CLAIMS

1. A respiratory system, comprising:

a flow generator to provide a gas-flow to a patient, the gas flow comprising an oxygen fraction, and

a controller configured to:

receive input relating to oxygen fraction at an patient's nose and/or mouth,

adjust the gas-flow flow rate based on the oxygen fraction at the patient's nose and/or mouth.

2. A respiratory system according to claim 1 wherein the input relating to oxygen fraction is received from a sensor.

3. A respiratory system according to claim 2 wherein the sensor is a O2 fraction sensor coupled to the controller.

4. A respiratory system according to claim 1 wherein the input relating to oxygen fraction is received via user input.

5. A respiratory system according to any preceding claim wherein the flow generator provides a high flow gas-flow.

6. A respiratory system according to any preceding wherein the gas-flow rate is adjusted based on a relationship between the oxygen fraction at the patient's nose and/or mouth and the gas-flow oxygen fraction.

7. A respiratory system according to any preceding claim further comprising one or more of:

a humidifier for humidifying the gas-flow,
inspiratory tube,
conduit (e.g. dry line or heated breathing tube),
patient interface,
pressure relief valve
filter.

8. A respiratory system according to any preceding claim wherein the controller is further configured to:

determine if the gas-flow meets inspiratory demand or does not meet inspiratory demand based on the oxygen fraction at the patient's mouth and/or nose.

9. A respiratory system according to any preceding claim wherein the controller is further configured to:

determine if the gas-flow meets inspiratory demand or does not meet inspiratory demand based on a relationship between oxygen fraction at the patient's mouth and/or nose and the gas-flow oxygen fraction.

10. A respiratory system according to claim 7 or 8 further comprising a user interface and the controller configured to convey to a user whether a patient is meeting or not meeting inspiratory demand.

11. A respiratory system according to any preceding claim wherein the oxygen fraction is:

at least more than about 21%, and optionally:

100%, or

between about 30% and about 50%.

12. A respiratory system according to any preceding claims wherein the flow rate is optionally the flow rate is about 20 litres per minute or more, or optionally between about 20 litres per minute and 90 litres per minute, or optionally between about 40 litres per minute and 70 litres per minute.

13. A respiratory system according to any preceding claims comprising or for use with a non-sealing patient interface, preferably a non-sealing nasal cannula.

14. A respiratory system according to claim 8 or 9 wherein whether the gas-flow meets the patient's inspiratory demand comprises comparing the oxygen fraction at the mouth and/or nose against the gas-flow oxygen fraction.

15. A respiratory system according to claim 8, 9 or 14 wherein, if the determined oxygen fraction at the patient's nose and/or mouth is less than the gas-flow oxygen fraction, then it is determined that the gas-flow does not meet the patient's inspiratory demand.

16. A respiratory system according to claim 8, 9 or 14 if oxygen fraction at the patient's nose and/or mouth is equal to or about ("matches") the gas-flow oxygen

fraction, then it is determined that the gas-flow meets or is close to the patient's inspiratory demand.

17. A respiratory system according to any one of claims 8 to 16 wherein if the inspiratory demand is not being met, the gas-flow flow rate is increased by the controller.

18. A respiratory system according to claim 17 wherein the gas-flow flow rate is increased to a flow rate of optionally about 20 litres per minute or more, or optionally between about 20 litres per minute and about 90 litres per minute, or optionally between about 40 litres per minute and about 70 litres per minute.

19. A respiratory system according to any one of claims 8 to 16 wherein if the inspiratory demand is being exceeded, the gas-flow flow rate is maintained or decreased by the controller.

20. A respiratory system according to any one of claims 8 to 19 wherein the gas-flow flow rate is maintained until it is determined that the patient inspiratory demand is not being met.

21. A respiratory system according to claim 8, 9 or 14, 15 wherein determination that patient inspiratory demand is not being met comprises the controller:

monitoring a set number of previous patient breath cycles,

determining a number of previous patient breath cycles that have entrainment of ambient air, and

comparing the number of previous patient breath cycles having entrainment of ambient air against a set threshold.

22. A respiratory system according to claim 21 wherein patient inspiratory demand is not met if the number of previous patient breath cycles having entrainment of ambient air exceeds a set threshold.

23. A respiratory system according to any preceding claim wherein system is operated to provide the gas-flow to a patient prior to an anaesthestic procedure, and the oxygen fraction of the gas-flow is 100%.

24. A respiratory system according to any one of claims preceding claim wherein the system is operated to provide the gas-flow to a patient during a sedation procedure, and the oxygen fraction of the gas-flow is about 21% or more.

25. A respiratory system to claim 24 wherein if the patient become apnoeic during the sedation procedure, the oxygen fraction of the gas-flow is between about 21% and about 100%.