

Title (en)  
METHOD FOR CONTROLLING A WASTE-HEAT UTILIZATION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Title (de)  
VERFAHREN ZUR STEUERUNG EINES ABWÄRMENUTZUNGSSYSTEMS FÜR EINE BRENNKRAFTMASCHINE

Title (fr)  
PROCÉDÉ DE COMMANDE D'UN SYSTÈME DE RÉCUPÉRATION DE CHALEUR PERDUE POUR UN MOTEUR À COMBUSTION INTERNE

Publication  
**EP 3320190 A1 20180516 (DE)**

Application  
**EP 16740953 A 20160711**

Priority  
• AT 506082015 A 20150710  
• AT 2016050246 W 20160711

Abstract (en)  
[origin: WO2017008094A1] The invention relates to a method for controlling a waste-heat utilization system (20) for an internal combustion engine (10) of a vehicle, wherein the waste-heat utilization system (20) has at least one expander (22), which can transmit torque to the internal combustion engine (10) and which can be bypassed by means of a bypass flow path (25), at least one evaporator (21), and at least one pump (24) for an operating medium, and wherein at least the evaporator (21) is arranged in the region of the exhaust gas system (11) of the internal combustion engine (10). The expander (22), which can be operated in several operating modes, has a driving connection to a secondary drive shaft (19) of the internal combustion engine in at least one operating mode. An operating mode of the waste-heat utilization system (20) is selected by a control device (30) on the basis of at least one input variable and the waste-heat utilization system (20) is operated in said operating mode. The input variable is selected by the control device (30) from the group consisting of expander rotational speed (n), gear information (GI), coasting information (CI), and pressure (p1, p2) and temperature (T1, T2) of the operating medium upstream or downstream of the expander (22). A first operating mode (1) is associated with a warm-up phase of the expander (22) and a second operating mode (2) is associated with a normal operating phase of the expander (22). In the first operating mode, the bypass flow path (25) is opened and the expander (22) is not connected to a secondary drive shaft (19) of the internal combustion engine (10). In the second operating mode, the bypass flow path (25) is closed and the expander (22) is connected to the internal combustion engine (10). The second operating mode (2) is selected if the pressure (p2) and/or the temperature (T2) of the operating medium downstream of the expander (22) exceeds a defined value.

IPC 8 full level  
**F01K 23/06** (2006.01); **F01K 23/14** (2006.01)

CPC (source: AT EP US)  
**F01K 13/02** (2013.01 - US); **F01K 23/065** (2013.01 - AT EP US); **F01K 23/14** (2013.01 - EP US); **F01K 25/08** (2013.01 - US); **F02G 5/02** (2013.01 - AT US)

Citation (search report)  
See references of WO 2017008094A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**WO 2017008094 A1 20170119**; AT 517911 A1 20170515; AT 517911 B1 20180315; CN 107896502 A 20180410; CN 107896502 B 20191217; EP 3320190 A1 20180516; EP 3320190 B1 20190320; US 10858961 B2 20201208; US 2020088069 A1 20200319

DOCDB simple family (application)  
**AT 2016050246 W 20160711**; AT 506082015 A 20150710; CN 201680040637 A 20160711; EP 16740953 A 20160711; US 201615743184 A 20160711