

Title (en)
DEVICE AND METHOD FOR REFRIGERATING OR LIQUEFYING A FLUID

Title (de)
VORRICHTUNG UND VERFAHREN ZUM KÜHLEN ODER VERFLÜSSIGEN EINES FLUIDS

Title (fr)
DISPOSITIF ET PROCÉDÉ DE RÉFRIGÉRATION OU DE LIQUÉFACTION D'UN FLUIDE

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Application
EP 22700957 A 20220118

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Abstract (en)
[origin: WO2022171393A1] Disclosed is a device for refrigerating or liquefying a fluid such as natural gas or hydrogen, comprising a circuit (3) for fluid that is to be cooled and has an upstream end for connection to a source (2) of gaseous fluid and a downstream end (23) for connection to a member for collecting the cooled or liquefied fluid, the device (1) comprising a heat exchanger assembly (6, 10) in heat exchange with the circuit (3) of fluid to be cooled, the device (1) comprising a refrigerator (20) in heat exchange with at least a portion of the heat exchanger assembly (6, 10), the refrigerator (20) being of the type that has a cycle for refrigerating a cycle gas containing at least one of: helium, hydrogen, nitrogen or neon; said refrigerator (20) comprising, arranged in series in a cycle circuit (14): a mechanism (15) for compressing the cycle gas, at least one member (7, 6, 10) for cooling the cycle gas, a mechanism (17) for expanding the cycle gas, and at least one member (6, 10) for reheating the expanded cycle gas, wherein the compression mechanism comprises a plurality of compression stages (15) in series composed of a centrifugal compressor assembly, the compression stages (15) being mounted on a set of shafts rotated by an assembly of one or more motors (18), the at least one member (7, 6, 10) for cooling the cycle gas comprising at least one heat exchanger (7) arranged at the outlet of at least one compression stage (15) in heat exchange with the cycle circuit (14), said heat exchanger (7) being cooled by a heat-transfer fluid, characterised in that the compression mechanism comprises at least two compression stages (15) that are arranged successively in series and do not include any member for cooling the cycle gas such as a heat exchanger (7) therebetween.

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