

Title (en)
COOLING RADIATOR FOR A VEHICLE, PARTICULARLY A MOTOR VEHICLE

Title (de)
KÜHLER FÜR EIN FAHRZEUG, INSBESONDERE EIN KRAFTFAHRZEUG

Title (fr)
RADIATEUR DE REFROIDISSEMENT POUR VEHICULE, NOTAMMENT AUTOMOBILE

Publication
EP 2810009 B1 20180822 (FR)

Application
EP 13705741 A 20130201

Priority
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• EP 2013052084 W 20130201

Abstract (en)
[origin: WO2013113900A1] The invention relates to a cooling radiator for a vehicle, in particular a motor vehicle, comprising a bundle allowing the exchange of heat between a first fluid and a second fluid. The bundle includes at least one row of parallel tubes (2) through which the first fluid flows, said tubes being flat and spaced apart from one another by a pitch, known as the tube pitch, in a first direction. In addition, the tubes (2) are provided with corrugations (22) designed to disrupt the flow of the first fluid. The tube pitch is between 5 and 8 mm.

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F28F 1/022 (2013.01 - EP US); **F28F 2001/027** (2013.01 - EP US)

Citation (opposition)
Opponent : MAHLE International GmbH
• US 2012024510 A1 20120202 - KOHL MICHAEL [DE], et al
• US 2005045314 A1 20050303 - ELBOURINI REFKI [US]
• EP 0710811 A2 19960508 - NIPPON DENSO CO [JP]
• US 2002153131 A1 20021024 - SUGAWARA MASATSUGU [JP], et al
• WO 2010089287 A1 20100812 - BEHR GMBH & CO KG [DE], et al
• WO 2005052490 A1 20050609 - BEHR GMBH & CO KG [DE], et al
• US 2007287334 A1 20071213 - YAGISAWA KENJI [JP], et al
• DE 10127084 A1 20020328 - BEHR GMBH & CO [DE]

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DOCDB simple family (publication)
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