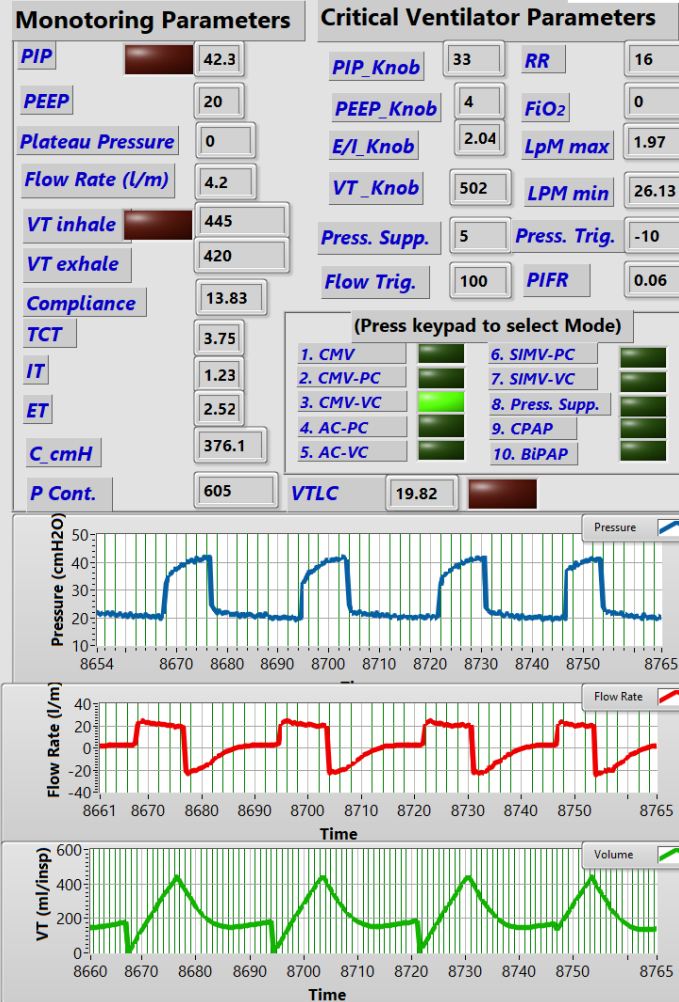




NED Ventilator

Ventilators are very critical in current COVID-19 pandemic. Therefore, it is needed to develop rapidly ventilators in considerable quantity that are reliable and stable during different modes (of operation) to provide ventilation to the patient in different critical conditions via Mandatory Ventilation modes (CMV/ AC/ SIMV) and Pressure support modes PSM mode (BiPAP/ CPAP). In this regard, the team of Haptics, Human-Robotics and Condition Monitoring Lab (affiliated with NCRA) of NED University of Engineering and Technology, Karachi developed an indigenous basic ICU-ventilator naming NED-ventilator, whose design is based on desired mixture of controlled-compressed air/ oxygen switching. The state-of the art design has obtained provisional approval for serial production from PEC/DRAP. The design is following the European/UK govt. standards and is able to be not only effectively used in COVID-19 but also for other ICU requirements for the patients.



R & D of ICU-Ventilators



Modes of Ventilation

PCV (CMV-PC)
 VCV (CMV-VC)
 AC-PC
 AC-VC
 SIMV- PC
 SIMV-VC
 Pressure support
 BiPAP
 CPAP

Specification

Type of Ventilation	Invasive and Noninvasive
Type of Patients	Adult and Pediatric
Clinical Environment	Hospitals, Institutions, and Home care
Alarm volume	50 to 80 dB
Power Source	AC (wall plugin), DC (Adapter)
External Power Requirements	AC power
Physical Dimensions (ventilator)	length=0.5m width=0.3m height:0.4m
Physical Dimensions (compressor)	length=0.4m width=0.5m height=0.75 m
Weight	30 kg (10kg for ventilator & 20 Kg for Compressor)
User Display	(type: touch (10 inch) and buttons panel (10 inch)
Operating Environment	15°C - 30°C (Temperature), 1 atm (Atmospheric Pressure)

Controls

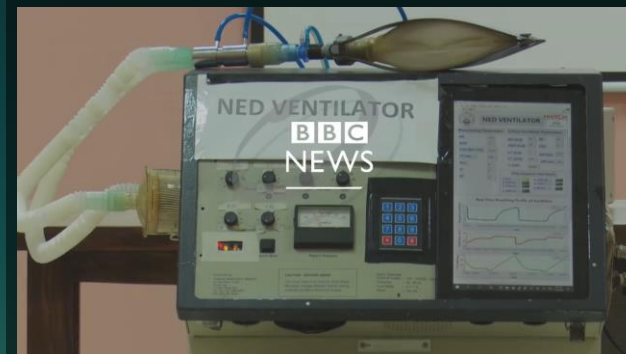
PEEP (upto 20 cm of H2O)
 FiO2 (0.21-1)
 Tidal Volume (200-700 ml, optional 800 ml)
 I: E Ratio (1:1 to 1:3)
 Triggering (Flow triggering- 0.5 to 5 liters per minute)
 Respiratory rate (8-35 per minute)
 pressure control (0-40 cm H2O)
 pressure support (0-40 cm H2O).
 Flow Cycle and Flow Control
 Safety Valve (adjustable upto 60 cmH2O)

Alarms/Safeties

Fail alarm/ Failsafe
 Device alarms
 High Breath Rate alarm
 Low Breath Rate
 High Inspiratory Pressure Alarm/Safety
 Minute volume alarm
 Disconnection alarm

Medical Device Accessories

Artificial lungs (capacity; 250ml, 500ml, 1000ml)
 Child and Adult Breathing Circuit
 HEPA Filter (Inspiratory and Expiratory)
 Patient Flow Sensor with Connector
 Air and Oxygen High Pressure (2-6 bar) connection pipe (grade connector)
 Air Compressor (up to 4 Bar approx..)



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