

Title (en)

Method of manufacturing a cooling plate and a cooling plate manufactured with this method

Title (de)

Kühlplatte sowie Verfahren zu ihrer Herstellung

Title (fr)

Plaque de refroidissement et procédé pour sa fabrication

Publication

**EP 1548133 A1 20050629 (EN)**

Application

**EP 03104532 A 20031203**

Priority

EP 03104532 A 20031203

Abstract (en)

A method of manufacturing a cooling plate comprises following steps: providing a metallic plate body (10) with a front face (12), a rear face (14) and at least one channel (22) extending through the metallic plate body beneath the front face; inserting with radial clearance a metallic tube (30) into the channel (22) so that both tube ends (32, 34) protrude out of the channel (22); and achieving a press fit of the tube (30) within the channel (22) by shrinking the section of the channel (22) and/or expanding the section of the tube (30). <IMAGE>

IPC 1-7

**C21B 7/10**

IPC 8 full level

**C21B 7/10** (2006.01); **F27B 1/24** (2006.01); **F27D 1/12** (2006.01); **F27D 9/00** (2006.01); **F28D 7/00** (2006.01); **F28F 1/14** (2006.01)

CPC (source: EP US)

**C21B 7/10** (2013.01 - EP US); **F27B 1/24** (2013.01 - EP US); **F27D 1/12** (2013.01 - EP US); **F27D 9/00** (2013.01 - EP US); **F28D 7/0041** (2013.01 - EP US); **F28F 1/14** (2013.01 - EP US); **F27D 2009/0018** (2013.01 - EP US); **F27D 2009/0045** (2013.01 - EP US); **F27D 2009/0062** (2013.01 - EP US); **Y10T 29/49863** (2015.01 - EP US); **Y10T 29/49874** (2015.01 - EP US)

Citation (search report)

- [XY] DE 3313998 A1 19831208 - VOEST ALPINE AG [AT]
- [DY] DE 2907511 A1 19800911 - KABEL METALLWERKE GHH, et al
- [DY] WO 0037870 A1 20000629 - OUTOKUMPU OY [FI], et al
- [Y] GB 2079655 A 19820127 - CONNELL JOHN O, et al
- [Y] DATABASE WPI Section Ch Week 197619, Derwent World Patents Index; Class J08, AN 1976-35010X, XP002282752
- [Y] DATABASE COMPENDEX [online] ENGINEERING INFORMATION, INC., NEW YORK, NY, US; ABDULALIYEV Z E ET AL: "Analysis of stresses in tube sheet of heat exchanger by three dimensional models", XP002282751, Database accession no. EIX99254647555 & ASME PET DIV PUBL PD; AMERICAN SOCIETY OF MECHANICAL ENGINEERS, PETROLEUM DIVISION (PUBLICATION) PD; STRUCTURAL DYNAMICS AND VIBRATION 1999 ASME, FAIRFIELD, NJ, USA, 1999

Cited by

WO2015166320A1; RU196503U1; LU91453B1; CN102047060A; LU91494B1; RU2495940C2; WO2009146980A1; WO2010066327A1; WO2010052220A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

DOCDB simple family (publication)

**EP 1548133 A1 20050629**; CN 100434536 C 20081119; CN 1886522 A 20061227; EP 1689891 A1 20060816; RU 2006123428 A 20080120; RU 2338790 C2 20081120; US 2007068664 A1 20070329; WO 2005054519 A1 20050616

DOCDB simple family (application)

**EP 03104532 A 20031203**; CN 200480035355 A 20041203; EP 04804674 A 20041203; EP 2004053264 W 20041203; RU 2006123428 A 20041203; US 58062604 A 20041203