A method pertaining to an HC dosing system for cleaning of exhaust gases from an engine (150), including a dosing unit in thermal contact with the engine’s exhaust system (250) and supplying a fuel to an exhaust duct (240) of the exhaust system, the step of determining (340) whether there is an undesired temperature level of the dosing unit (250), and if so, limiting (360) the temperature of the exhaust duct (240) by control of operation of the engine. Also a computer programme product containing programme code (P) for a computer (200, 210, 400) for implementing the method, and also to a device and a motor vehicle (100) which is equipped with the device.
Start

Controls engine operation

Ends

Fig. 3a

Start

Measure first temperature value

Calculates second temperature value

Compare temperature values

Choose temperature value

Determine maximum permissible exhaust temperature

Adopt measure(s) for influencing exhaust temperature

Ends

Fig. 3b
METHOD AND DEVICE PERTAINING TO LIMITING THE TEMPERATURE OF A HC DOSSING UNIT IN AN EXHAUST SYSTEM

TECHNICAL FIELD

[0001] The present invention relates to a method pertaining to an HC dosing system for cleaning of exhaust gases from an engine, comprising a dosing unit situated in thermal contact with the engine’s exhaust system and intended to supply a fuel to an exhaust duct of the exhaust system. The invention relates also to a computer programme product which contains programme code for a computer for implementing a method according to the invention. The invention relates also to a device of an HC dosing system for exhaust cleaning for an engine and a motor vehicle which is equipped with the HC dosing system.

BACKGROUND

[0002] In vehicles today, diesel fuel is used as fuel in DPF (diesel particulate filter) systems which comprise a particle filter. The particle filter is adapted to capturing, for example, diesel particles and soot. During active regeneration of the particle filter, diesel fuel is supplied to an exhaust pipe downstream of an engine and is led into an oxidation catalyst, also called DOC. In the oxidation catalyst, said diesel fuel is burnt and causes a rise in the temperature of the exhaust system. Active regeneration of the particle filter situated downstream of the oxidation catalyst can thus be effected.

[0003] One type of DPF system comprises a container for diesel fuel. The DPF system may also have a pump adapted to drawing said diesel fuel from the container via a suction hose and to supplying it via a pressure hose to a dosing unit situated adjacent to an exhaust system of the vehicle, e.g. adjacent to an exhaust pipe of the exhaust system. The dosing unit is adapted to injecting a necessary amount of diesel fuel into the exhaust pipe upstream of the particle filter according to operating routines stored in a control unit of the vehicle. To make it easier to regulate the pressure when no or only small amounts are being dosed, the system also comprises a return hose which runs back from a pressure side of the system to the container. This configuration makes it possible to cool the dosing unit by means of said diesel fuel which, during cooling, flows from the container via the pump and the dosing unit and back to the container. This results in active cooling of the dosing unit. The return flow from the dosing valve to the container is currently substantially constant.

[0004] As the dosing unit is currently situated adjacent to the vehicle’s exhaust system which becomes warm during operation of the vehicle, e.g. depending on the engine’s load, there is risk of the dosing valve becoming overheated. Overheating of the dosing unit may entail degradation of its functionality, potentially impairing its performance.

[0005] The dosing unit currently comprises electrical components, certain of them being provided with a circuit card. Said circuit card may for example be adapted to controlling the dosing of diesel fuel to the vehicle’s exhaust system. For various reasons, these electrical components are sensitive to high temperatures. Too high temperatures of the dosing unit may result in degradation of the electrical components, potentially leading to expensive repairs at a service workshop. Moreover, diesel fuel present in the dosing unit may at least partly convert to solid form at too high temperatures, potentially leading to obstruction of the dosing unit. According to an example, said diesel fuel undergoes pyrolysis in the dosing unit and is thereby at least partly converted to coke. Thus at least part of said diesel fuel may carbonise. It is therefore of utmost importance that the temperature of the dosing unit of the DPF system not exceed a critical level.

SUMMARY OF THE INVENTION

[0006] There is thus a need to improve current HC dosing systems in order to reduce or eliminate the above disadvantages.

[0007] An object of the present invention is to propose a novel and advantageous method for improving the performance of an HC dosing system.

[0008] An object of the present invention is to propose a novel and advantageous method for improving the performance of an HC dosing system when a dosing unit has insufficient or no cooling flow.

[0009] Another object of the present invention is to propose a novel and advantageous device of an HC dosing system and a novel and advantageous computer programme for improving the performance of an HC dosing system.

[0010] Another object of the present invention is to propose a novel and advantageous device of an HC dosing system and a novel and advantageous computer programme for improving the performance of an HC dosing system when a dosing unit has insufficient or no cooling flow.

[0011] Another object of the present invention is to propose a method pertaining to an HC dosing system, which method results in reduced risk of undesirable functional degradation of components of the HC dosing system and/or reduced risk of obstruction of components, e.g. a dosing unit, of the HC dosing system with respect to a fuel.

[0012] A further object of the invention is to propose an alternative method pertaining to an HC dosing system and an alternative computer programme pertaining to an HC dosing system, and an alternative device of an HC dosing system.

[0013] These objects are achieved with a method pertaining to an HC dosing system for exhaust cleaning for an engine, according to claim 1.

[0014] An aspect of the invention proposes a method pertaining to an HC dosing system for cleaning of exhaust gases from an engine, comprising a dosing unit situated in thermal contact with the engine’s exhaust system and intended to supply a fuel to an exhaust duct of the exhaust system, comprising the step of determining whether there is an undesired temperature level of said dosing unit. The method comprises also the step, if it is found that there is said undesired temperature level, of limiting the temperature of said exhaust duct by control of the operation of said engine.

[0015] In cases where cooling of the dosing unit is not sufficient, whereupon a temperature of the dosing unit rises to an undesired level, a temperature of exhaust gases in the exhaust system may be controlled by influencing the operation of the engine. With advantage, the result is a method which entails less risk of too high temperatures of the dosing unit. This prevents the dosing unit from sustaining permanent damage or the fuel from causing obstruction in the dosing unit as a result of carbonisation.

[0016] Said limitation of the temperature may be achieved by reducing a maximum available torque of an output shaft of the engine. To this end, neither a driver nor a stored operating routine may demand more torque than the maximum available torque. Reducing the maximum available torque will lower a temperature of the exhaust gases in the exhaust duct.
Said reduction of the maximum available torque may be effected by ramping or in discrete stages. Said reduction of the maximum available torque may be based on a temperature of the exhaust gases in the exhaust duct which is either detected or is calculated by means of a stored model. Alternatively, said reduction of the maximum available torque may be based on a temperature of the dosing unit which is either measured or is calculated by means of a stored model.

[0017] Said limitation of the temperature may be achieved by influencing an EGR content of the engine. By influencing said EGR content it is possible for a temperature of the exhaust gases in the exhaust duct to be actively regulated to a desirable predetermined level. By altering said EGR content it is possible for a temperature of the exhaust gases in the exhaust duct to be actively lowered to a desirable predetermined level. Improved cooling of the dosing unit will thus be made possible.

[0018] Said limitation of the temperature may be achieved by influencing injection times for fuel of at least one cylinder of the engine or by influencing injection times of at least one cylinder of the engine. By altering injection times of at least one cylinder of a diesel engine, or an ignition time of at least one cylinder of an Otto engine, it is possible for a temperature of the exhaust gases in the exhaust duct to be actively regulated to a desirable predetermined level. By shifting injection times or an ignition time it is possible for a temperature of the exhaust gases in the exhaust duct to be actively lowered to a desirable predetermined level. Improved cooling of the dosing unit will thus be made possible.

[0019] Said undesired temperature level may be set on the basis of characteristics of said fuel. Said temperature level may in particular be set on the basis of a temperature at which said fuel begins to be adversely affected and/or become unstable. Said temperature level may be within a range of 80-130 degrees Celsius. Said temperature level may be a temperature which is higher than 130 degrees Celsius. According to an example with rather sensitive fuel said temperature level may be within a range of 60-90 degrees Celsius.

[0020] The step of determining whether there is an undesired temperature level of said dosing unit may be based on at least one of the following steps:

[0021] measuring a temperature directly of the dosing unit;
[0022] measuring a temperature of an exhaust flow in said exhaust duct; and
[0023] calculating a temperature of said dosing unit by means of a calculation model.

[0024] Measuring a temperature directly of the dosing unit provides an exact measurement of the prevailing temperature there.

[0025] Measuring a temperature of the exhaust flow in the exhaust duct, or a temperature of a component of the exhaust system of the HC dosing system, e.g. the exhaust duct, may provide an indication of a prevailing temperature of the dosing unit. Measurement of the temperature of the exhaust flow in the exhaust duct is a good complement or alternative to directly measuring a temperature of the dosing unit.

[0026] Calculating a temperature of said dosing unit by means of a calculation model is a variant involving no need for physical sensors adjacent to the dosing unit and/or the exhaust duct (the exhaust system). It is therefore a cost-effective variant for determining a temperature of the dosing unit.

[0027] Determining (measuring or calculating) a temperature of the dosing unit, or determining (measuring or calculating) a temperature of some other component of the HC dosing system, which temperature corresponds to a temperature of the dosing unit, makes it possible to detect any occurrence of an undesired temperature level of a dosing unit adapted to supplying fuel to an exhaust duct.

[0028] According to an example, a future temperature of the dosing unit may be predicted by means of a stored calculation model. According to an example, a prevailing load upon an engine of the HC dosing system may for example be catered for. It is well known that an exhaust temperature rise pertaining to an increase in engine load entails a certain time lag. A future temperature of the dosing unit may therefore be predicted on the basis of a prevailing load, or change of load, upon the engine of the HC dosing system.

[0029] Said fuel may be diesel fuel or some other hydrocarbon-based fuel.

[0030] The method may further comprise the step of manually disengaging the step of controlling the operation of said engine in order to limit the temperature of said exhaust duct. During operating states in which there is insufficient cooling of the dosing unit, automatic control of the engine’s operation is initiated in order to lower a temperature of the exhaust flow in a desirable way. If the HC dosing system is fitted in a rescue vehicle, e.g. a fire engine, a driver or some other member of the vehicle’s crew may choose to actively discontinue said control of the engine’s operation. This may result in the undesired consequence, for example, that the dosing unit is destroyed by too high temperatures and that the vehicle may thereupon release too large amounts of undesirable emissions. In the case of an urgent rescue, however, the innovative method may be overridden in order to prioritise high vehicle speed and high available engine torque. Deactivation of the innovative method may be by means of a push-button which is fitted in a driving cab of the vehicle and is signal-connected to a control unit of the vehicle.

[0031] The method is easy to implement in existing motor vehicles. Software pertaining to an HC dosing system for exhaust cleaning for an engine according to the invention may be installed in a control unit of the vehicle during the manufacture of the vehicle. A purchaser of the vehicle may thus have the possibility of selecting the function of the method as an option. Alternatively, software which comprises programme code for applying the innovative method pertaining to an HC dosing system for exhaust cleaning for an engine may be installed in a control unit of the vehicle on the occasion of upgrading at a service station, in which case the software may be loaded into a memory in the control unit. Implementing the innovative method is therefore cost-effective, particularly since no further components or subsystems need be installed in the vehicle. Relevant hardware is currently already provided in the vehicle. The invention therefore represents a cost-effective solution to the problems indicated above.

[0032] An aspect of the present invention proposes a device of an NC dosing system for cleaning of exhaust gases from an engine, comprising a dosing unit situated in thermal contact with the engine’s exhaust system and intended to supply a fuel to an exhaust duct of the exhaust system, further comprising:

[0033] means for determining whether there is an undesired temperature level of said dosing unit, and
means, if it is found that there is said undesired temperature level, for limiting the temperature of said exhaust duct by control of the operation of said engine.

The device may comprise means for reducing a maximum available torque of an output shaft of the engine in order to achieve said limitation of the temperature.

The device may comprise means for influencing an EGR content of the engine in order to effect said limitation of the temperature. Said limitation of the temperature may be achieved by influencing injection times for fuel of at least one cylinder of the engine or by influencing ignition times of at least one cylinder of the engine.

The device may comprise at least one of the following:

means for measuring a temperature directly of the dosing unit;

means for measuring a temperature of an exhaust flow in said exhaust duct; and

means for calculating a temperature of said dosing unit by means of a calculation model.

The above objects are also achieved with a motor vehicle which comprises the features of the device herein described of an HC dosing system. The vehicle may be a truck, bus or passenger car.

An aspect of the invention proposes a computer programme pertaining to an HC dosing system for exhaust cleaning for an engine, which programme contains programme code stored on a computer-readable medium for causing an electronic control unit or another computer connected to the electronic control unit to perform steps according to any of claims 1-7.

An aspect of the invention proposes a computer programme pertaining to an HC dosing system for exhaust cleaning for an engine, which programme contains programme code for causing an electronic control unit or another computer connected to the electronic control unit to perform steps according to any of claims 1-7.

An aspect of the invention proposes a computer programme product containing a programme code stored on a computer-readable medium for performing method steps according to any of claims 1-7 when said programme is run on an electronic control unit or another computer connected to the electronic control unit.

Software which contains programme code pertaining to an HC dosing system for exhaust cleaning for an engine is easy to update or replace. Moreover, different parts of the software containing programme code pertaining to an HC dosing system for exhaust cleaning for an engine may be replaced independently of one another. This modular configuration is advantageous from a maintenance perspective.

Further objects, advantages and novel features of the present invention will become apparent to one skilled in the art from the following details, and also by putting the invention into practice. Whereas the invention is described below, it should be noted that it is not restricted to the specific details described. Specialists having access to the teachings herein will recognise further applications, modifications and incorporations within other fields, which are within the scope of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

For fuller understanding of the present invention and further objects and advantages of it, the detailed description set out below should be read together with the accompanying drawings, in which the same reference notations denote similar items in the various diagrams, and in which:

FIG. 1 illustrates schematically a vehicle according to an embodiment of the invention;

FIG. 2 illustrates schematically a subsystem for the vehicle depicted in FIG. 1, according to an embodiment of the invention;

FIG. 3a is a schematic flowchart of a method according to an embodiment of the invention;

FIG. 3b is a more detailed schematic flowchart of a method according to an embodiment of the invention; and

FIG. 4 illustrates schematically a computer according to an embodiment of the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

FIG. 1 depicts a side view of a vehicle 100. The exemplified vehicle 100 comprises a tractor unit 110 with an engine 150 and a trailer 112. The vehicle may be a heavy vehicle, e.g. a truck or a bus. The vehicle may alternatively be a passenger car.

It should be noted that the invention is applicable to any suitable HC dosing system and is therefore not restricted to DPF systems of motor vehicles. The innovative method and the innovative device according to an aspect of the invention are well suited to other platforms which have an HC dosing system than motor vehicles, e.g. watercraft. The watercraft may be of any kind, e.g. motorboats, steamers, ferries or ships.

The innovative method and the innovative device according to an aspect of the invention are also well suited to various kinds of power plants, e.g. an electric power plant comprising a diesel generator.

The innovative method pertaining to an HC dosing system and the innovative device of an HC dosing system are well suited to any engine system which comprises an engine and an HC dosing system, e.g. on a locomotive or some other platform.

The innovative method and the innovative device are well suited to any system which comprises a particle generator (e.g. a combustion engine) and an HC dosing system.

The innovative method and the innovative device are well suited to any system which comprises any kind of system which generates exhaust gases with particles and a filter which stores particles, which particles are burnt during regeneration of said filter, particularly during active regeneration of said filter.

The term “link” refers herein to a communication link which may be a physical connection such as an opto-electronic communication line, or a non-physical connection such as a wireless connection, e.g. a radio link or microwave link.

The term “line” refers herein to a passage for holding and conveying a fluid, e.g. a fuel in liquid form. The line may be a pipe of any suitable size. The line may be made of any suitable material, e.g. plastic, rubber or metal.

The term “fuel” refers herein to an agent used for active regeneration of a particle filter of an HC dosing system. Said fuel according to a version is diesel fuel. Other kinds of hydrocarbon-based fuels, e.g. synthetic fuels, may of course
be used. Diesel fuel is herein cited as an example of a fuel, but one skilled in the art will appreciate that the innovative method and the innovative device are feasible for other types of fuels, subject to necessary adaptations, e.g., adaptations to adjust carbonization temperatures for fuels adopted, in control algorithms for executing software code in accordance with the innovative method.

Although the term “HC dosing system” is herein used to denote a particle filter system, the invention is not restricted to use of a diesel particle filter. On the contrary, other types of particle filter may be used according to the invention. One skilled in the art will appreciate which kind of fuel is best suited to regenerating the particle filter adopted.

FIG. 2 depicts a subsystem 299 of the vehicle 100. The subsystem 299 is situated in the tractor unit 110. The subsystem 299 may form part of an HC dosing system. The subsystem 299 consists according to this example of a container 205 adapted to containing a fuel. The container 205 is adapted to containing a suitable amount of fuel and to being replenishable as necessary. The container may accommodate, for example, 200 or 1500 litres of fuel.

A first line 271 is adapted to leading the fuel to a pump 230 from the container 205. The pump 230 may be any suitable pump. The pump 230 may be a diaphragm pump provided with at least one filter. The pump 230 is adapted to being driven by an electric motor. The pump 230 is adapted to drawing the fuel from the container 205 via the first line 271 and supplying it via a second line 272 to a dosing unit 250. The dosing unit 250 comprises an electrically controlled dosing valve by means of which a flow of fuel added to the exhaust system can be controlled. The pump 230 is adapted to pressurising the fuel in the second line 272. The dosing unit 250 is provided with a throttle unit against which said pressure of the fuel is built up in the subsystem 299.

The dosing unit 250 is adapted to supplying said fuel to an exhaust system (not depicted) of the vehicle 100. More specifically, the dosing unit 250 is adapted to supplying a suitable amount of fuel in a controlled way to an exhaust system of the vehicle 100. According to this version, a particle filter (not depicted), e.g. a DPF, is situated downstream of a location in the exhaust system where the fuel is supplied. The amount of fuel supplied in the exhaust system is intended to be used in a conventional way in the HC dosing system for influencing fuel return of the particle filter.

The dosing unit 250 is situated adjacent to, for example, an exhaust pipe which is itself adapted to leading exhaust gases from the combustion engine 150 of the vehicle 100 to said particle filter. The dosing unit 250 is situated in thermal contact with the exhaust system of the vehicle 100. This means that thermal energy stored in, for example, an exhaust pipe, silencer, particle filter and SCR catalyst can thus be led to the dosing unit 250.

The dosing unit 250 is provided with an electronic control card which is adapted to handling communication with a control unit 200. The dosing unit 250 comprises also plastic and/or rubber components which might melt or be otherwise adversely affected as a result of too high temperatures.

The dosing unit 250 is sensitive to temperatures above a certain value, e.g. 120 degrees Celsius. As for example the exhaust pipe, the silencer and the particle filter of the vehicle 100 exceed this temperature value, there is risk that the dosing unit 250 might become overheated during or after operation of the vehicle if not provided with cooling.
tion times of at least one cylinder of the engine, in accordance with an aspect of the innovative method. This may also be done in combination with said reduction of the maximum available torque of an output shaft of the engine and/or said influencing of the engine's EGR content.

[0080] A second control unit 210 is arranged for communication with the first control unit 200 via a link 201. The second control unit 210 may be detachably connected to the first control unit 200. The second control unit 210 may be a control unit external to the vehicle 100. The second control unit 210 may be adapted to performing the innovative method steps according to the invention. The second control unit 210 may be used to cross-load software to the first control unit 200, particularly software for applying the innovative method. The second control unit 210 may alternatively be arranged for communication with the first control unit 200 via an internal network in the vehicle. The second control unit 210 may be adapted to performing substantially similar functions to those of the first control unit 200, e.g. determining whether there is an undesired temperature level of the dosing unit 250, which dosing unit 250 is adapted to supplying fuel to an exhaust duct, and if it is found that there is said undesired temperature level, limiting the temperature of said exhaust duct by control of the operation of said engine. The innovative method may be applied by the first control unit 200 or the second control unit 210 or by both the first control unit 200 and the second control unit 210.

[0081] According to this version, a compressed air source 260 is provided to supply compressed air to the dosing unit 250 via a line 261. The dosing unit 250 is adapted to using said compressed air supply to divide more finely the fuel dosed. The compressed air may also be used for at least partly causing the dosing unit to dose said fuel into the exhaust duct. The compressed air may also be used to blow air out of, for example, the dosing unit 250 any fuel which may be present therein. This may be done during operation of the engine 150 or after the engine 150 has been switched off.

[0082] According to a version, the container 205 may be the vehicle's fuel tank, in which case portions of the vehicle's existing fuel system are utilised according to the present invention. According to another example, the container may be a separate container, i.e. not the same container as the vehicle's fuel tank.

[0083] According to a version, the dosing unit 250 is situated immediately adjacent to an exhaust duct of the HC dosing system. According to another example, the dosing unit 250 is provided with a passive nozzle running through said exhaust duct to dose said fuel directly into the exhaust duct.

[0084] According to a version, said pump 230 is the same pump as normally generates fuel pressure for an injection system of the engine 150. According to another example, said pump 230 is a separate pump, i.e. not the same pump as normally generates the fuel pressure for the injection system.

[0085] According to an example, a precatalyst and/or oxidation catalyst are/is fitted in series with, and upstream of, the particle filter.

[0086] FIG. 3a is a schematic flowchart of a method pertaining to an HC dosing system for cleaning of exhaust gases from an engine 150 which comprises a dosing unit situated in thermal contact with the engine's exhaust system 250 and intended to supply a fuel to an exhaust duct 240 of the exhaust system, according to an embodiment of the invention. The method comprises a first step s301. Method step s301 comprises the steps of determining whether there is an undesired temperature level of said dosing unit 250 and, if it is found that there is said undesired temperature level, of limiting the temperature of said exhaust duct 240 by control of the operation of said engine. The method ends after step s301.

[0087] FIG. 3b is a schematic flowchart of a method pertaining to an HC dosing system for cleaning of exhaust gases from an engine 150 which comprises a dosing unit situated in thermal contact with the engine's exhaust system 250 and intended to supply a fuel to the exhaust duct 240 of the exhaust system, according to an embodiment of the invention.

[0088] The method comprises a first step s310. Method step s310 comprises the step of determining a prevailing temperature of the dosing unit 250. This is done by direct measurement of prevailing temperatures adjacent to the dosing unit 250. Step s310 measures a first temperature value T1 which represents a prevailing temperature of the dosing unit 250. Step s310 is followed by a step s320.

[0089] Method step s320 comprises the step of determining indirectly an estimated prevailing temperature of the dosing unit 250. This is done by measurement of a prevailing temperature T2 adjacent to some other component of the HC dosing system than the dosing unit 250. Step s310 measures a second temperature value T2 of some other component than the dosing unit 250. The measured temperature T2 may be used to determine (calculate) a first estimated prevailing temperature T_est of the dosing unit 250. An alternative is that a second estimated prevailing temperature T_est of the dosing unit 250 may be determined (calculated) by means of a calculation model which has as input value some other parameter than temperature of a component of the HC dosing system. Such an input parameter may for example be a prevailing load upon the engine 150. It should also be noted that according to a version it is possible to use solely the measured temperature T1 of the dosing unit 250 for determining a highest temperature value Tmax as below. In certain cases it is advantageous to use both the measured temperature T1 and at least one of the estimated prevailing temperatures T_est and T_est for determining a highest temperature value Tmax as below, resulting in a more robust method. It should be noted that steps s310 and s320 may be performed substantially simultaneously, or in reverse order. Step s320 is followed by a step s330.

[0090] Method step s330 comprises the step of comparing the determined first temperature T1 and at least one of said estimated prevailing temperatures T_est and T_est of the dosing unit 250. Step s330 is followed by a step s340.

[0091] Method step s340 comprises the step of using a result of said comparison between the determined first temperature T1 and the at least one estimated prevailing temperature (T_est, T_est) of the dosing unit 250 as a basis for choosing the highest among the values compared. This highest temperature value is also called Tmax. Step s340 comprises also the step of determining whether there is an undesired temperature level of the dosing unit, in cases where said dosing unit is adapted to supplying fuel to an exhaust duct. This may be done by comparison with a limit value Tth such as a predetermined temperature value, e.g. 70 or 100 degrees Celsius, depending on which kind of fuel is used in the HC dosing system. If Tmax is greater than or equal than Tth, it may be found that there is an undesired temperature level of the dosing unit. If Tmax is smaller than Tth, it may be found that there is no undesired temperature level of the dosing unit 250.
[0092] According to an alternative version, it is possible, as described above, to determine whether there is an undesired temperature level of the dosing unit 250 on the sole basis of the measured temperature T1 of the dosing unit, resulting in a less complex method, according to an aspect of the invention.

[0093] Step s340 is followed by a step s350.

[0094] Method step s350 comprises the step of using the chosen value Tmax as a basis for determining a maximum permissible exhaust temperature Tm. The maximum permissible exhaust temperature Tm may be determined by a reference data consultation process whereby the chosen value Tmax is related to a maximum permissible exhaust temperature Tm, e.g. in tabular form. The maximum permissible exhaust temperature Tm may alternatively be determined by means of a calculation model for which the chosen value Tmax is an input value. Step s350 is followed by a step s360.

[0095] Method step s360 comprises the step of using the determined maximum permissible exhaust temperature Tm as a basis for adopting at least one measure for influencing the temperature of the exhaust flow in the exhaust duct 240. According to a version, at least one measure is chosen from among the following:

[0096] reducing a maximum available torque of an output shaft of the engine;

[0097] influencing an EGR content of the engine;

[0098] influencing injection times for fuel of at least one cylinder of the engine, or influencing ignition times of at least one cylinder of the engine; and

[0099] influencing an air flow of the engine by means of one or more dampers, e.g. a throttle at the inlet and/or outlet side of the engine.

[0100] The method ends after step s360.

[0101] FIG. 4 is a diagram of a version of a device 400. The control units 200 and 210 described with reference to FIG. 2 may in a version comprise the device 400. The device 400 comprises a non-volatile memory 420, a data processing unit 410 and a read/write memory 450. The non-volatile memory 420 has a first memory element 430 in which a computer programme, e.g. an operating system, is stored for controlling the function of the device 200. The device 400 further comprises a bus controller, a serial communication port, I/O means, an A/D converter, a time and date input and transfer unit, an event counter and an interruption controller (not depicted). The non-volatile memory 420 has also a second memory element 440.

[0102] A proposed computer programme P comprises routines for determining whether there is an undesired temperature level of a dosing unit 250 which is situated in thermal contact with the engine’s exhaust system 250 and adapted to supplying fuel to an exhaust duct 240 of the exhaust system, and, if it is found that there is said undesired temperature level, for limiting the temperature of said exhaust duct by control of the operation of said engine, in accordance with the innovative method.

[0103] The programme P comprises routines for, where appropriate, reducing a maximum available torque of an output shaft of the engine in order to achieve limitation of the temperature of the exhaust duct 240.

[0104] The programme P comprises routines for, where appropriate, influencing an EGR content of the engine 150 in order to achieve limitation of the temperature of the exhaust duct 240.

[0105] The programme P comprises routines for, where appropriate, influencing injection times for fuel of at least one cylinder of the engine 150 or influencing ignition times in at least one cylinder of the engine 150, in order to achieve limitation of the temperature of the exhaust duct 240.

[0106] The programme P may be stored in an executable form or in a compressed form in a memory 460 and/or in a read/write memory 450.

[0107] Where the data processing unit 410 is described as performing a certain function, it means that the data processing unit 410 effects a certain part of the programme stored in the memory 460, or a certain part of the programme stored in the read/write memory 450.

[0108] The data processing device 410 can communicate with a data port 499 via a data bus 415. The non-volatile memory 420 is intended for communication with the data processing unit 410 via a data bus 412. The separate memory 460 is intended to communicate with the data processing unit 410 via a data bus 411. The read/write memory 450 is adapted to communicating with the data processing unit 410 via a data bus 414. The data port 499 may for example have the links 201, 221, 231, 251 and 281 connected to it (see FIG. 2).

[0109] When data are received on the data port 499, they are temporarily stored in the second memory element 440. When input data received have been temporarily stored, the data processing unit 410 is prepared to effect code execution as described above. According to a version, signals received on the data port 499 contain information about a prevailing temperature of the dosing unit 250. According to a version, signals received on the data port 499 contain information about a prevailing temperature of an exhaust flow in the exhaust duct 240. According to an alternative version, signals received on the data port 499 contain information about a prevailing temperature of a suitable component of the subsystem 299, e.g. a prevailing temperature of the exhaust duct, a prevailing temperature of the particle filter or a prevailing temperature of a silencer of the HC dosing system. Such a signal may be used to calculate a prevailing temperature of the dosing unit 250 by means of a calculation model stored in the memory 460. The signals received on the data port 499 may be used by the device 400 to determine whether there is an undesired temperature of the exhaust flow in the exhaust duct 240 and, on the basis thereof, to influence operation of the engine 150 in such a way as to make it possible to achieve a desirable temperature of the exhaust flow.

[0110] Parts of the methods herein described may be effected by the device 400 by means of the data processing unit 410 which runs the programme stored in the memory 460 or the read/write memory 450. When the device 400 runs the programme, methods herein described are executed.

[0111] The foregoing description of the preferred embodiments of the present invention is provided for illustrative and descriptive purposes. It is not intended to be exhaustive or to restrict the invention to the variants described. Many modifications and variants will obviously be apparent to one skilled in the art. The embodiments have been chosen and described in order best to explain the principles of the invention and its practical applications and hence make it possible for specialists to understand the invention for various embodiments and with the various modifications appropriate to the intended use.

1. A method pertaining to an HC dosing system for cleaning of exhaust gases from an engine that produces exhaust gases when the engine is operating, and the engine comprising a dosing unit situated in thermal contact with an exhaust system of the engine;
the method comprising:
supplying fuel by said dosing unit to an exhaust duct of the
exhaust system,
determining whether an undesired temperature level of
said dosing unit exists and if said undesired temperature
level is determined, limiting the temperature of said exhaust duct by controlling at least one operation of said engine.
2. A method according to claim 1, wherein said limitation of said temperature comprises reducing a maximum available
torque of an output shaft of the engine.
3. A method according to claim 1, wherein said limitation of said temperature comprises influencing an EGR content of said engine.
4. A method according to claim 1, wherein said limitation of said temperature comprises influencing injection times for
fuel of at least one cylinder of said engine or influencing ignition times of at least one cylinder of said engine.
5. A method according to claim 1, further comprising setting said undesired temperature level on the basis of characteristics of said fuel.
6. A method according to claim 1, in which said determining whether there is an undesired temperature level of said dosing unit is based on at least one of:
directly measuring a temperature of said dosing unit;
measuring a temperature of an exhaust flow in said exhaust duct; and
calculating a temperature of said dosing unit by a calculation model.
7. A method according to claim 1, wherein said fuel is
diesel fuel or another hydrocarbon-based fuel.
8. A device of an HC dosing system for cleaning of exhaust gases from an engine having an exhaust system that produces exhaust gases when the engine is operating;
the engine comprising a dosing unit situated in thermal contact with the exhaust system of the engine, and the exhaust system including an exhaust duct, and the dosing unit being configured and operable to supply a fuel to the exhaust duct of the exhaust system;
a determining device for determining whether there exists an undesired temperature level of said dosing unit; and
if said undesired temperature level is determined, a control device is configured and operable for limiting the temperature of said exhaust duct by control of operation of said engine.
9. A device according to claim 8, wherein said engine has an output shaft, and said control device is configured and operable for reducing a maximum available torque of said output shaft of the engine to limit said temperature.
10. A device according to claim 8, further comprising said control device being configured and operable for influencing
an EGR content of said engine to limit said temperature.
11. A device according to claim 8, further comprising said control device is configured and operable for limiting said temperature by influencing injection times for fuel of at least one cylinder of the engine or by influencing ignition times of at least one cylinder of the engine.
12. A device according to claim 8, wherein said control device is settable for an undesired temperature level based on characteristics of said fuel.
13. A device according to claim 8, further comprising at least one of the following:
a measurement device for directly measuring a temperature of the dosing unit;
a measurement device for measuring a temperature of an exhaust flow in said exhaust duct; and
a calculating device for calculating a temperature of said dosing unit by a calculation model.
14. A device according to claim 8, wherein said fuel is
diesel fuel or another hydrocarbon-based fuel.
15. A motor vehicle comprising a device according to claim 8.
16. A motor vehicle according to claim 15, comprising a truck, bus or passenger car.
17. A computer programme pertaining to an HC dosing system for cleaning of exhaust gases from an engine, comprising a dosing unit to supply a fuel to an exhaust duct, which programme contains programme code for causing an electronic control unit or another computer connected to the electronic control unit to perform steps according to claim 1.
18. A computer programme product according to claim 17, wherein the product contains a programme code stored on a non-transitory programme computer-readable medium which can be read by said computer system for performing
method steps, when said computer programme is run on an electronic control unit or another computer connected to said electronic control unit.

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