

Title (en)
HIGH HEAT FLUX REGIME COOLERS

Title (de)
SYSTEMKÜHLER MIT HOHEM WÄRMEFLUSS

Title (fr)
REFROIDISSEURS DE RÉGIME DE FLUX DE CHALEUR ÉLEVÉ

Publication
EP 3759255 A4 20211201 (EN)

Application
EP 19841627 A 20190624

Priority

- US 201862701832 P 20180722
- US 201816101418 A 20180811
- US 201962808857 P 20190222
- US 201916290922 A 20190303
- US 201916422909 A 20190524
- US 2019038752 W 20190624

Abstract (en)
[origin: WO2020023169A1] High heat flux furnace cooler comprise CuNi pipe coils cast inside pours of high purity (99%-Wt) copper. The depth of front copper cover over the pipe coils in the hot face to manufacture into the casting is derived from a projection of thermal and stress conditions existing at the cooler's end-of-campaign-life. CFD and/or FEA analyses and modeling is used for a trial-and-error zeroing in of the optimum geometries to employ in the original casting of CuNi pipe coils in high purity copper casting. Individual pipe coil positions to cast inside a copper casting mold are secured with devices that will not melt, cause thermal shear stresses, or be the source of contaminations or copper defects. Pipe bonding to the casting results because the differential coefficient of expansions of the pipes' and the casting's copper alloys involved do not exceed the yield strength of the casting copper during operational thermal cycling.

IPC 8 full level
F27D 1/12 (2006.01); **C21B 7/10** (2006.01); **C21C 5/46** (2006.01); **F27B 1/24** (2006.01); **F27D 9/00** (2006.01)

CPC (source: EP)
C21B 7/10 (2013.01); **C21C 5/4646** (2013.01); **F27B 1/24** (2013.01); **F27B 14/08** (2013.01); **F27D 1/12** (2013.01); **F27D 9/00** (2013.01); **F27D 2009/0021** (2013.01)

Citation (search report)

- [X1] CN 1280198 A 20010117 - ANSHAN HEAT ENERGY INST MINIST [CN]
- [X1] US 6280681 B1 20010828 - MACRAE ALLAN J [US]
- See references of WO 2020023169A1

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 2020023169 A1 20200130; EP 3759255 A1 20210106; EP 3759255 A4 20211201

DOCDB simple family (application)
US 2019038752 W 20190624; EP 19841627 A 20190624