(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 405 083 A1

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
11.01.2012 Bulletin 2012/02

(21) Application number: **10168756.4**

(22) Date of filing: **07.07.2010**

(51) Int Cl.:
E04H 15/22 *(2006.01)*

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

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(54) Inflatable hall and method for controlling the pressure and/or the temperature therein

(57) The invention relates to an inflatable hall (1,101) comprising a hall skin unit (3,103) of a flexible material for forming at least part of a roof of the inflatable hall, which hall skin unit at least partially encloses an interior volume (13,113) of the inflatable hall. The inflatable hall comprises an air supply unit (2,102) for supplying air to the interior volume of the inflatable hall for generating and/or maintaining an atmospheric overpressure in said interior volume. The air supply unit is provided with an air inlet (4,109), with a fan unit (6,100) disposed downstream thereof, and with an air outlet (5,105) disposed downstream of said fan unit, which air outlet opens into the interior volume of the inflatable hall, wherein the air supply unit is provided with an additional fan unit disposed parallel to the foresaid fan unit.

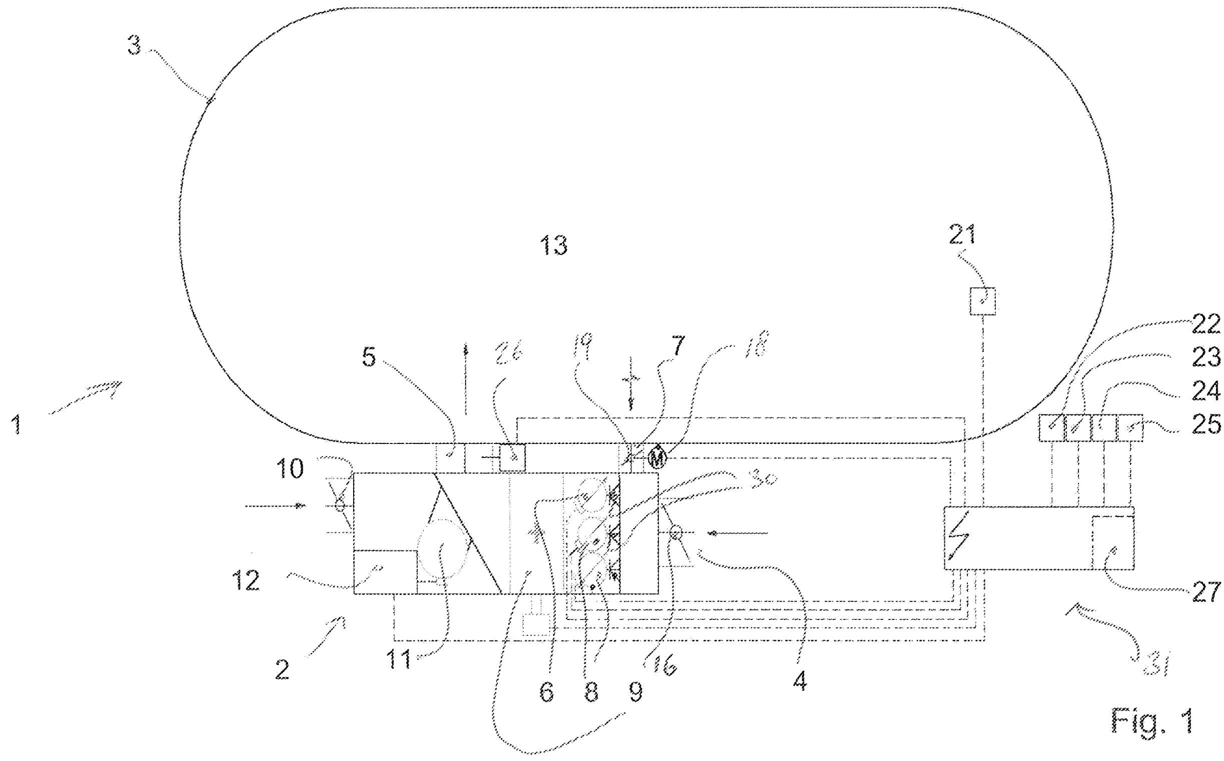

Fig. 1

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Description

[0001] The invention relates to an inflatable hall comprising a hall skin unit of a flexible material for forming at least part of a roof of the inflatable hall, which hall skin unit at least partially encloses an interior volume of the inflatable hall, which inflatable hall comprises an air supply unit for supplying air to the interior volume of the inflatable hall for generating and/or maintaining an atmospheric overpressure in said interior volume, which air supply unit is provided with an air inlet, with a fan unit disposed downstream thereof, and with an air outlet disposed downstream of said fan unit, which air outlet opens into the interior volume of the inflatable hall.

[0002] An inflatable hall of the above kind is generally known. An inflatable hall or air hall is used for (temporarily) roofing over an existing open location so as to protect it against weather conditions such as rain or temperature differences. The inflatable hall comprises a relatively lightweight and flexible base material, which is stretched around the location. Said base material forms the hall skin. The hall skin and the location enclose an interior space. The inflatable hall is provided with a fan connected to the interior space. The fan blows outside air into the interior space, thereby generating a slight atmospheric overpressure. The hall skin will thus be placed under tension, causing it to bulge out. The inflatable hall is thus designed to render the location, for example a tennis court or an external storage yard, suitable for use, with the inflatable hall protecting the location against weather conditions.

[0003] A drawback of the known inflatable hall is that it's use involves a relatively high energy consumption.

[0004] Accordingly it is an object of the invention to provide an inflatable hall as described in the introduction which is more energy-efficient in use. This object is accomplished by the present invention by providing the air supply unit also with an additional fan unit disposed parallel to the aforesaid fan unit. The air supply unit has one air outlet, which can be connected to the inflatable hall. Disposed upstream of the air outlet are the fan unit, for example a fan, and at least one additional fan unit. The additional fan unit is disposed parallel to the fan unit. The at least two fan units are both designed for supplying air to the interior volume of the inflatable hall via the air outlet for the purpose of generating and/or maintaining an atmospheric overpressure in said interior volume. The fan units are thus designed to cooperate for pressurising the interior volume and/or keeping it pressurised. This makes it possible to configure each fan unit of the air supply unit as a relatively compact and energy-efficient unit. The amount of air that is supplied can be varied by adjusting the individual fan units. The amount of air that is supplied can be varied, for example, by selectively activating or deactivating one or more fan units. All fan units or only some of the fan units may be operational at the same time. This makes it possible to dimension each fan unit to suit a specific working point, which working point has been selected so that the efficiency of the fan unit will be relatively high. In this way an air supply unit for an inflatable hall is obtained which is relatively compact and efficient in comparison with the prior art. Furthermore, the use of one air inlet, with at least two parallel fan units disposed upstream thereof, ensures that the air flow in the inflatable hall will not be adversely affected by changes in the total amount of air that is being supplied.

[0005] The fan unit may comprise an axial fan. The use of such an axial fan leads to a further energy-saving in comparison with, for example, centrifugal fans. In addition to that, axial fans can be designed as a relatively compact unit. Moreover, axial fans are relatively reliable.

[0006] The fan unit and/or the additional fan unit may be provided with a non-return valve. This leads to an increased efficiency of this system, since air is prevented from flowing upstream in the air supply unit.

[0007] In one embodiment, the fan unit and the additional fan unit are each designed for independently maintaining at least the required overpressure in the interior volume. The fan unit is capable of maintaining the required overpressure, and that independently of the additional fan unit. The same goes for the additional fan unit. This makes it possible in certain circumstances to supply air to the interior volume of the inflatable hall by means of only one fan unit. In particular during periods in which heating or cooling the interior volume is not needed, one fan unit remains operational to compensate for air losses due to leakage. The fan unit and the additional fan unit are dimensioned to provide the required overpressure for keeping the inflatable hall upright, i.e. the air supply unit is overdimensioned for the stationary situation. This achieves that, in particular in situations in which a higher absolute pressure in the interior volume is needed, the air supply system will be able to supply the higher pressure or the higher heat demand in a relatively quick, effective and efficient manner. Furthermore, each fan unit functions as a backup unit for the other fan unit. If the first fan unit or the additional fan unit should not be capable of providing the required pressure, the other fan unit will be capable of providing said pressure. In this way a reliable operation of the inflatable hall is ensured.

[0008] To prevent pressure losses in the inflatable hall resulting from a power failure, the inflatable hall may comprise an emergency air supply unit, for example a diesel generator.

[0009] The maximum flow that can be produced by the fan unit may be substantially the same as the maximum flow that can be produced by the additional fan unit. The maximum flow that the first fan unit is capable of delivering is in that case substantially the same as the maximum flow the additional fan is capable of delivering. Because of this identical dimensioning, it is relatively easy to control the amount of air that is supplied to the inflatable hall.

[0010] The air supply unit may be provided with an air conditioning device for at least heating and/or cooling the air supplied by the first air supply unit. This makes it possible to regulate the temperature in the inflatable hall.

[0011] The air supply unit is preferably disposed downstream of the fan units.

[0012] An air conditioning device may be provided near each fan unit.

[0013] The air conditioning device may comprise a high efficiency cascade system.

[0014] The air conditioning device may comprise a modulating burner.

[0015] In one embodiment, the inflatable hall comprises a return outlet fitted with a return valve for extracting air from the inflatable hall, which return outlet can be connected to a return inlet provided in the air supply unit. The air inlet of the air supply unit may optionally be provided with a shut-off device, for example a controllable valve. This embodiment makes it possible to freshen or recirculate the air in the inflatable hall, or use a combination of the two, as desired. If the air is to be recirculated, the return valve of the return outlet is opened on the basis of hall pressure. The shut-off device can optionally be used for closing the air inlet of the air supply unit. A full closure by the shut-off device is preferably avoided, however, so that it remains possible to compensate for air leakage from the inflatable hall by supplying air via the air inlet. In the case of a complete replacement of the air, the shut-off device must be open, the return valve will be closed in that case on the basis of hall pressure. A situation in between is also conceivable, of course.

[0016] The inflatable hall may comprise a control unit for controlling the pressure and/or the temperature of the interior volume of the inflatable hall, which control unit comprises one or more sensors connected thereto for measuring one or more parameters relating to climate data outside the inflatable hall, and which is designed to control the pressure and/or temperature on the basis of said parameters, said parameters being parameters from the group including interior volume temperature, outside temperature, radiation, wind velocity and the presence of snow. The control unit makes it possible to control the pressure and/or the temperature in the inflatable hall in a precise and energy-efficient manner. The conditions outside the inflatable hall have an influence on the heat losses of the inflatable hall to the environment. By taking these conditions into account in the control of the temperature, the temperature in the inflatable hall can be realised in a precise and efficient and thus relatively energy-efficient manner. It has been found that radiation between the inflatable hall and the environment, for example, plays an important part in the energy household of the inflatable hall. Control on the basis of radiation data makes it possible to realise an effective and precise temperature control.

[0017] The amount of radiation can be measured by means of a radiation sensor, for example, or by means of a temperature sensor provided with a radiation-sensitive envelope, such that the prevailing radiation influences the signal delivered by the temperature sensor.

[0018] In one embodiment, the control unit is connected to the return valve, wherein the control unit comprises a sensor for measuring wind velocity and wherein the control unit is designed for moving the return valve towards a closed position when the wind velocity exceeds a predetermined value. Moving the return valve to a closed position makes it possible to realise a pressure build-up in the inflatable hall. In this way air cannot exit the inflatable hall, or at least to a lesser extent. The return valve is further closed, as a result of which the hall pressure increases. Pressure losses in the inflatable hall unit will be reduced. This makes it easier to realise the required pressure build-up by means of the air supply units. This control is important with a view to maintaining the required overpressure in the interior volume of the inflatable hall. The control unit will cause the return valve to move to a more closed position. Said position may be a not completely closed position.

[0019] The control unit may comprise a frequency controller for controlling the number of revolutions of the fan unit and/or the additional fan unit. Controlling the frequency of the fan unit makes it possible to realise a precise and relatively energy-efficient process. An energy saving of more than 60% is possible.

[0020] In one embodiment, the inflatable hall comprises an interior temperature sensor for measuring the temperature of the interior volume, wherein the control unit is designed to make readjustments on the basis of the temperature measured by the interior temperature sensor. The interior temperature sensor is capable of measuring the temperature of the air in the inflatable hall. It is (additionally) possible for the interior temperature sensor to measure the temperature of the return air. In combination with the control in dependence on the parameters that relate to climate data outside the inflatable hall, a precise, effective and energy-efficient control of the temperature in the inflatable hall is realised.

[0021] The control unit may be connected to a clock unit for providing time data, in which case the control unit is designed for controlling the temperature on the basis of said time data. Based on the time data, the air supply units may for example be active for a particular period of time, or shut down after a particular period of time.

[0022] The clock unit may be connected to an input unit, via which a user can input the time data. The user can thus feed time data to the control unit, for example for the purpose of setting the period during which the air supply units are to supply air or during which heating or cooling are to take place.

[0023] The invention also relates to a method for controlling the pressure of the interior volume of the inflatable hall as described in the foregoing. The method is characterised by the step of controlling the number of revolutions of the fan unit and/or the additional fan unit. Adjusting the number of revolutions is a relatively efficient method in comparison with prior art control methods, for example control by means of throttle valves. By controlling the number of revolutions, the fan unit can operate in an efficient manner over a relatively large range of working points. Controlling the number of revolutions thus leads to a further improvement of the efficiency of the air supply unit.

[0024] As already indicated, the inflatable hall may comprise a return outlet fitted with a return valve for extracting air from the inflatable hall, which return valve can be connected to a return inlet provided in the air supply unit, which return inlet is preferably disposed upstream of the fan unit. In one embodiment of the method, the method comprises the step of controlling the flow across the return outlet.

[0025] In one embodiment, the method comprises the step of setting the fan unit and/or the additional fan unit to modulating operation. Controlling the number of revolutions can take place supplementary to said setting to modulating operation. Modular switching makes it possible to activate or deactivate fan units as desired. In situations in which there is no demand for heat in the inflatable hall, for example, the fan unit can be activated for supplying air to compensate for air losses due to leakage. The additional fan unit may be deactivated in that case. The hall pressure can in that case be controlled by means of a frequency controller, for example, which controls the number of revolutions of the fan unit. Controlling the hall pressure is also possible by further opening or closing the return valve. The hall pressure is controlled on the basis of the pressure required for keeping the hall skin upright. When a higher hall pressure is needed, for example in connection with an increased wind velocity, this can be realised by reducing the flow across the return valve in a first step, and increasing the number of revolutions of the fan unit in a second step. Additionally, the at least one additional fan unit can be activated for modulating operation for supplying the required pressure buildup.

[0026] It is preferable, however, to use the fan unit during periods when there is no demand for heat, and to activate the additional fan units (in particular for modulating operation) during periods in which there is a demand for heat, as will be explained in more detail yet hereinafter.

[0027] In one embodiment, the method comprises the steps of determining the heat demand in the inflatable hall; determining the inlet temperature of the air supplied by the air supply unit; and controlling the fan unit and/or the additional fan unit on the basis of the heat demand and the inlet temperature; and/or setting the fan unit and/or the additional fan unit to modulating operation. Determining the heat demand can take place on the basis of calculations. Said calculations can be realised on the basis of measurement data, such as the above-described measurement data of parameters that relate to climate data outside the inflatable hall. This makes it possible to calculate the energy losses of the inflatable hall and to adjust the flow across the air supply unit. Preferably, the fan unit and the additional fan unit are activated during heating mode, so that a good distribution/mixing of air is realised and heating is effected quickly. In the case of snowfall, fan units may be turned off, so that a higher melting temperature is realised.

[0028] The air supply unit of the inflatable hall may be provided with an air conditioning device for at least heating and/or cooling the air supplied by the first air supply unit, wherein the method comprises the step of controlling the air conditioning device. An improved control of the temperature in the inflatable hall is realised by making use of an air conditioning unit which is capable of cooling and/or heating.

[0029] The present invention will be explained in more detail hereinafter by means of a description of a preferred embodiment thereof, in which reference is made to the appended figures, in which:

Figure 1 is a schematic view of an embodiment of an inflatable hall;
Figure 2 is a schematic view of another embodiment of an inflatable hall.

[0030] Figure 1 shows an inflatable hall 1. The inflatable hall comprises a hall skin unit 3. The hall skin unit 3 comprises the balloon skin provided with insulation material. The hall skin unit bounds an interior volume 13 of the inflatable hall 1. The pressure required for keeping the hall structure (the weight of the balloon skin with the insulation material and the tension cables) upright is supplied by the air supply unit 2. The air supply unit 2 is designed for supplying air to the interior volume 13 of the inflatable hall for generating and/or maintaining an atmosphere overpressure in the interior volume 13. As figure 1 shows, the air supply unit 2 comprises an air inlet 4 for supplying air to the air supply unit. Disposed downstream of the air inlet 4 are a number of fan units 6,8. Provided further downstream thereof is an air outlet 5, which opens into the interior volume of the inflatable hall.

[0031] The array of fan units 6,8 comprises a first fan unit 6 and an additional fan unit 8 disposed parallel to said fan unit 6. In the embodiment as shown, two additional fan units 8 are provided. It is possible, of course, to provide a larger or a smaller number of additional fan units 8.

[0032] Arranging a number of fan units in parallel in an air supply unit with a common air inlet leads to an inflatable hall which is relatively (energy) efficient. It is possible to have the (individual) fan units function at respective desired working points. It is for example possible to control the frequency of the fan units. The supply of air can be varied also by activating or deactivating one or more fan units. The joint fan units produce a particular maximum flow across the air inlet. The flow that is actually delivered can be reduced by deactivating one or more fan units. The minimum flow required for maintaining the hall pressure can be produced by only some of the total number of fan units. No use needs to be made of a throttle valve in the air inlet, which leads to a more efficient air supply unit that exhibits relatively minor energy losses.

[0033] The fan unit 6 and the additional fan unit 8 are each designed for independently maintaining at least the required overpressure in the interior volume 13. Preferably, the fan units 6,8 are equally dimensioned, i.e. the maximum flow that can be produced by the fan unit 6 is substantially the same as the maximum flow that can be produced by the additional fan unit 8.

[0034] The fan units are provided with a non-return valve 30 so as to prevent undesirable backflow of air in upstream direction. The non-return valve may also be a valve actuated by a servo motor.

[0035] As figure 1 shows, the air supply unit 2 is provided with an air conditioning device 9 for at least heating and/or cooling the air supplied by the first air supply unit. In the illustrated embodiment, the air conditioning device comprises a burner capable of modulating operation. Said burner may also be an on/off burner or a low/high/off burner. It is also quite possible, however, to use an embodiment (not shown) which is not provided with an air conditioning unit 9. More in particular, some embodiments may not be provided with a heating device.

[0036] The inflatable hall also comprises a return outlet 7 fitted with a return valve 19. The return outlet connects the interior volume 13 of the inflatable hall 1 to the supply device. In the illustrated embodiment, said connection is disposed upstream of the fan unit. The return outlet is designed for extracting air from the inflatable hall. The return valve 19 can be actuated by means of a motor 18. The return valve can thus be put in an open or closed position or in a position in-between, as desired. The larger the opening that is used, the greater the amount of air that will recirculate via the air supply device.

[0037] In the illustrated embodiment the air inlet 4 is provided with a shut-off device 16, for example in the form of a valve. Said shut-off device makes it possible to open or close the air inlet as desired. In a (nearly) fully closed position of the air inlet 4, and an open position of the return outlet 7, full recirculation of air in the inflatable hall takes place. The air inlet 4 will be slightly open in practically all cases, so that the air supply unit can compensate for losses of air from the inflatable hall. An embodiment not comprising a shut-off device is also conceivable.

[0038] In a situation in which the air inlet 4 is open and the return outlet 7 is closed, on the other hand, a pressure buildup can take place in the inflatable hall.

[0039] To prevent pressure losses resulting from a power failure in the inflatable hall 1, the inflatable hall 1 is provided with an emergency air supply unit 11, 12. In the illustrated embodiment the emergency air supply unit 11, 12 forms part of the air supply unit. The emergency air supply unit 11, 12 comprises an emergency air inlet 10 provided with a closable opening and, downstream thereof, a calamity fan unit 11. Said calamity fan unit 11 preferably comprises a centrifugal fan. A non-return valve (not shown) may be provided downstream of said calamity fan unit 11. Downstream, the fan 11 is connected to the air outlet of the air supply unit 2. An emergency power supply unit, in the form of a diesel generator 12, is provided near the calamity fan unit. In case of a calamity, for example a power failure, the diesel generator 12 will come into operation and drive also the calamity fan unit 11, such that the required pressure buildup in the inflatable all remains ensured.

[0040] The inflatable hall shown in figure 1 is also provided with a control unit 31 for controlling the pressure and/or the temperature of the interior volume 13 of the inflatable hall 1. The control unit comprises a number of sensors 21-26 connected thereto. A number of said sensors 22-25 are designed for measuring one or more parameters relating to climate data outside the inflatable hall. Thus, there is an outside temperature sensor 22 for measuring outside temperature, a wind sensor 23 for measuring wind velocity, a radiation sensor 24 for measuring radiation, and a snow sensor 25 for measuring presence of snow. In one embodiment, at least two snow sensors are provided so as to make it possible to detect the presence of snow in a more precise and reliable manner. Additionally, sensors are provided for measuring the temperature of the air supplied to the inflatable hall (temperature sensor 26) and for measuring the temperature and/or the pressure of the air in the inflatable hall (interior sensor 21).

[0041] The control unit 31 preferably comprises a frequency controller 27 for controlling the number of revolutions of the fan unit 6 and/or the additional fan unit 8. This enables the air supply unit to operate with a relatively large number of flow rates whilst a relatively high degree of energy efficiency is ensured.

[0042] Figure 2 shows an inflatable hall 101 according to another embodiment. The inflatable hall comprises a hall skin unit 103. Said hall skin unit bounds an internal volume 113. The required pressure buildup in the inflatable hall is provided by the air supply unit 102. In this embodiment, the air supply unit 102 comprises an air inlet 109. Disposed downstream thereof are a number of fan units 100, 106. In the illustrated embodiment, the fan units 100, 106 are axial fans, but it is also possible to use centrifugal fans, for example. Disposed further downstream thereof is an air outlet 105, which opens into the interior volume 113 of the inflatable hall 101.

[0043] The array of fan units 100, 106 comprises a first fan unit 100 and an additional fan unit 106 disposed parallel to said fan unit 100. Three additional fan units 106 are provided in the illustrated embodiment, so that in total four fan units 100, 106 are arranged parallel to each other. It will be understood that the number of fan units may vary, and that a larger or a smaller number may be used, as desired. The advantageous effects of said parallel arrangement have already been explained in the foregoing. It is of course possible to provide a larger or a smaller number of additional fan units 106.

[0044] The dimensioning of the fan units can be similar to that described with reference to figure 1. That is, the fan units used in the illustrated embodiment are each designed for independently maintaining at least the required overpressure in the interior volume 113, and the fan units 100, 106 are dimensioned substantially identically, i.e. the maximum flow that can be produced by the fan unit 100 is substantially the same as the maximum flow that can be produced by each of the additional fan units 106. It is of course possible to vary the maximum flow rates of the individual fan units or the individual additional fan units.

[0045] The fan units 100, 106 are provided with a non-return valve 130 to prevent undesirable backflow of air in upstream direction. A non-return valve may also be a valve actuated by a servo motor, for example.

[0046] In the embodiment shown in figure 2, the air supply unit 102 is provided with air conditioning device 108. In the illustrated embodiment, the air conditioning device comprises a high-efficiency cascade system 104. The high-efficiency cascade system comprises a number of central-heating boilers arranged in cascade. Furthermore provided is a dual-action pump provided with an electric pressure difference control unit. The high-efficiency cascade system also comprises an expansion vessel. The heating element 108 is disposed between the fan units 100, 106 and the air inlet 109 for heating and cooling the air supplied by the first air supply unit 102. The air conditioning device used in the illustrated embodiment comprises a modulating burner. It is also quite possible to use an embodiment (not shown) which is not provided with an air conditioning unit 9. In particular in some cases a heating device may not be provided.

[0047] The inflatable hall shown in figure 2 also comprises a return outlet 107 fitted with a return valve 120 and a motor 111. In the illustrated embodiment, the air inlet 109 can be shut off by means of a shut-off device (not shown). As already described before, recirculation of air or, conversely, a pressure buildup in the inflatable hall can be effected by alternately closing and opening the return outlet and the shut-off device of the air inlet 109. The pressure can be maintained, also in the closed position of the return valve, by suitably selecting the flow to the inflatable hall.

[0048] To prevent pressure losses in the inflatable hall 101 resulting from a power failure, the inflatable hall 1010 also comprises an emergency power unit 112 in the form of a diesel generator. The diesel generator will supply the power required for driving the various parts of the inflatable hall.

[0049] The inflatable hall shown in figure 2 is also provided with a control unit 131 for controlling the pressure and/or the temperature of the interior volume 13 of the inflatable hall 101. The control unit has already been explained in the foregoing with reference to figure 1. The control unit comprises a number of sensors 121-126 connected thereto. A number of said sensors 122-125 are designed for measuring one or more parameters relating to climate data outside the inflatable hall. Thus, there is an outside temperature sensor 122 for measuring outside temperature, a wind sensor 123 for measuring wind velocity, a radiation sensor 124 for measuring radiation, and one (or more) snow sensors 125 for measuring presence of snow. The radiation sensor may be a radiation sensor, for example, or a temperature sensor, which is for example provided with a radiation-sensitive coating. Additionally, sensors are provided for measuring the temperature of the air supplied to the inflatable hall (temperature sensor 126) and for measuring the temperature and/or the pressure of the air in the inflatable hall (interior sensor 121).

[0050] The control unit 131 preferably comprises a frequency controller 27 for controlling the number of revolutions of the fan unit 6 and/or the additional fan unit 8. This enables the air supply unit to operate with a relatively large number of flow rates whilst a relatively high degree of energy efficiency is ensured.

[0051] The inflatable hall shown in figures 1 and 2 can be operated as follows. During periods in which there is no demand for heat, one fan unit 6, 100 is operated to compensate for air losses due to leakage. The return valve 19, 120 is closed and the air conditioning unit 9, 104 is turned off. The hall pressure is in that situation controlled by a frequency controller 27, 127, which controls the number of revolutions of the fan unit. The hall pressure is controlled on the basis of the pressure required for keeping the hall skin structure upright. If the wind sensor 23, 123 measures an increase in the wind velocity, the hall pressure is increased as well. In a first step, the flow across the return valve can be reduced in that case. In a second step the fan speed can be increased.

[0052] In case of a calamity, the fan units become operative as much as needed for keeping the hall pressurized. Possibly, in the embodiment shown in figure 1, use can be made of the calamity fan unit 11.

[0053] The temperature in the inflatable hall is controlled on the basis of one or more parameters relating to climate data outside the inflatable hall. As described in the foregoing, said parameters are parameters from the group including interior volume temperature, outside temperature, radiation, wind velocity and the presence of snow. The temperature setting is readjusted on the basis of the internal temperature and possibly also the return temperature of the air in the return outlet.

[0054] In particular in the presence of snow, during the daytime and at night, the heating is turned on and air having a suitable temperature is blown in by means of one or more fan units, with the temperature being selected so that the snow will melt and the hall is prevented from collapsing under the weight of the snow.

[0055] It will be understood by those skilled in the art that the invention is not limited to that which is described herein, but that several equivalent embodiments of the invention are possible, which all fall within the scope of the claims.

Claims

1. An inflatable hall comprising a hall skin unit of a flexible material for forming at least part of a roof of the inflatable hall, which hall skin unit at least partially encloses an interior volume of the inflatable hall, which inflatable hall comprises an air supply unit for supplying air to the interior volume of the inflatable hall for generating and/or maintaining an atmospheric overpressure in said interior volume, which air supply unit is provided with an air inlet, with a fan unit disposed downstream thereof, and with an air outlet disposed downstream of said fan unit, which air outlet opens into the interior volume of the inflatable hall, **characterised in that** the air supply unit is also provided with an additional fan unit disposed parallel to the aforesaid fan unit.

2. An inflatable hall according to claim 1, wherein the fan unit and the additional fan unit are each designed for independently maintaining at least the required overpressure in the interior volume.

3. An inflatable hall according to claim 1 or 2, wherein the maximum flow that can be delivered by the fan unit is substantially the same as the maximum flow that can be delivered by the additional fan unit.

4. An inflatable hall according to any one of the preceding claims, wherein the air supply unit is provided with an air conditioning device for at least heating and/or cooling the air supplied by the first air supply unit, wherein the air conditioning device comprises a high efficiency cascade system and/or wherein the air conditioning device comprises a modulating burner.

5. An inflatable hall according to any one of the preceding claims, wherein the inflatable hall comprises a return outlet fitted with a return valve for extracting air from the inflatable hall, which return outlet is connectable to a return inlet provided in the air supply unit, which return inlet is preferably disposed upstream of the fan unit.

6. An inflatable hall according to any one of the preceding claims, comprising a control unit for controlling the pressure and/or the temperature of the interior volume of the inflatable hall, which control unit comprises one or more sensors connected thereto for measuring one or more parameters relating to climate data outside the inflatable hall, and which is designed to control the pressure and/or temperature on the basis of said parameters, said parameters being parameters from the group including interior volume temperature, outside temperature, radiation, wind velocity and the presence of snow.

7. An inflatable hall according to claims 5 and 6, wherein the control unit is connected to the return valve, wherein the control unit comprises a sensor for measuring wind velocity and wherein the control unit is designed for moving the return valve towards a closed position when the wind velocity exceeds a predetermined value.

8. An inflatable hall according to claim 6 or 7, wherein the control unit comprises a frequency controller for controlling the number of revolutions of the fan unit and/or the additional fan unit.

9. An inflatable hall according to any one of claims 6-8, comprising an interior temperature sensor for measuring the temperature of the interior volume, wherein the control unit is designed to make readjustments on the basis of the temperature measured by the interior temperature sensor.

10. An inflatable hall according to any one of claims 6-9, wherein the control unit is connected to a clock unit for providing time data, wherein the control unit is designed for controlling the temperature on the basis of said time data.

11. A method for controlling the pressure and/or the temperature of an interior volume of an inflatable hall according to any one of the preceding claims, **characterised in that** the method comprises the step of controlling the number of revolutions of the fan unit and/or the additional fan unit.

12. A method according to claim 11, wherein the inflatable hall comprises a return outlet fitted with a return valve for extracting air from the inflatable hall, which return valve is connectable to a return inlet provided in the air supply unit, which return inlet is preferably disposed upstream of the fan unit, and wherein the method comprises the step of controlling the flow across the return outlet.

13. A method according to claim 11 or 12, comprising the step of setting the fan unit and/or the additional fan unit to modulating operation.

14. A method according to any one of claims 11-13, wherein the method comprises the steps of:

   - determining the heat demand in the inflatable hall;
   - determining the inlet temperature of the air supplied by the air supply unit;
   - controlling the fan unit and/or the additional fan unit on the basis of the heat demand and the inlet temperature; and/or setting the fan unit and/or the additional fan unit to modulating operation.

15. A method according to claim 14, wherein the air supply unit of the inflatable hall is provided with an air conditioning device for at least heating and/or cooling the air supplied by the first air supply unit, wherein the method comprises the step of controlling the air conditioning device.

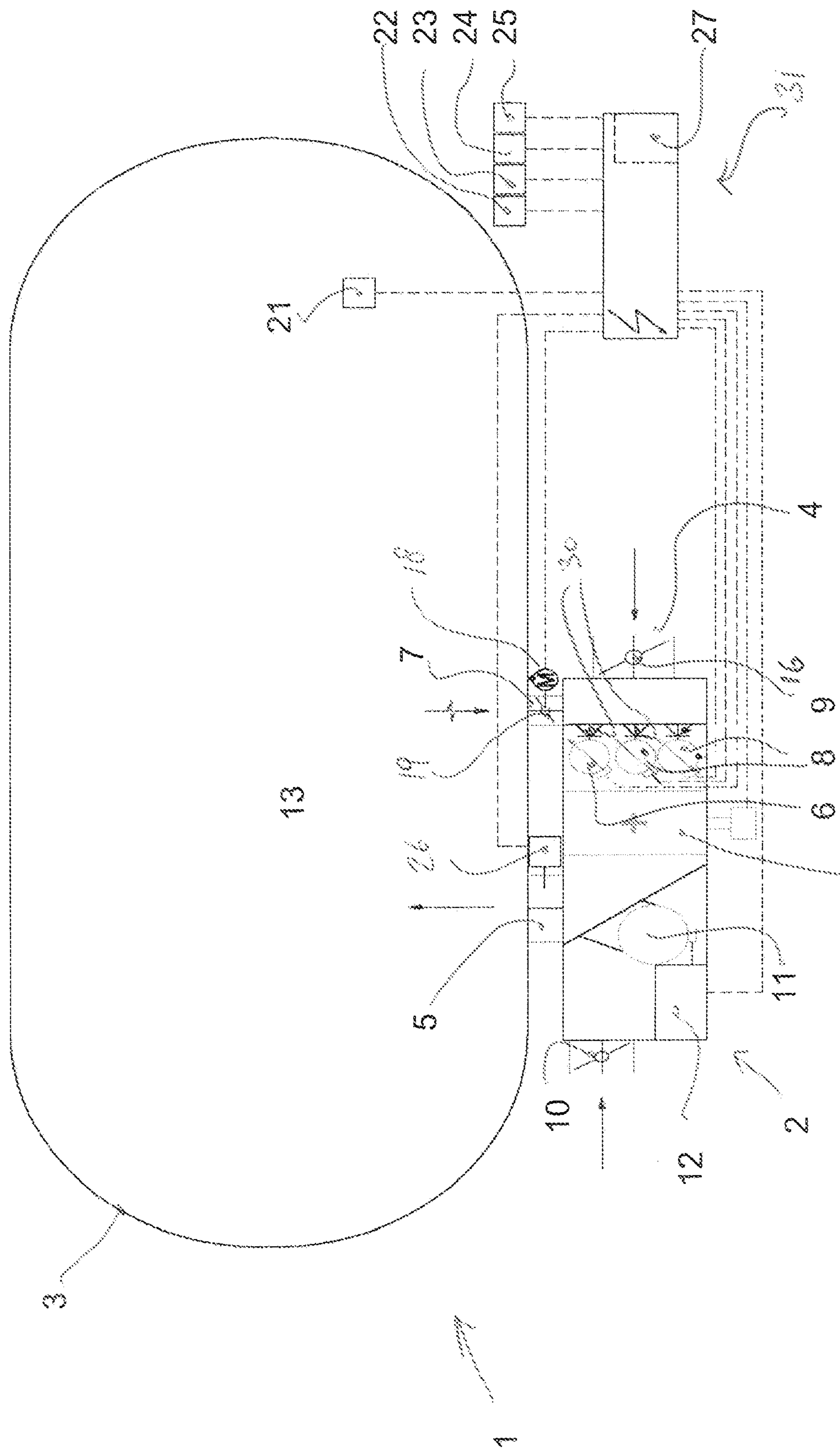

Fig. 1

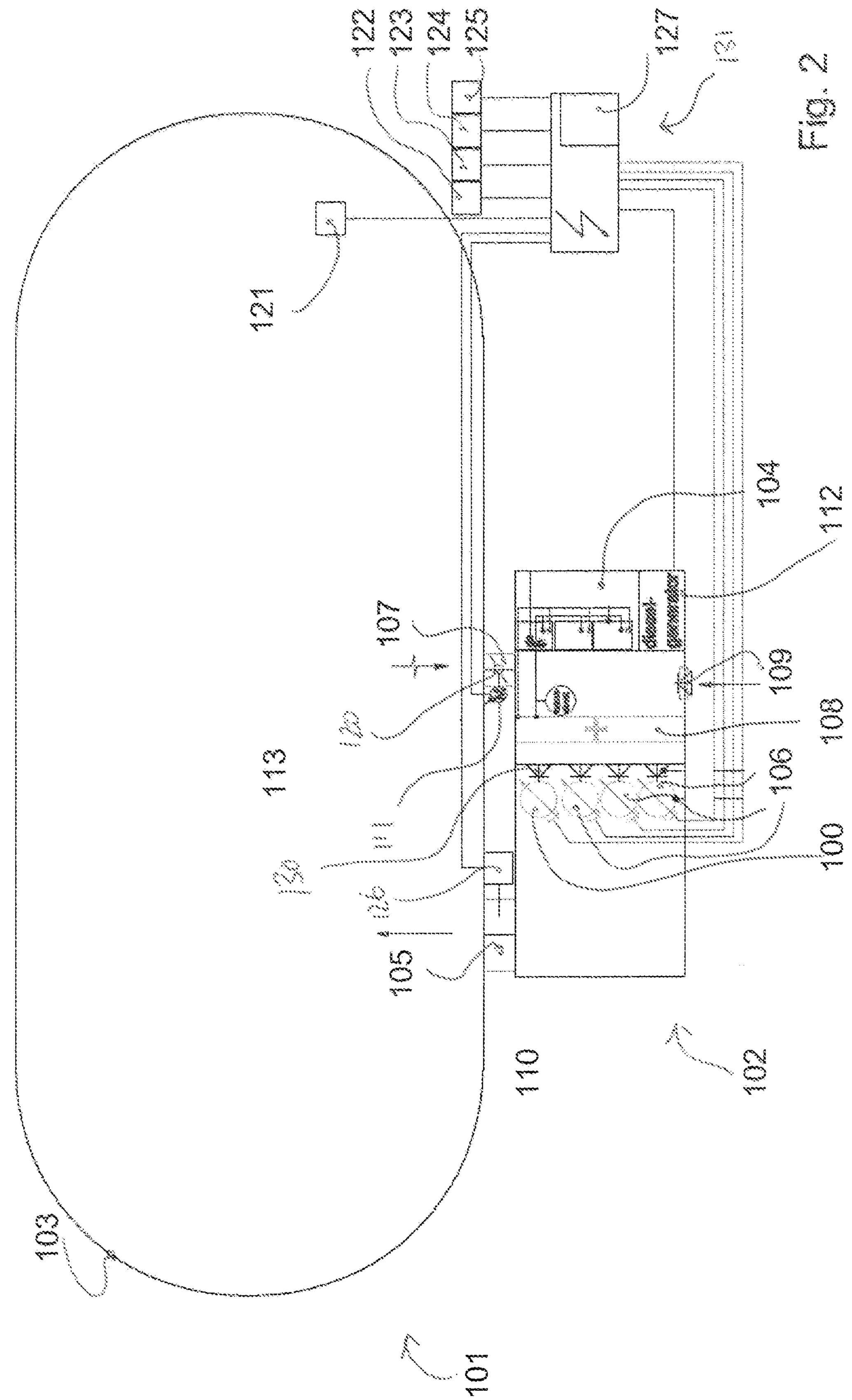
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Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 10 16 8756

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Place of search	Date of completion of the search	Examiner
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X : particularly relevant if taken alone
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