** (2013.01); **F25B 2700/21152** (2013.01)

Citation (applicant)

JP 2008530501 A 20080807

Citation (search report)

- [A] WO 03019085 A1 20030306 - MAERSK CONTAINER IND AS [DK], et al
- [A] PUROHIT NILESH ET AL: "Energetic and economic analysis of trans-critical CO₂ booster system for refrigeration in warm climatic condition", INTERNATIONAL JOURNAL OF REFRIGERATION, ELSEVIER, AMSTERDAM, NL, vol. 80, 2 May 2017 (2017-05-02), pages 182 - 196, XP085130818, ISSN: 0140-7007, DOI: 10.1016/J.IJREFRIG.2017.04.023

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 4113035 A1 20230104; **EP 4113035 B1 20230927**; **EP 4113035 C0 20230927**; JP 2023007844 A 20230119

DOCDB simple family (application)

EP 22181615 A 20220628; JP 2021110944 A 20210702