

decreasing flow during high flow therapy, capturing expelled CO₂ for rebreathing and/or increasing a carbon dioxide content ratio in a breathing gas being supplied to the user.

[0008a] In an embodiment, a system for evaluating the effectiveness of a high flow therapy is disclosed. The system includes a sensor configured to determine an indication of a respiratory pattern of a patient; a flow generator, the flow generator configured to provide a high flow therapy to the patient, and a controller configured to: receive the indication of the respiratory pattern of the patient and identify a respiratory disorder, the respiratory disorder identified as an abnormal breathing pattern; and control the flow generator to provide the high flow therapy to the patient to compensate for the identified abnormal breathing pattern; wherein an effectiveness of the high flow therapy is evaluated by the controller or an external monitor, wherein evaluating the effectiveness comprises determining if the respiratory disorder has improved, and wherein the high flow therapy is adjusted according to the evaluation of effectiveness.

[0009] In an embodiment, a method of treating Cheyne-Stokes Respiration (CSR) is disclosed. The method includes measuring a signal indicative of respiration of a patient, analysing the signal to determine if the signal indicates that the patient is suffering from CSR and applying a high flow therapy to the patient. In an embodiment, the method can include analysing the signal to determine if the signal indicates that the patient is suffering from CSR includes analysing the signal for periods of shallow breathing or apneas in between periods of heavy breathing or hyperventilation. In an embodiment, analysing the signal to determine if the signal indicates that the patient is suffering from CSR includes analysing the signal for periods of a waxing respiration portion and a waning respiration portion. In an embodiment, applying the nasal high flow occurs during a transition between the waxing portion and the waning portion. In an embodiment, the method includes identifying a period and phases of the signal indicative of the respiration of the patient. In an embodiment, initiating the nasal high flow occurs during at least one of the phases. In an embodiment, the method includes identifying a phase delay associated with chemoreceptor signals of the patient. In an embodiment, initiating

the nasal high flow incorporates the phase delay. In an embodiment, a periodic signal amplitude having a 90% reduction of a normal signal amplitude is indicative of CSR. In an embodiment, a signal amplitude having an approximately 50% reduction from a normal signal amplitude is indicative of CSR. In an embodiment, the amplitude continues for about 10 seconds or more. In an embodiment, the high flow is about 40 litres per minute. In an embodiment, the method further includes humidifying air used in the high flow therapy. In an embodiment, the high flow therapy is nasal high flow therapy. In an embodiment, the high flow therapy is applied for a window of time less than or approximately equal to the period of the CSR cycle. In an embodiment, measuring is performed by a sensor. In an embodiment, analysing is performed by a hardware processor. In an embodiment, the applying is performed by a high flow respiratory assistance device.