The invention relates to a ventilator system, especially for cooling the engine of a motor vehicle, said system comprising at least one ventilator provided with a ventilator motor, a control appliance, and an actuator for an air flap. The inventive ventilator system also comprises a ventilator control system which is integrated thei into and is used to autonomously control the ventilator motor(s) and the actuator(s) for air flaps.
Motor with louver operation

Motor rotational speed

100% n max

33% n min

Standstill

Louver position

Louver open
Louver shut

TVin = pulse duty factor at control input

Fig. 4
VENTILATOR SYSTEM FOR A MOTOR VEHICLE

[0001] The invention relates to a ventilator system for a motor vehicle according to the preamble of claim 1 and to a control method for operating a ventilator system as claimed in claim 23.

[0002] Normally, the activation of electrical components, such as one or more ventilator motors and actuators for flaps for regulating the air stream, takes place with the aid of a vehicle-side control apparatus. In a complex control system of this type, an increased outlay is often required in order to manage the coordination of the individual components. Furthermore, each electrical component has to be activated separately by the vehicle-side control apparatus and also have current applied to it individually, so that, under confined conditions, problems with regard to the construction space may arise.

[0003] Proceeding from this prior art, the object of the invention is to make available an improved ventilator system and a control method for operating this ventilator system.

[0004] This object is achieved, for a ventilator system initially mentioned, by means of the characterizing features of claim 1. Advantageous refinements are the subject matter of the subclaims.

[0005] According to the invention, a cooling module with an integrated ventilator system for cooling a coolant, which in turn cools a motor vehicle engine, is provided, which has at least one ventilator motor associated with an actuator, for example, a stepping motor, which, for an air flap, the ventilator system having a ventilator control which is integrated into the latter and which independently controls the ventilator motor or ventilator motors and the actuators or actuators for air flaps, with the result that a control essentially independent of the vehicle-side control becomes possible and, in particular, no individual power supply via the vehicle-side control apparatus is required. In this case, in particular, an integration of hardware and software in a compact system (CFS) is also possible. Moreover, the outlay in terms of cabling to the vehicle power supply is reduced, so that the ventilator system can be integrated into a vehicle in a simple way.

[0006] By the control apparatus for the air flaps and for the ventilator motor, in particular for the louver flaps, being integrated into this ventilator motor, the control of the air flaps and of the ventilator motor no longer takes place directly from the vehicle-side control. The air flaps and the ventilator motor are controlled as a function of one another, to be precise, in particular, as a function of the cooling requirement and the driving speed and, if appropriate, also of the air temperature, which, if appropriate, that is to say if no sensors internal to the ventilator system are provided, are communicated to the ventilator motor control apparatus from the vehicle-side control preferably via standard signals (for example, PWM signal with or without terminal 15 or a bus system, for example CAN bus, LIN bus). Owing to the ventilator control being largely independent of the vehicle-side control, the vehicle manufacturer has to make available only one signal with the two variables for the control, in the simplest instance only one signal for the desired rotational speed of the ventilator being transmitted. The vehicle-side control provides preferably only an activation signal, further functions being transmitted preferably via a modified activation signal, such as, for example, various frequencies or pulse duty factors, current or voltage signals. In this case, the extended function preferably contains signals relating to the cooling requirement (desired value of the ventilator rotational speed) and the driving speed. The programming of the ventilator system, that is to say of the ventilator control apparatus or apparatuses, takes place via a standard interface via the vehicle-side control or a specific connection, so that the ventilator system can be adapted to various specific vehicle parameters and therefore one ventilator system can be used for various vehicle types. Various vehicle-specific parameters can be integrated into the software algorithm, thus making programming simpler during installation. In this case, a bidirectional interface for vehicle-side control may be provided, which both delivers vehicle data to the ventilator system and allows communication with the control apparatuses. An energy-saving operating mode, a hot-running operating mode and/or a follow-up operating mode and also fault management are possible via the software used in the ventilator motor control apparatus. It may likewise be stipulated that the ventilator motor runs at maximum power in the case of high driving speeds.

[0007] The ventilator control is preferably connected to at least one sensor for the coolant temperature and/or the engine power and/or the flow velocity of the air in the region of the ventilator and/or the air temperature, the measurement values of the sensor or sensors being used for controlling the ventilator motor or ventilator motors and the actuator or actuators for the air flaps, so that these parameters are determined internally to the ventilator system and are processed correspondingly.

[0008] The ventilator control preferably has at least one sensor for detecting the position of the air flaps or of the actuators, said sensor preferably being an integral part of a sensor system integrated into an actuator activation. This makes it possible to use simple cost-effective actuators and/or air flaps, in particular, also, simple actuators without return, for example stepping motors or pneumatic cylinders. Furthermore, cost-effective high-side or low-side output stages may be used for controlling the simple actuators, an integration of the position detection of the actuator being possible.

[0009] Preferably, the ventilator control is arranged on or in a ventilator motor housing and is connected to the vehicle-side control via a plug contact. This allows the ventilator system to be integrated into the vehicle in a simple way.

[0010] Where a plurality of ventilators are concerned, the ventilator control apparatuses may communicate with one another preferably via an internal ventilator bus system. However, communication may also take place via a connected vehicle-side bus system, for example CAN or LIN bus system. Automatic control apparatus detection for a single unit or a master unit and for one or more slave units is preferably provided. In this case, the coding for the master or slave unit may take place via a plug connection, for example via the plug for the actuator of an air flap. Furthermore, a control apparatus detection is preferably provided which can detect the presence of a single unit automatically, so that, in this case, this unit is defined automatically as a master unit. A modular set-up (single or double ventilator system) is also possible in this instance.
In a ventilator system with two ventilators, a FAIL-SAFE mode is preferably provided, which makes it possible, in the event of a failure of the master unit, for the slave unit to continue to operate automatically, so that at least a partial cooling is ensured in the event of a failure of the ventilator.

A ventilator system with two ventilators having ventilator motors and two actuators for air flaps preferably has identically or at least essentially identically designed ventilators and actuators, so that, using identical parts, the production costs can be lowered and stockkeeping simplified.

The ventilator system is preferably used for engine cooling by a ventilator, but may also be used correspondingly for other components of an air conditioning system, signals appropriately coordinated for this purpose being transmitted by the vehicle-side control.

An energy-saving mode can preferably be regulated by means of the ventilator control, the energy-saving mode comprising, in particular, an at least partly opened air flaps position and an at least reduced rotational speed of the ventilator motor. This mode may be initializing particularly as a function of parameters, such as outside temperature, engine rotational speed and driving speed, a saving of energy being possible by the rotational speed of the ventilator motor being at least reduced, but preferably reduced to zero.

Preferably, furthermore, a maximum rotational speed of the ventilator motor in the case of high driving speeds can be set by means of the ventilator control, so that the ventilator affords as low an aerodynamic resistance as possible, thus making maximum cooling powers possible.

Furthermore, a hot-running mode can advantageously be regulated by means of the ventilator control, the hot-running mode comprising, in particular, a closed air flaps position and a switched-off ventilator motor. As a result, it becomes possible in a simple way to reach the operating temperature of the motor vehicle engine quickly and therefore so as to minimize wear.

Advantageously, moreover, a follow-up mode after a stop of the vehicle engine can be regulated by means of the ventilator control, so that the cooling module can be cooled in order to avoid a build-up of heat. In particular, such a follow-up requirement can advantageously be detected automatically by the ventilator control.

In a preferred version of a ventilator system, both a desired position of the air flaps and a desired rotational speed of the ventilator motor can be transmitted by means of a coded signal, with the result that the number of signal lines necessary can be kept small. Advantageously, in this case, the coded signal is a pulse width modulated signal, a first pulse width range being assigned a first air flaps position and a second pulse width range being assigned a second air flaps position. Advantageously, furthermore, one pulse width range is in this case assigned a variable desired rotational speed of the ventilator motor which is dependent on the pulse width. Overall, this makes it possible to have communication by means of only a few, ideally only one signal line between the ventilator system and the motor vehicle or else between modules of the ventilator system (for example, master/slave system with two or more ventilators). Moreover, a pulse width modulated signal defined in this way by means of a transmission characteristic curve can be used in a simple way with standardized bus systems, such as, for example, a CAN bus or LIN bus.

For a control method for operating a ventilator system, the object is achieved by means of the features of claim 23.

A simple simultaneous activation of air flaps and ventilator motor thus advantageously becomes possible.

The parameter preferably comprises information on an activation state of the motor vehicle engine, while, in the case of nonactivation, a decision is made on a follow-up control of the ventilator system. The risk of a build-up of heat after the engine has been stopped can thus be counteracted.

Preferably, furthermore, in the course of the control method a decision on a hot-running mode is made, in the hot-running mode an air flap being closed and a ventilator motor being deactivated. It thereby becomes possible for the operating temperature of the vehicle engine to be reached quickly by means of the control method.

Preferably, furthermore, a decision on an energy-saving mode is made, in the energy-saving mode an air flap being open and the ventilator motor being operated with at least reduced power.

Moreover, depending on the parameter, a decision on the desired position of the air flap and the desired position of the ventilator rotational speed is made, one of the decision possibilities comprising a desired rotational speed of the ventilator motor which is between zero and a maximum rotational speed. The energy consumption of the ventilator motor can thus be adapted optimally to the required cooling power, and temporarily excessive cooling can also be avoided.

Preferably, the abovementioned method steps are combined, overall, into a callable control sequence in the manner of a subroutine, the subroutine being called up from a loop, in particular a main program. By virtue of this programming arrangement, continuous adaptation to changed cooling requirements can take place in a simple way.

Preferably, furthermore, in a control method according to the invention, there is provision for the ventilator system to be initialized by means of a starting signal of the motor vehicle. This may take place, for example, by a supply voltage being switched on or by means of a special bus signal. Moreover, particularly preferably, after initialization, a programming of the control system may take place by means of the motor vehicle. A particularly easy adaptation of a ventilator system with an integrated control method to different motor vehicles is thereby possible.

In a preferred embodiment of a control method according to the invention, there is a provision for a first ventilator motor to be initialized by means of first control electronics as a master system and for at least one second ventilator motor to be initialized by means of second control electronics as a slave system, one of the two, the master or the slave system, receiving operating data from the other system in each case, and the other system in each case receiving operating data from the motor vehicle. Furthermore, there is preferably provision, in the course of a
periodic control loop, for a first ventilator motor to be detected by means of first control electronics as a master system and for at least one second ventilator motor to be detected by means of second control electronics as a slave system, one of the two, the master or the slave system, receiving operating data from the other system in each case, and the other system in each case receiving operating data from the motor vehicle. An activation of a plurality of parallel and virtually independent systems (ventilator and air flap) can thereby take place in a simple way, and, moreover, an emergency running mode or fault management can be provided, which, in the event of a defect in one system, controls cooling at least by means of the other system, while, if appropriate, feedback on reduced functionality and cooling power to the vehicle takes place.

[0028] In an alternative version, there is provision for a first ventilator motor to be initialized by means of first control electronics as a master system and for at least one second ventilator motor to be initialized by means of second control electronics as a slave system, each of the two, the master or the slave system, exchanging operating data with the motor vehicle. Both motors therefore simultaneously receive the operating data from the vehicle, and each motor communicates itself with the motor vehicle or feeds various data back to the vehicle. The master/slave coding defines which addresses are assigned to the respective motor which on this address transmits its data to the motor vehicle. This affords improved redundancy, depending on the design of the bus system, and allows the simple implementation of fault or emergency running programs in the event of a fault.

[0029] In general, there is preferably provision for a fault management of the ventilator system to be activatable.

[0030] Particularly preferably, the ventilator system controlled by means of a control method according to the invention is a ventilator system as claimed in one of claims 1 to 22.

[0031] A control method according to the invention comprises, in terms of implementation in the form of a device, control electronics with a program-controlled processor, a control method as claimed in one of claims 23 to 34 being implemented by means of a program.

[0032] Further advantages and features of the invention may be gathered from the exemplary embodiment described below and from the dependent claims.

[0033] The invention is explained in detail below by means of two exemplary embodiments, with reference to the drawing in which:

[0034] FIG. 1 shows a view of a ventilator cowl with orifices for the relative wind, the orifices being closable by means of louver flaps, not illustrated,

[0035] FIG. 2 shows a circuit diagram of a ventilator system,

[0036] FIG. 3 shows a flow chart which indicates the basic structure of a control, and

[0037] FIG. 4 shows a transmission characteristic curve for the simultaneous desired value transmission of a ventilator motor rotational speed and an air flap position.

[0038] In an exemplary embodiment according to the invention, a ventilator system has in the present case two ventilators 1, 2 and two ventilator motors 1a, 2a driving these, said ventilator motors being two brushless electric ventilator motors, and, in each case, an actuator 3, 4 for an air flap, in the present case a louver flap. The louver flaps are not illustrated in detail, but mechanical drive elements 3a, 4a connected to the actuators 3, 4 and also guides 5 for the air flaps can be seen.

[0039] Each of the ventilator motors 1a, 2a is designed in such a way that it has internally hardware which is connected via a plug connection 1b, 2b directly to the assigned actuator and can activate the latter directly (cf. FIG. 2). In this case, an electronic circuit for activating the respective actuator 3, 4 is accommodated in the same housing as a circuit for activating the respective ventilator motor 1a, 2a, in particular in the housing of the respective ventilator motor 1a, 2a. With respect to the rest of the vehicle, the ventilators 1, 2 are connected to electronics of the remaining vehicle in each case via connections 6, 7.

[0040] In the present case, automatic master/slave motor detection and communication is provided, in that one of the two ventilator motors is coded via a plug connection and is thereby defined as a master motor. According to the present exemplary embodiment (mainstream variant), the master motor communicates only with the vehicle-side electronics. The second, non-coded slave motor does not communicate with the vehicle. In this case, the hardware and software of the two ventilator motors are designed such that automatic detection of master and slave is integrated.

[0041] In conjunction with the present hardware, a software algorithm is designed in such a way that, in the event of a failure of a ventilator motor, this failure is detected, and the complementary and still operative ventilator can continue to operate independently. This affords redundancy. At the same time, the function of motor cooling is also restricted at specific predetermined vehicle operating points (FAIL-SAVE mode). Communication between the two ventilator motors is possible via the common bus system (in the present case, CAN bus system). In particular, there is provision, in the event of a failure of the master motor, for the slave motor to be redefined as a master motor or to communicate independently with the vehicle, in order for this situation, too, to allow at least partial motor cooling.

[0042] The control logics for the actuators of the louver flaps and the ventilator motors are illustrated as a flow chart in FIG. 3, the same control logics also basically being applicable in a vehicle-side control, that is to say the ventilator control is integrated there. The system is activated by the vehicle-side control, for example by means of a signal from a main control system, which is emitted automatically when the engine is started, or by the application of a voltage, whereupon the main program starts and the system moves into the basic position. Moreover, a programming (flash mode) of the control logics may take place previously. Depending on requirements, such programming may take place after each start and, for example, comprise the entire control program of the ventilator system electronics or else only unusual programming, for example in the event of fault management.

[0043] Moreover, in the course of the initialization of the system, an initialization of the motors as master or slave is carried out. This affords the advantage, inter alia, that the
motors, including their control and their programming, can be identical, so that more cost-effective manufacture and replacement parts logistics are possible.

[0044] A subroutine for control and ventilator operation, which is illustrated in detail on the right in FIG. 3, is subsequently started as a component of a loop. This checks whether the system is still activated. If so, various variants are possible, depending on whether normal operation, hot-running or energy-saving operation is involved, the ventilator motor and the actuator for the louvre flap being supplied with power according to requirements (see bottom part of FIG. 3). If not, a follow-up control is possible, insofar as this is predetermined.

[0045] If the interrogation of a follow-up mode or system stop is negated, a decision is first made as to whether a hot-running mode is initiated, for example if the vehicle still has no operating temperature. If the hot-running mode is initiated, the air flaps are closed and the ventilator motors are switched off.

[0046] Otherwise, depending on the operating parameters, a decision is made as to whether an energy-saving mode is run or not. If so, the air flaps are opened and the ventilator motors are switched off, in order to achieve cooling solely by means of relative wind.

[0047] If no energy-saving mode is run, the air flaps and the ventilator rotational speed are set according to requirements, and in this case the ventilator rotational speed may also lie below a maximum rotational speed.

[0048] In the case of the abovementioned decisions, operating parameters, such as, for example, coolant temperature and driving speed, are used as argument values, in order from fixed value matrices to read out the resulting desired values for the flap position and ventilator rotational speed.

[0049] Before or after the execution of the subroutine (in the present case, before it), it is determined for the two ventilator motors whether the ventilator motor is a master motor or a slave motor, and communication with the other corresponding control apparatus takes place accordingly. Furthermore, the master motor communicates with the vehicle-side control, signals relating to the cooling requirement and the driving speed being transmitted to the master motor.

[0050] After leaving the subroutine, branching takes place as a function of whether the control apparatus belongs to the master motor or to the slave motor.

[0051] In the latter instance, communication with the master apparatus is taken up in order to exchange operating data. Thereafter, the loop described above is run through once again (master/slave detection and call-up of subroutine).

[0052] If the control apparatus belongs to the master motor, there is first communication with the slave apparatus. The need for fault management is then determined, and, in the event of faults or defects, special programs, not illustrated, are called up where appropriate. In the normal situation of freedom from faults, there is subsequently communication with the vehicle, in order, inter alia, to read out at least one, but generally a plurality of operating parameters. These are, for example, values relating to the system state (engine on/off) and to the driving speed, outside temperature, coolant temperature, engine power and engine operating mode (for example, sporty or economy).

[0053] According to the exemplary embodiment, a special regulation of two ventilator motors of ventilators designed as tubular ventilators and of associated lower flaps is provided. FIG. 1 shows a ventilator cowl which on top has rectangular orifices for the air stream which are closable by means of louvre flaps, not shown. The ventilator cowl is in this case arranged downstream of the cooler in the direction of travel (“suction ventilator arrangement”). The signal for the driving speed comes, in the present case, from the vehicle-side control. In this arrangement, the ventilator control must ensure that, if there is sufficient relative wind, the ventilator or ventilators remain switched off and the air can flow through the orifices, and that, at a low driving speed or when the vehicle is stationary, the fans are switched on and the orifices are closed.

[0054] According to a variant of the exemplary embodiment, a sensor for the flow velocity of the air in the region of the ventilator is provided, integrated into the ventilator system, so that faults as a result of external influences, such as a stronger wind from the front, even though the vehicle is traveling slowly, which may arise in the control described above, can be avoided, and, in this respect, the ventilator control is independent of the vehicle-side control.

[0055] According to a further variant, a temperature sensor for the engine coolant is provided, which transfers its measurement values directly to the ventilator control, and a corresponding demand-dependent regulation of the ventilator motors and of the actuators for the air flaps takes place, and, in this respect, too, the system is independent of the vehicle-side control.

[0056] FIG. 4 shows a transmission characteristic curve, such as can be programmed, for example, in the controls according to the invention, for example in the form of a fixed value matrix. In this case, by means of the transmission characteristic curve shown, an activation both of an air flap in the desired states open/shut of a ventilator motor with a continuously predetermined desired rotational speed can take place, at the same time only a single pulse width modulated signal or a pulse width modulated signal common to said components is used. The pulse width (TVin) may in this case be between 0% and 100%. In the present case, a pulse width of 0% to 10% is assigned to a standstill of the ventilator motor and to a closed air flap. This corresponds to a hot-running mode. In the range of 10%-11% TVin, the ventilator motor is off and the flap is open, which may correspond to an energy-saving mode. In the range of 11% to 90%, the air flap is closed and the motor rotational speed is dependent linearly on the pulse width between a technic-ally expedient minimum of 33% and the maximum rotational speed. In the range of 90% to 95% TVin, there is a maximum ventilator rotational speed, the flap being open only in the range of 93% to 94% and otherwise being closed. Between 95% and 100% TVin, the motor is again switched off and the air flap closed. In this way, all combinations expedient for operation are coded in a one-dimensional transmission characteristic curve or in a single pulse width modulated signal.

[0057] Such a transmission characteristic curve may be used both for communication between the master motor and a vehicle and for communication between a master motor and a slave motor.
1. A ventilator system, in particular for cooling a motor vehicle engine, which has at least one ventilator with a ventilator motor, a control apparatus and an actuator for an air flap, wherein the ventilator system has a ventilator control which is integrated into the latter and which independently controls the ventilator motor or ventilator motors and the actuator or actuators for air flaps.

2. The ventilator system as claimed in claim 1, wherein the ventilator control is connected to the vehicle-side control.

3. The ventilator system as claimed in claim 2, wherein ventilator control is essentially independent of the vehicle-side control, said ventilator control receiving a switch-on and/or a switch-off signal from the vehicle-side control.

4. The ventilator system as claimed in claim 2, wherein the ventilator control is essentially independent of the vehicle-side control, said ventilator control receiving a signal relating to the cooling requirement of the engine from the vehicle-side control.

5. The ventilator system as claimed in claim 2, wherein the ventilator control is essentially independent of the vehicle-side control, said ventilator control receiving a signal relating to the driving speed from the vehicle-side control.

6. The ventilator system as claimed in claim 2, wherein the ventilator control is essentially independent of the vehicle-side control, said ventilator control receiving a signal relating to the air temperature from the vehicle-side control.

7. The ventilator system as claimed in claim 1, wherein the ventilator control is connected to at least one sensor for the coolant temperature and/or the engine power and/or the flow velocity of the air in the region of the ventilator and/or the air temperature, the measurement values of the sensor or sensors being used for controlling the ventilator motor or ventilator motors and the actuator or actuators for the air flaps.

8. The ventilator system as claimed in claim 1, wherein the ventilator control has at least one sensor for detecting the position of the air flaps or of the actuators.

9. The ventilator system as claimed in claim 8, wherein the at least one sensor is part of a sensor system integrated into an actuator control.

10. The ventilator system as claimed in claim 1, wherein the ventilator control is arranged on or in a ventilator motor housing and is connected to the vehicle-side control via an interface.

11. The ventilator system as claimed in claim 1, wherein the ventilator control is connected to a remaining vehicle-side control via an interface, in particular a standard interface, such as a CAN bus or a LIN bus, while a parameter transfer and/or a programming of the ventilator control can take place via the interface.

12. The ventilator system as claimed in claim 1, wherein an internal ventilator bus system is provided.

13. The ventilator system as claimed in claim 1, wherein automatic control apparatus detection for a single unit or a master unit and for one or more slave units is provided.

14. The ventilator system as claimed in claim 13, wherein, in a ventilator system with two ventilators, a FAIL-SAVE mode is provided, which makes it possible, in the event of a failure of the master unit, for the slave unit to continue to operate automatically.

15. The ventilator system as claimed in claim 1, wherein the ventilator system has two ventilators with ventilator motors and two actuators for air flaps, the ventilators and actuators being designed identically.

16. The ventilator system as claimed in claim 1, wherein an energy-saving mode can be regulated by means of the ventilator control, the energy-saving mode comprising, in particular, an at least partly open air flap position and an at least reduced rotational speed of the ventilator motor.

17. The ventilator system as claimed in claim 1, wherein a maximum rotational speed of the ventilator motor in the case of high driving speeds can be set by means of the ventilator control.

18. The ventilator system as claimed in claim 1, wherein a hot-running mode can be regulated by means of the ventilator control, the hot-running mode comprising, in particular, a closed air flap position and a switched-off ventilator motor.

19. The ventilator system as claimed in claim 1, wherein a follow-up mode after a stop of the vehicle engine can be regulated by means of the ventilator control.

20. The ventilator system as claimed in claim 1, wherein both the desired position of the air flap and a desired rotational speed of the ventilator motor can be transmitted by means of a coded signal.

21. The ventilator system as claimed in claim 20, wherein the coded signal is a pulse width modulated signal, a first pulse width range being assigned a first air flap position and a second pulse width range being assigned a second air flap position.

22. The ventilator system as claimed in claim 21, wherein one pulse width range is assigned a variable desired rotational speed of the ventilator motor which is dependent on the pulse width.

23. A control method for operating a ventilator system for cooling a motor vehicle engine, comprising the following steps:

   a. determination of at least one parameter which is dependent on an operating state of the motor vehicle engine;

   b. derivation of a desired position of an air flap and of a desired rotational speed for a ventilator motor as a function of the parameter;

   c. activation of the air flap to reach the desired position and of the ventilator motor to reach the desired rotational speed.

24. The control method as claimed in claim 23, wherein the parameter comprises information on an activation state of the motor vehicle engine, in the case of nonactivation a decision being made on a follow-up control of the ventilator system.

25. The control method as claimed in claim 23, wherein a decision on a hot-running mode is made, in the hot-running mode an air flap being closed and a ventilator motor being deactivated.

26. The control method as claimed in claim 23, wherein a decision on an energy-saving mode is made, in the energy-saving mode an air flap being open and the ventilator motor being operated with at least reduced power.

27. The control method as claimed in claim 23, wherein a decision on the desired position of the air flap and the desired position of the ventilator rotational speed is made, one of the decision possibilities comprising a desired rota-
28. The control method as claimed in claim 23, wherein the method steps are combined, overall, into a callable control sequence in the manner of a subroutine, the subroutine being called up from a loop.

29. The control method as claimed in claim 23, wherein the ventilator system can be initialized by means of a starting signal of the motor vehicle.

30. The control method as claimed in claim 23, wherein after initialization, a programming of the control system can take place by means of the motor vehicle.

31. The control method as claimed in claim 23, wherein a first ventilator motor is initialized by means of first control electronics as a master system and at least one second ventilator motor is initialized by means of second control electronics as a slave system, one of the two, the master or the slave system, receiving operating data from the other system in each case, and the other system in each case receiving operating data from the motor vehicle.

32. The control method as claimed in claim 23, wherein in the course of a periodic control loop, a first ventilator motor is detected by means of first control electronics as a master system and at least one second ventilator motor is detected by means of second control electronics as a slave system, one of the two, the master or the slave system, receiving operating data from the other system in each case, and the other system in each case receiving operating data from the motor vehicle.

33. The control method as claimed in claim 23, wherein a ventilator motor is initialized by means of first control electronics as a master system and at least one second ventilator motor is initialized by means of second control electronics as a slave system, each of the two, the master or the slave system, exchanging operating data with the motor vehicle.

34. The control method as claimed in claim 23, wherein a fault management of the ventilator system is activatable.

35. The control method as claimed in claim 23, wherein the ventilator system is a ventilator system as claimed in one of claims 1 to 22.

36. A device for cooling a coolant of a motor vehicle, comprising control electronics with a program-controlled processor, a control method as claimed in claim 23, wherein being implemented by means of a program.