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(54) **Motor device for discontinuous use**

(57) A motor device (1) for discontinuous use is described, consisting in particular of an emergency electricity generating set or a fire-fighting pump, comprising: an internal combustion engine (2), activated in a discontinuous manner, and a solar panel (3), preferably thermal, suitable for maintaining the internal combustion engine (2) at activation temperature, thus allowing the rapid activation thereof.

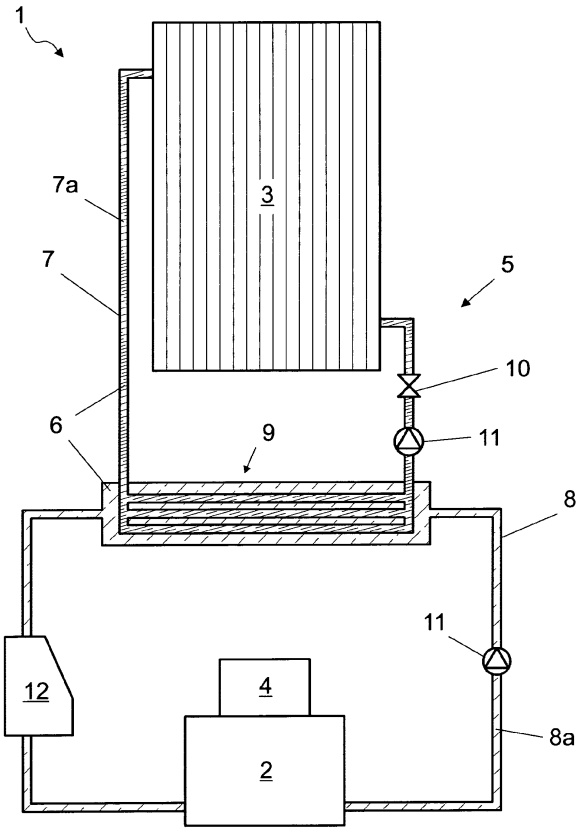

Fig. 1

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Description

[0001] The present invention relates to a motor device for discontinuous use, such as in particular an emergency electricity generating set or a motor pump of the type specified in the preamble of the first claim.

[0002] Various types of motor devices for discontinuous use are currently known.

[0003] In particular some types of said motor devices are used occasionally and have to be very rapidly activated at around 100% of their maximum power.

[0004] This is the case in particular with emergency electricity generating sets, fire-fighting pumps and similar.

[0005] Emergency electricity generating sets are found in hospitals, banks, hospices, hotels, data processing centres and various other facilities, in which interruption of the electricity supply could incur heavy financial losses or even losses in terms of human lives.

[0006] Said electricity generating sets generally comprise a diesel engine and an alternator. They are designed to take over from the mains supply, in the space of a few seconds, when a power cut occurs for any reason.

[0007] The use of said engines is discontinuous, unpredictable, occasional and must be immediate, since they are used only in the event of a blackout or other unpredictable emergencies.

[0008] The above equipment has some important drawbacks.

[0009] As is known, combustion engines, such as the diesel engines referred to, have to be pre-heated before they can run at full speed, otherwise there is the risk of them very quickly breaking down.

[0010] Consequently, they must be continuously heated, at all times of the day and night and throughout the year, so that they can be promptly operated at any time.

[0011] For example, emergency electricity generating sets are provided with a preheating fluid at approximately 40°C - 50°C, which circulates uninterruptedly inside the engine.

[0012] The heating of said fluid, by an electric heater or similar, involves a high consumption of energy.

[0013] In fact, constant heating throughout the day is necessary to ensure operation even though the device may never be used over a period of one or more years. A similar situation occurs also in fire-fighting pumps which are obligatory where the water supply is not sufficient to meet requirements, in terms of water pressure and flow rate. Often said devices are never used during their life.

[0014] In this situation the technical aim underlying the present invention is to produce a motor device for discontinuous use able to substantially remedy the drawbacks cited.

[0015] In the context of said technical aim an important object of the invention is to produce a motor device for discontinuous use which permits reduced energy consumption.

[0016] A further object of the invention is to produce a simple inexpensive motor device.

[0017] The technical aim and the objects specified are achieved by a motor device for discontinuous use as claimed in the attached Claim 1.

[0018] Preferred embodiments are highlighted in the sub-claims.

[0019] The characteristics and advantages of the invention are clarified below by the detailed description of a preferred embodiment of the invention, with reference to the accompanying drawings, in which:

Fig. 1 shows a diagram of the motor device for discontinuous use according to the invention.

[0020] With reference to the Figure cited, the motor device according to the invention is indicated overall by the number **1.**

[0021] It comprises at least one internal combustion engine **2.**

[0022] Said engine 2 is used in a discontinuous manner, in particular it is activated and brought to full speed rapidly, i.e. in the course of a few seconds. The moment of activation is furthermore unpredictable and occasional.

[0023] The motor device 1 therefore consists in particular of an electricity generating set, more specifically an emergency electricity generating set, as illustrated in Fig. 1. Alternatively it consists of a fire-fighting pump, suitable for emitting fluid at high pressure to fight fires.

[0024] The internal combustion engine 2 consists of a combustion engine of known type, preferably a diesel engine or, alternatively, a petrol, LPG or methane engine.

[0025] It can be connected to an alternator **4,** if the device is a generating set, or a pump of known type or other.

[0026] The device 1 furthermore comprises a solar panel **3,** suitable for maintaining the internal combustion engine 2 at activation temperature.

[0027] The term activation temperature indicates a temperature suitable for permitting rapid activation of the engine 2. Said temperature is generally around 40°C or 50°C.

[0028] The solar panel 3 is preferably a thermal solar panel, suitable for bringing a heating fluid **6** to a temperature near to the activation temperature.

[0029] The heating fluid 6 circulates preferably in a specific exchange circuit **5** in which it is suitable for maintaining the combustion engine 2 at activation temperature.

[0030] The exchange circuit 5 is preferably split into a first circuit 7, part of the thermal solar panel 3, and a second circuit **8,** suitable for directly heating the engine 2. The heating fluid 6 is in turn preferably split into a first fluid 7a, located in the first circuit 7, and a second fluid **8a,** preferably consisting of water and located in the second circuit 8.

[0031] The two circuits 7 and 8 are interfaced in a heat exchanger **9.**

[0032] The second circuit 8 appropriately coincides with the engine cooling or lubrication circuit.

[0033] In order to avoid heating of the engine 2 when the latter is active, a closing valve 10 is also provided in the exchange circuit 5 and in particular in the first circuit 7.

[0034] Activation pumps **11** are also appropriately provided, in the individual circuits, suitable for activating the flow of the fluids.

[0035] An electric heater **12** is furthermore advantageously present in the exchange circuit 5, in particular the second circuit 8, suitable for heating the heating fluid 6 if it has not reached the required temperature.

[0036] The operation of a motor device 1, described above in structural terms, is as follows.

[0037] The internal combustion engine 2 is activated only occasionally and in any case in a discontinuous manner.

[0038] During non-activation of the engine 2, which corresponds to the majority of the lifetime of the device 1 or even the entire lifetime thereof, the thermal solar panel 3 heats the first fluid 7a up to approximately 40°C - 50°C.

[0039] The same first fluid 7a flows through the first circuit 7 and exchanges heat with the second fluid 8a inside the heat exchanger 9.

[0040] The second fluid 8a, which flows in the second circuit 8, heats the internal combustion engine 2 and brings it to activation temperature, i.e. to approximately 40°C - 50°C.

[0041] If the temperature of the second fluid 8a is not sufficient, the electric heater automatically cuts in to heat said fluid.

[0042] The engine 2 is therefore always ready for activation, in a few seconds it is brought to full speed and activates the alternator 4, a pump or other.

[0043] When the engine 2 is activated, its temperature rises considerably in a short time and the heating fluid is no longer necessary, on the contrary it is inappropriate.

[0044] In said case the closing valve 10 automatically interrupts the flow of the first fluid 7a, which no longer supplies the heat exchanger 9.

[0045] The invention comprises a new method for activation of an internal combustion engine 2, previously described.

[0046] According to said method the internal combustion engine 2 is activated occasionally and rapidly at full speed and is kept constantly at activation temperature by means of a solar panel 3, of the type previously described.

[0047] Said maintenance at activation temperature is obtained by the circulation of a fluid at a temperature near to said activation temperature, as previously described, and preferably by means of the device described above.

[0048] The method furthermore coincides preferably with operation of the above-mentioned device 1.

[0049] The invention offers important advantages.

[0050] The presence of a solar panel 3, in particular if thermal, means that electricity does not have to be used to pre-heat the engine 2.

[0051] The thermal solar panel 3 is perfectly able to bring a fluid to temperatures near the activation temperature, also in the winter.

[0052] The advantage in energy terms is particularly marked for emergency electricity generating sets, or for fire-fighting pumps, in view of their brief or nil periods of activation and their long periods of non-use.

[0053] Furthermore the same are frequently located on roofs or external containers, near which it is very easy to install a solar panel 3.

[0054] The invention is subject to variations falling within the scope of the inventive concept. For example mirrors can be provided suitable for concentrating on the thermal solar panel 3 the rays falling onto a wide surface.

[0055] Said solution could allow the heating fluid 6 to reach an adequate temperature also in cold countries and also in winter.

[0056] All the details can be replaced by equivalent elements and any materials, forms and dimensions can be used.

Claims

1. Motor device (1) for discontinuous use comprising: an internal combustion engine (2), activated in a discontinuous manner and **characterised in that** it comprises at least one solar panel (3) suitable for maintaining said internal combustion engine (2) at activation temperature thus allowing rapid activation of the same.

2. Device according to claim 1, wherein said solar panel (3) is a thermal solar panel suitable for heating a heating fluid (6) which in turn maintains said internal combustion engine (2) at activation temperature.

3. Device according to claim 2, wherein said heating fluid (6) flows inside an exchange circuit (5).

4. Device according to claim 3, wherein said exchange circuit (5) is split into a first circuit (7), connected to said solar panel (3), and a second circuit (8) suitable for directly heating said internal combustion engine (2), said circuits (7, 8) interfacing with each other in a heat exchanger (9).

5. Device according to one or more of the claims 2, 3 or 4, comprising an electric heater (12) suitable for heating said heating fluid (6) if the same has not reached the required temperature.

6. Device according to one or more of the preceding claims, wherein said internal combustion engine (2) is connected to an electricity generating set (4).

7. Device according to claim 3, consisting of an emergency electricity generating set.

8. Device according to one or more of the preceding claims, wherein said internal combustion engine (2) is suitable for activating a pump.

9. Device according to claim 8, consisting of a fire-fighting pump.

10. Method for activation of an internal combustion engine (2), wherein said internal combustion engine (2) is activated occasionally and rapidly at full speed and **characterised in that** said internal combustion engine (2) is maintained constantly at activation temperature by means of a solar panel (3).

11. Method according to claim 10, wherein said solar panel (3) is a thermal solar panel and wherein said internal combustion engine (2) is maintained at activation temperature by the circulation of a fluid maintained by said thermal solar panel at a temperature near to said activation temperature.

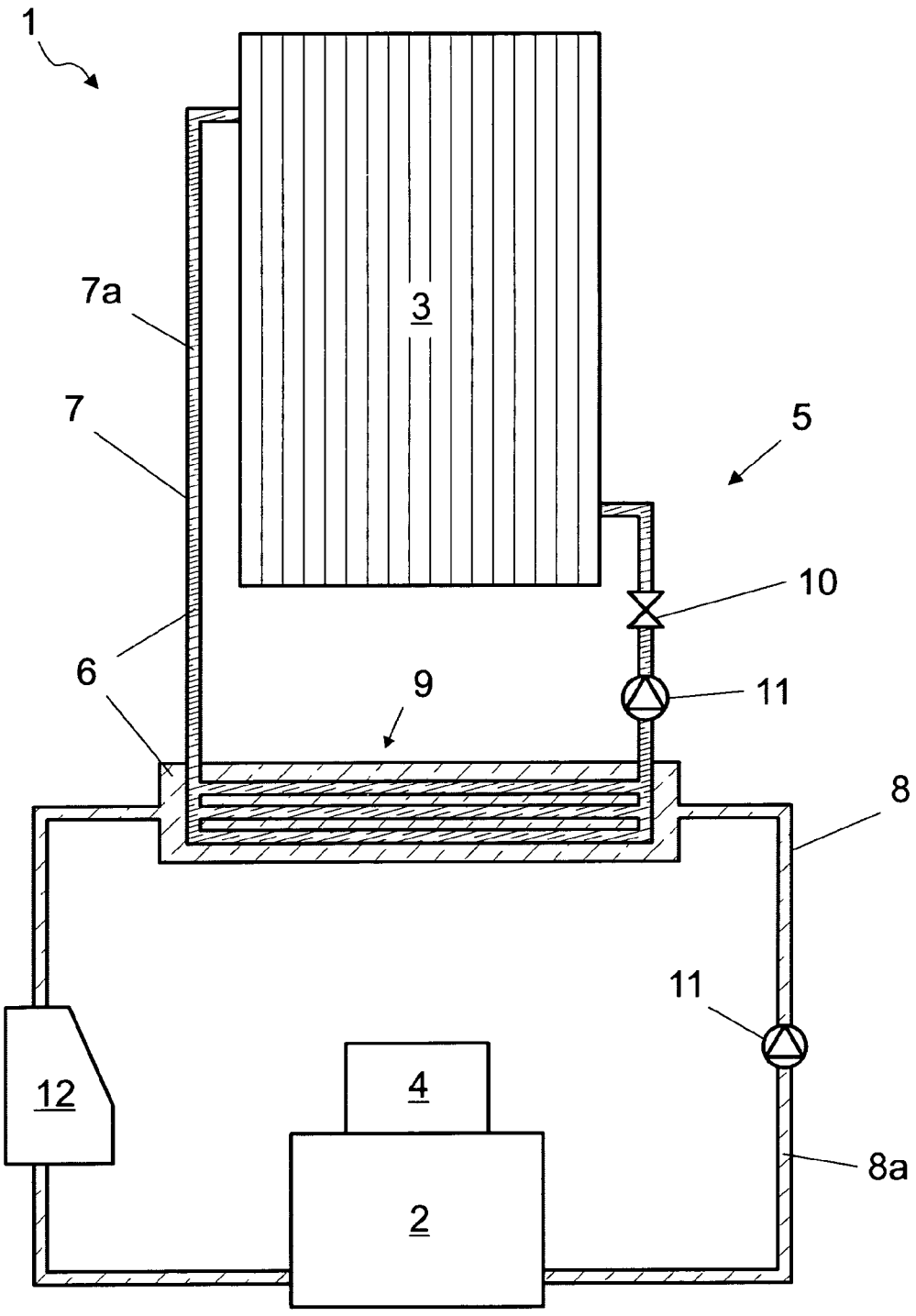

Fig. 1

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EUROPEAN SEARCH REPORT

Application Number
EP 09 42 5399

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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X Y	EP 0 010 819 A1 (AKZO NV [NL]) 14 May 1980 (1980-05-14) * page 9, line 30 - page 10, line 13; claims 38,39 *	1-5, 10-11 6-9	
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			TECHNICAL FIELDS SEARCHED (IPC) F02N F01M F02B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 February 2010	Yates, John

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 09 42 5399

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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09-02-2010

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