

Title (en)
HEAT EXCHANGE DEVICE

Title (de)
WÄRMETAUSCHERVORRICHTUNG

Title (fr)
DISPOSITIF D'ÉCHANGE DE CHALEUR

Publication
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Application
EP 17150970 A 20170111

Priority
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Abstract (en)
The present invention relates to a heat exchange device suitable for cooling recirculated exhaust gases in an EGR (Exhaust Gas Recirculation) system. The invention is characterized by a configuration that allows incorporating the heat exchanger in very small spaces and with the recirculated exhaust gas inlets and outlets not necessarily being aligned. It is also characterized by an inner configuration based on the stack of flat tubes configured by means of die-cut and stamped sheets configuring a complex path of the fluid to be cooled. According to embodiments, the invention is incorporated in a cavity of the engine block of an internal combustion engine with fluid communication with the liquid coolant. The present invention has an impact on protecting the environment.

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Citation (search report)
• [X] US 2009260787 A1 20091022 - KALBACHER KLAUS [DE]
• [X] US 2007023174 A1 20070201 - BROST VIKTOR [DE]
• [Y] KR 20150067667 A 20150618 - HALLA VISTEON CLIMATE CONTROL [KR]
• [A] US 2015316330 A1 20151105 - KENNEY BENJAMIN A [CA], et al
• [Y] JP 2009114924 A 20090528 - TOKYO RADIATOR SEIZO KK
• [Y] JP 2012132614 A 20120712 - YUTAKA GIKEN CO LTD
• [Y] JP 2014194296 A 20141009 - USUI KOKUSAI SANGYO KK

Cited by
EP3505859A1; DE102017130153A1; US2019186434A1; FR3084408A1; WO2020065281A1; US10900446B2; DE102017130153B4

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