Title (en)

THERMAL ENERGY STORAGE AND RECOVERY WITH A HEAT EXCHANGER ARRANGEMENT HAVING AN EXTENDED THERMAL INTERACTION REGION

Title (de)

SPEICHERUNG UND WIEDERGEWINNUNG VON WÄRMEENERGIE MIT EINER WÄRMETAUSCHERANORDNUNG MIT ERWEITERTER WÄRMEINTERAKTIONSREGION

Title (fr)

DISPOSITIF DE RÉCUPÉRATION ET STOCKAGE D'ÉNERGIE THERMIQUE POURVU D'UN AMÉNAGEMENT D'ÉCHANGEUR DE CHALEUR COMPORTANT UNE RÉGION D'INTERACTION THERMIQUE ÉTENDUE

Publication

EP 2593742 A2 20130522 (EN)

Application

EP 11723029 A 20110525

Priority

- EP 10190013 A 20101104
- EP 10007149 A 20100712
- EP 2011058554 W 20110525
- EP 11723029 A 20110525

Abstract (en)

[origin: WO2012007216A2] A thermal energy storage and recovery device (100, 300) comprises a heat exchanger arrangement (110, 310), which is configured for guiding a flow of a heat transfer medium between a first end (112a) and a second end (114a) of the heat exchanger arrangement, a heat storage material (108), which surrounds the heat exchanger arrangement in such a manner that a thermal interaction region is formed for thermally coupling the heat transfer medium with the heat storage material and a control unit for controlling the operation of the device. The heat exchanger arrangement is adapted to (a) transport the heat transfer medium from the first end to the second end, if the device is in a first operational mode, in which the heat storage material receives thermal energy from the heat transfer medium and (b) transport the heat transfer medium from the second end to the first end, if the device is in a second operational mode, in which the heat storage material releases thermal energy to the heat transfer medium. The thermal interaction region has at least such a physical length along a transport direction of the heat transfer medium and the control unit is configured for operating the device in such a manner, that when storing thermal energy with a hot heat transfer medium or when recovering thermal energy with a cold heat transfer medium within the device there exists a region (R) where the inlet and outlet temperature of the heat transfer medium of this region is kept constant. Further, a corresponding method and a system comprising such a device are described.

IPC 8 full level

F28D 20/00 (2006.01)

CPC (source: EP US)

F01K 3/00 (2013.01 - US); **F02C 6/14** (2013.01 - EP US); **F28D 17/04** (2013.01 - US); **F28D 20/00** (2013.01 - EP US); **F28D 20/0056** (2013.01 - EP US); **F28F 27/02** (2013.01 - EP US); F05D 2220/72 (2013.01 - EP US); F05D 2220/76 (2013.01 - EP US); Y02E 20/14 (2013.01 - EP US); Y02E 60/14 (2013.01 - EP US)

Citation (search report)

See references of WO 2012007216A2

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 2012007216 A2 20120119; **WO 2012007216 A3 20120518**; CN 102985782 A 20130320; CN 102985782 B 20150225; EP 2593742 A2 20130522; US 2013104549 A1 20130502

DOCDB simple family (application)

EP 2011058554 W 20110525; CN 201180034442 A 20110525; EP 11723029 A 20110525; US 201113809192 A 20110525