CSIR-Central Mechanical Engineering Research Institute
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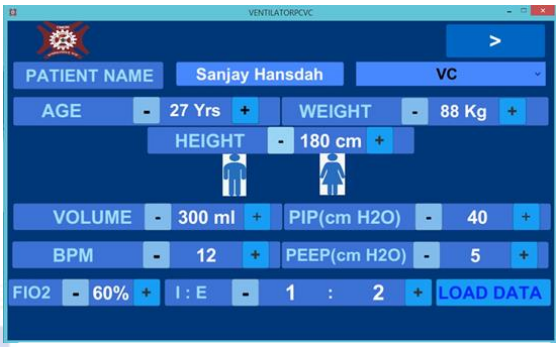
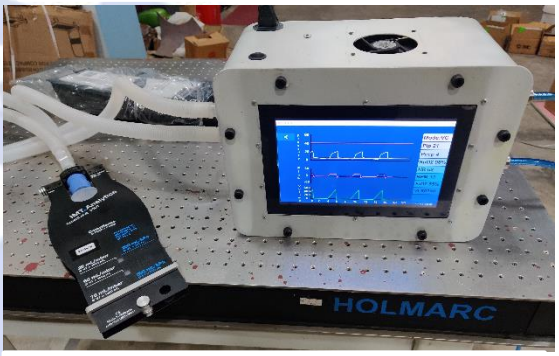
Mechanical Ventilator with High Flow Oxygen Therapy

With the availability of newer information related to COVID-19 from various journals of international repute, that high flow oxygen therapy was providing much better results, CSIR-CMERI tuned its R&D direction towards developing an affordable Mechanical Ventilator with an integrated Nasal High Flow (NHF) Oxygen Therapy Unit. The addition of the Unit into the CSIR-CMERI developed Ventilator has helped in multiplying its portability and therefore facilitating its usage in diverse and a variety of critical medical scenarios. This technology can play a significant role for treatment of the patients in combination with the help of competent medical support staff.

In addition to the NHF unit, the Mechanical Ventilator is also equipped with a SpO_2 measuring sensor, which provides real-time Oxygen saturation levels in blood and heart rate of the patient. With the availability of various patient specific data in real time, various bedside tool (ROX Index, ROX-HR, FiO2-PEEP etc.) based intelligent and customizable alarms have also been built into the controller. In conjunction these provides a comprehensive
picture of medical intervention needs of an individual.



Software GUI for Ventilator Setting



Real-time Graphs of Pressure, Flow and Volume

Specifications:

- **Therapy Types: Invasive Ventilation, Non-invasive Ventilation, Standard and Nasal High Flow (NHF) O_2 Therapies**
- **Standard O_2 Therapy:** Continuous Flow of 2- 5 L/min @ 21-100% FiO_2
- **Nasal High Flow (NHF) O_2 Therapy:** Continuous Flow of 2- 40 L/min @ 21-100% FiO_2
- **Mechanical Ventilator**
- **Ventilation Modes: VC-AC, PC-AC, VC-SIMV, PC-SIMV**
- **PIP:** 0-120 cm of H_2O (adjustable in steps of 1)
- **PEEP:** 0-20 cm of H_2O (adjustable in steps of 1)
- **Inspiratory Flow:** 2- 70 L/min
- **Trigger:** Flow Trigger (1-10L/min), Pressure Trigger (2-5 cm of H_2O)
- **Inspiratory: Expiratory ratio (I:E):** 1:0.3 - 1:4 (adjustable in any ratio)
- **Respiratory Rate (BPM):** 10 – 40 breaths per minute in increments of 2
- **Tidal Volume:** 100 ml – 800 ml in steps of 50
- **O_2 Concentration (FiO_2) :** 21 – 100%
- **SpO_2:** Patient's Oxygen Saturation displayed in real time
- **Alarms:** Standard & customizable alarms
- **Certifications:** IEC 60601-1:2012 (TUV Rheinland); ISO-80601-2-12 (In-house)

Technology Transfer Fee: Rs.7.5 Lakh plus applicable GST for Micro & Small Enterprises and Rs. 12.5 Lakh plus applicable GST for others.

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