CLAIMS

1. A flow generator for a respiratory therapy system configured to deliver a breathable gas flow to a patient, the flow generator comprising:

    a housing comprising an inlet and an outlet and a gas flow path between the inlet and outlet;

    an impeller mounted within the housing for rotation about an axis, the impeller configured to be rotationally driven by a motor to provide a gas flow along the gas flow path;

    the flow generator further comprising a sensor mounted in the housing in the gas flow path and configured to detect a property of the gas flow.

2. The flow generator of claim 1 wherein the sensor is configured to detect differential pressure in the gas flow path.

3. The flow generator of claim 2 wherein the sensor is a flow sensor configured to generate a signal indicative of flow rate of the gas flow, from the detected differential pressure.

4. The flow generator of claim 2 wherein the sensor is a pressure sensor configured to generate a signal indicative of the pressure of the gas flow, from the detected differential pressure.

5. The flow generator of claim 1 wherein the sensor comprises first and second sensor openings, the sensor being mounted in the housing such that the first sensor opening faces towards the direction of gas flow through the gas flow path, and the second sensor opening faces away from the direction of gas flow through the gas flow path.

6. The flow generator of claim 1 or claim 2 wherein the sensor is mounted in either the inlet or the outlet of the housing.

7. The flow generator of claim 1 or claim 2 being a centrifugal flow generator.

8. The flow generator of claim 1 or claim 2 wherein the outlet is a radial or tangential outlet configured to deliver the gas flow from the housing in a direction substantially perpendicular to the axis; the sensor being mounted in the radial or tangential outlet.

9. The flow generator of claim 8 wherein the outlet comprises opposed radially inner and outer side walls, the sensor being mounted on the radially outer side wall.

10. The flow generator of claim 1 wherein the inlet is an axial inlet configured to deliver gas into the housing in a direction substantially parallel to the axis, the sensor being mounted in the axial inlet.

11. The flow generator of claim 7 wherein the sensor comprises first and second sensor openings, the sensor being mounted in the housing such that the first sensor opening faces towards the direction of gas flow through the gas flow path, and the second sensor opening faces away from the direction of gas flow through the gas flow path, wherein the first and sensor openings are radially spaced from the axis by a different amount.

12. The flow generator of claim 9 wherein the first and second sensor openings are in fluid communication with the inlet via respective connecting tubes.

13. The flow generator of claim 12 wherein the respective connecting tubes extend substantially parallel to the axis, into the gas flow path.

14. The flow generator of claim 8 wherein the sensor is mounted in a middle third of the gas flow path when viewed along the axis of the gas flow path, that is, in the direction of gas flow.

15. The flow generator of claim 8 wherein the sensor projects into the gas flow path by a predetermined amount.

16. The flow generator of claim 15 wherein the sensor projects across less than half the width of the gas flow path.

17. The flow generator of claim 15 wherein the sensor projects across less than a third of the gas flow path.

18. The flow generator of any one of the preceding claims comprising a motor, the motor being coupled with the impeller to rotationally drive the impeller within the housing.

19. The flow generator of any one of the preceding claims comprising a controller, the controller being configured to receive an output from the sensor indicative of the gas flow in the gas flow path, and being further configured to control the rotational speed and/or torque of the impeller in dependence upon the output from the sensor.

20. A flow generator for a respiratory therapy system configured to deliver a breathable gas flow to a patient, the flow generator comprising:

a housing comprising an inlet and an outlet and a gas flow path between the inlet and outlet;

an impeller mounted within the housing for rotation about an axis, the impeller configured to be rotationally driven by a motor to provide a gas flow along the gas flow path;

wherein the outlet is a radial or tangential outlet configured to deliver the gas flow from the housing in a direction substantially perpendicular to the axis;

the flow generator further comprising a sensor mounted in the radial or tangential outlet of the housing in the gas flow path.

21. A flow generator for a respiratory therapy system configured to deliver a breathable gas flow to a patient, the flow generator comprising:

a housing comprising an inlet and an outlet and a gas flow path between the inlet and outlet;

an impeller mounted within the housing for rotation about an axis, the impeller configured to be rotationally driven by a motor to provide a gas flow along the gas flow path;

wherein the inlet is an axial inlet configured to deliver gas into the housing in a direction substantially parallel to the axis;

the flow generator further comprising a sensor mounted in the axial inlet of the housing in the gas flow path.

22. A respiratory therapy system comprising the flow generator of any one of claims 1 to 21.

23. The system of claim 22 further comprising any one or more of:
    a. a breathing gas humidifier;
    b. a gas delivery conduit, which may or may not be heated; and/or
    c. a patient interface.

24. The system of claim 23 further comprising at least one pressure sensor configured to generate a signal indicative of the breathable gas pressure, the pressure sensor being located in any of the following locations:
    a. at or in the housing of the flow generator;
    b. at or in the gas delivery conduit.
    c. at or in the patient interface;
    d. between the flow generator and the breathing gas humidifier;
    e. between the flow generator and the patient interface;

25. The system of claim 24 comprising a plurality of pressure sensors, each pressure sensor being located in a different part of the system.

26. The system of claim 23 wherein the patient interface comprises any one of:
    a) a full face mask comprising a mask frame and a cushion configured to seal around the patient's nose and mouth;
    b) an oral mask comprising a mask frame and a cushion configured to seal around the patient's mouth;
    c) a nasal mask comprising a mask frame and a cushion configured to seal around the patient's nose;
    d) a nasal cannula having one or more prongs for insertion into the patient's nares;

e) a nasal mask comprising one or more nasal pillows configured to seal against the patient’s nose; and
f) a hybrid mask comprising a combination of nasal pillows/prongs and an oral seal.
g) an endotracheal conduit; and
h) a tracheostomy interface.