Title (en)

METHOD FOR DESIGNING AN EXHAUST GAS COOLING SYSTEM

Title (de)

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Title (fr)

PROCEDE POUR LA CONCEPTION D'UN SYSTEME DE REFROIDISSEMENT DE GAZ D'ECHAPPEMENT

Publication

**EP 1458959 B1 20060125 (DE)**

Application

**EP 02787586 A 20021107**

Priority

- DE 10161398 A 20011213
- EP 0212412 W 20021107

Abstract (en)

[origin: DE10161398A1] The invention relates to a method for cooling a catalytic device (18) in the exhaust gas system (14 20) of an internal combustion engine (12) of a motor vehicle (10) by connecting a passive exhaust gas cooling device (14, 20) upstream whose cooling capacity, which is dependent on the operating states of the vehicle, engine and of the exhaust gas system, cannot be influenced. Said exhaust gas cooling device consists of an exhaust gas cooler (20) and of an exhaust gas section (14), which is connected upstream and/or downstream and whose cooling capacity is correlated with the required power of the motor vehicle (10) for overcoming level road resistances and with the displacement of the internal combustion engine (12). The inventive method is particularly suited for cooling an NO<sb>x</sb> storage-type catalytic converter (18) connected downstream from a DI spark ignition engine that is shift operable and/or can run lean, since the DI spark ignition engine (12), in the event of a corresponding lowering of the catalytic converter temperature in broad operating ranges, can be operated in an economical lean operation while optimizing consumption. The invention also relates to an exhaust gas system (14 - 20) and to a vehicle (10) for carrying out this method.
[origin: DE10161398A1] The method involves using a passive cooling device operated depending on vehicle, engine and exhaust system operating states. At a constant speed of 100 km/h, ambient temperature 20 deg. C, relative humidity 20-80 per cent and wind speed less than 3 m/s the cooling power is f x PBFZG100 x (1.6/VH)n, where f and n are parameters, PBFZG100 is the power in kW required to cruise on the flat at 100 km/h and VH is the engine's stroke volume in liters. The method involves the use of a passive cooling device operated depending on the vehicle, engine and exhaust system operating states. At a constant speed of 100 km/h at an ambient temperature of 20 deg. C, relative humidity of 20-80 per cent and wind speed less than 3 m/s the cooling power is f x PBFZG100 x (1.6/VH)n, where f is a parameter between 0.3 and 0.55, PBFZG100 is the power in kW required to cruise on the flat at 100 km/h, VH is the engine's stroke volume in liters and n is between 0.3 and 50.8. Independent claims are included for: (i) an exhaust gas system for an internal combustion engine; and (ii) a motor vehicle with an IC engine and exhaust gas system.

IPC 8 full level

**F01N 3/02** (2006.01); **F01N 3/05** (2006.01); **F01N 3/08** (2006.01)

CPC (source: EP)

**F01N 3/0205** (2013.01); **F01N 3/05** (2013.01); **F01N 3/0814** (2013.01); **F01N 3/0842** (2013.01); F01N 2240/02 (2013.01)

Citation (examination)

DE 19522274 A1 19970102 - WESTERNHAGEN HERMANN VON [DE]

Designated contracting state (EPC)

CZ DE ES FR GB IT

DOCDB simple family (publication)

**DE 10161398 A1 20030618**; DE 50205720 D1 20060413; EP 1458959 A1 20040922; EP 1458959 B1 20060125; WO 03054363 A1 20030703

DOCDB simple family (application)

**DE 10161398 A 20011213**; DE 50205720 T 20021107; EP 0212412 W 20021107; EP 02787586 A 20021107