

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.

IPC 8 full level  
**F28D 1/03** (2006.01)

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**F28D 1/0391** (2013.01 - EP US); **F28D 1/05358** (2013.01 - US); **F28F 1/06** (2013.01 - US); **F28D 2021/0094** (2013.01 - EP US);  
**F28F 1/022** (2013.01 - EP US); **F28F 2001/027** (2013.01 - EP US)

Citation (opposition)  
Opponent : **MAHLE International GmbH**  
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• 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  
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**EP 2013052084 W 20130201**; CN 201380012171 A 20130201; EP 13705741 A 20130201; FR 1251015 A 20120203; JP 2014555231 A 20130201; JP 2018000299 A 20180104; PL 13705741 T 20130201; US 201314375846 A 20130201