WHAT IS CLAIMED IS:

1. A respiratory support apparatus configured to provide a gases flow to a patient, the respiratory support apparatus comprising:

a flow generator configured to generate the gases flow;

a humidifier configured to humidify the gases flow;

a controller, the apparatus being controlled by the controller to function in at least two modes, being a normal mode and a high-temperature mode, wherein when in the high-temperature mode, the peak temperature of gases delivered to the patient is higher than the peak temperature of gases delivered to the patient when in the normal mode;

wherein in the normal mode the controller controls the flow generator to generate the gases flow at a flow rate within a first flow rate range that is limited by a first peak flow rate; and

wherein in the high-temperature mode, the controller controls the flow generator to generate the gases flow at a flow rate within a second flow rate range that is limited by a second peak flow rate, the second peak flow rate being lower than the first peak flow rate of the normal mode.

2. The apparatus of claim 1 wherein the first flow rate range is limited by a first minimum flow rate, and the second flow rate range is limited by a second minimum flow rate, the second minimum flow rate being higher than the first minimum flow rate.

3. The apparatus of any one of the preceding claims wherein the magnitude of a change of flow rate range between high-temperature mode and normal mode is controlled so as to be below a predetermined threshold.

4. The apparatus of claim 2 wherein the minimum flow rate of the second flow rate range, is equal to or less than the minimum flow rate of the first flow rate range.

5. The apparatus of any one of the preceding claims wherein the second flow rate range is narrower than the first flow rate range.

6. The apparatus of any one of the preceding claims wherein the second flow rate range is narrower than the first flow rate range by between 1 and 70 L/min, preferably between 5 and 60 L/min and more preferably between 10 and 60 L/min.

7. The apparatus of any one of the preceding claims wherein when in the high-temperature mode the gases flow to the patient is controlled to a temperature range of 41 to 50 °C, preferably 43 to 47 °C.

8. The apparatus of any one of the preceding claims wherein the controller limits the duration of the high-temperature mode to a set duration.

9. The apparatus of any one of the preceding claims and configured to be controlled by the controller in a further mode, being a cool-down mode, the cool-down mode being operative after the high-temperature mode, such that when in the cool-down mode, any one or more of:

a. the flow rate is controlled to a flow-rate set point, wherein the rate of change of the flow rate from the flow rate used during high-temperature mode to the flow rate set point is controlled to be below a predetermined threshold;

b. the electrical power supplied to the humidifier heater is reduced from that used during normal mode and/or high-temperature mode; and/or

c. a temperature set point of the gases flow delivered to the patient is reduced from that during high-temperature mode.

10. A respiratory support apparatus configured to provide a gases flow to a patient, the respiratory support apparatus comprising:

a flow generator configured to generate the gases flow;

a humidifier configured to humidify the gases flow;

a controller, the apparatus being controlled by the controller to function in at least two modes, being a normal mode and a high-temperature mode, wherein when in the high-temperature mode, the temperature of gases delivered to the patient is higher than the temperature of gases delivered to the patient in normal mode;

wherein in the high-temperature mode the controller limits the duration of the high-temperature mode to a maximum duration.

11. The apparatus of claim 10 wherein the controller limits the duration of the high-temperature mode using a signal generated by a timer.

12. The apparatus of claim 11 wherein the set duration is between 15 and 180 minutes, preferably 20 and 120 minutes, and more preferably between 30 and 90 minutes.

13. The apparatus of claim 10 wherein the controller limits the duration of the high-temperature mode using a signal generated by a counter.

14. The apparatus of any one of claims 11 to 13 wherein the apparatus generates the signal.

15. The apparatus of claim 14 wherein the apparatus comprises a further controller, configured to generate the signal.

16. The apparatus of any one of claims 11 to 13 wherein the apparatus receives the signal from a remote device.

17. The apparatus of any one of claims 12 to 15 wherein the apparatus is configured to be controlled by the controller in a further mode, being a cool-down mode, the cool-down mode being operative after the high-temperature mode ends.

18. The apparatus of claim 17 wherein, when in the cool-down mode, any one or more of:

a. the flow rate is controlled to a flow rate set point, wherein the rate of change of the flow rate from the flow rate used during high-temperature mode to the flow rate set point is controlled to be below a predetermined threshold;

b. the electrical power supplied to the humidifier heater is reduced from that used during normal mode and/or high-temperature mode; and/or

c. a temperature set point of the gases flow delivered to the patient is reduced from that during high-temperature mode.

19. The apparatus of any one of the preceding claims wherein in the cool-down mode, the apparatus is controlled to a gases flow temperature set point of 40 °C or less.

~~20. The apparatus of any one of the preceding claims wherein in the cool-down mode, the apparatus is controlled to generate a gases flow at a flow rate within the first range of flow rates that are generated in the normal mode.~~

~~21. The apparatus of any one of the preceding claims wherein in the cool-down mode, the apparatus is controlled such that the enthalpy and/or dew-point of the gases flow is reduced from that of the high-temperature mode.~~

~~22. The apparatus of any one of the preceding claims wherein when in the high-temperature mode, the gases flow to the patient is in a temperature range of 41 to 50 °C, preferably 43 to 47 °C.~~

~~23.~~1. A respiratory support apparatus configured to provide a gases flow to a patient, the respiratory support apparatus comprising:

a flow generator configured to generate the gases flow;

a humidifier configured to humidify the gases flow, the humidifier comprising a humidifier heater;

a controller, the apparatus being controlled by the controller to function in at least two modes, being a normal mode and a high-temperature mode, wherein when in the high-temperature mode, the temperature of gases delivered to the patient is higher than the temperature of gases delivered to the patient in the normal mode;

the apparatus further being controlled by the controller in a further mode, being a cool-down mode, the cool-down mode being operative after the high-temperature mode ends, such that when in the cool-down mode, any one or more of:

a. the flow rate is controlled to a flow rate set point, wherein the rate of change of the flow rate from the flow rate used during high-temperature mode to the flow rate set point is controlled to be below a predetermined threshold;
b. the electrical power supplied to the humidifier heater is reduced from that used during normal and/or high-temperature mode; and/or
c. a temperature set point of the gases flow delivered to the patient is reduced from that during high-temperature mode;

d. the flow rate, and/or the rate of change of the flow rate from the flow rate used during high-temperature mode, is controlled according to a predetermined flow-time curve/relationship.

~~24.~~2. The apparatus of claim 1~~23~~ wherein the cool-down mode is automatically selected by the controller, in response to one or more predetermined conditions of operation of the apparatus.

~~25.~~3. The apparatus of claim 2~~24~~ wherein the one or more predetermined conditions of operation are selected from any one or more of:

a. a predetermined period of time, as determined by a timer;
b. a predetermined number of counts, as determined by a counter;
c. a gases flow dew-point being exceeded;
d. a gases flow enthalpy being exceeded;
e. the user exiting high-temperature mode.

~~26.~~4. The apparatus of any one of claims ~~23~~ 1 to ~~25~~ 3 wherein the controller returns the apparatus to normal mode, after the cool-down mode.

~~27.~~5. The apparatus of claim ~~26~~ 4 wherein the controller returns the apparatus to normal mode after a predetermined period of time, which may be in the range of 15 to 60 minutes, or 30 minutes.

~~28.~~6. The apparatus of claim ~~26~~ 4 wherein the controller returns the apparatus to normal mode in dependence upon the temperature of the gases flow.

~~29.~~7. The apparatus of claim 6~~28~~ wherein the controller returns the apparatus to normal mode in dependence upon the temperature of the gases flow being less than a predetermined temperature.

~~30.~~8. The apparatus of claim 4~~26~~ wherein the controller returns the apparatus to normal mode in dependence upon the dew-point of the gases flow.

~~31.~~9. The apparatus of claim ~~26~~ 4 wherein the controller returns the apparatus to normal mode in dependence upon the enthalpy of the gases flow.

~~32.~~10. The apparatus of any one of claims ~~22~~ 1 to ~~31~~ 9 wherein when in the high-temperature mode, the gases flow to the patient is in a temperature range of 41 to 50 °C, preferably 43 to 47 °C.

~~33.~~11. A respiratory support apparatus configured to provide a gases flow to a patient, the respiratory support apparatus comprising:

a flow generator configured to generate the gases flow;

a humidifier configured to humidify the gases flow;

a controller, the apparatus being controlled by the controller to function in at least two modes, being a normal mode and a high-temperature mode, wherein when in the high-temperature mode, the temperature of gases delivered to the patient is higher than the temperature of gases delivered to the patient in normal mode;

wherein the controller controls the apparatus to restrict a characteristic of the gases flow during high-temperature mode, and/or immediately after termination of high-temperature mode, such that the enthalpy and/or the dew-point of the gases flow is below a predetermined level.

~~34.~~12. The apparatus of any one of the preceding claims wherein when in the high-temperature mode, the gases flow to the patient is in a temperature range of 41 to 50 °C, preferably 43 to 47 °C.

13. The apparatus of claim 6 or 7 wherein the controller returns the apparatus to normal mode when a measured temperature at a humidifier outlet, or at a patient end of a hose delivering the gases flow to a patient interface from the humidifier is less than the predetermined temperature.

14. The apparatus of any of the previous claims wherein when in the cool-down mode the controller does not change the flow rate until the temperature measured at the patient end

of a hose delivering the gases flow to a patient interface from the humidifier and/or at the outlet a humidifier outlet falls below a predetermined threshold.

15. The apparatus of any of claims 4 to 14 wherein in the normal mode, the controller controls the gases flow to have any one or more of the following characteristics:

a) a dew-point in the range of 31 °C – 37 °C;

b) a temperature in the range of 31 °C – 37 °C;

c) a flow rate in the range of 10 L/min – 70 L/min.

~~35. A respiratory support apparatus configured to provide a gases flow to a patient, the respiratory support apparatus comprising:~~

~~a flow generator configured to generate the gases flow;~~

~~a humidifier configured to humidify the gases flow, the humidifier comprising a humidifier heater;~~

~~a controller, the apparatus being controlled by the controller to function in at least two modes, being a normal mode and a high-temperature mode, wherein when in the high-temperature mode the dew-point of gases delivered to the patient is higher than the dew-point of gases delivered to the patient in normal mode; wherein when in the high-temperature mode, the gases flow to the patient is in a dew-point range of 43 to 50 °C.~~

~~36. An apparatus according to any one of the preceding claims comprising any one or more of:~~

~~a. a patient interface configured to be mounted on the patient and to receive the humidified gases flow from the humidifier;~~

~~b. a patient circuit comprising at least one patient conduit configured to be connected to an outlet of the humidifier, and to receive the humidified gases flow from the humidifier;~~

~~c. headgear configured to mount a patient interface on the patient's head.~~

~~37. The apparatus of claim 36 wherein the patient interface comprises a nasal cannula.~~

38. The apparatus of any one of the preceding claims, comprising a user interface arranged to a receive an input from the user to control the apparatus.

39. The apparatus of claim 38 wherein the user interface is a graphic user interface, and preferably a touch screen graphic user interface.

40. The apparatus of claim 38 or 39 wherein the normal and high-temperature modes are user selectable, via the user interface.

41. The apparatus of any one of the preceding claims wherein the apparatus is controlled to provide a cool-down mode, after termination of the high-temperature mode.

42. The apparatus of claim 41 wherein the cool-down mode is automatically selected by the controller, in response to one or more predetermined conditions of operation of the apparatus.

43. The apparatus of claim 42 wherein the one or more predetermined conditions of operation are selected from any one or more of:

a. a predetermined period of time, as determined by a timer;
b. a predetermined number of counts, as determined by a counter;
c. a gases flow dew-point being exceeded;
d. a gases flow enthalpy being exceeded;
e. the user exiting high-temperature mode.

44. The apparatus of any one of claims 41 to 43, wherein the apparatus is controlled, after the cool-down mode, to return to the normal mode.

45. The apparatus of any one of the preceding claims wherein when in normal mode, the gases flow supplied to the patient is controlled to have any one or more of the following characteristics:

a. a dew-point in the range of 31 °C – 37 °C;
b. a temperature in the range of 31 °C – 37 °C;
c. a flow rate in the range of 10 L/min – 70 L/min.

~~46. The apparatus of any one of the preceding claims wherein when in high-temperature mode, the gases flow supplied to the patient is controlled to have any one or more of the following characteristics:~~

~~a. a dew-point in the range of 40 °C – 45 °C;~~

~~b. a temperature in the range of 41 °C – 50 °C;~~

~~c. a flow rate in the range of 30 L/min – 40 L/min;~~

~~d. a minimum flow rate that is a predetermined amount less than the minimum flow rate in the normal mode;~~

~~e. a minimum flow rate that is a predetermined amount more than the minimum flow rate in the normal mode; and~~

~~f. a maximum flow rate that is a predetermined amount less than the maximum flow rate in the normal mode.~~