

NAL develops Ventilator 'SwasthVayu' for COVID-19 patients

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New Delhi, May 11 (India Science Wire): The National Aerospace Laboratories (NAL), Bengaluru - an institution under the Council of Scientific and Industrial Research (CSIR) - has developed a non-invasive bi-level positive airway pressure (BiPAP) ventilator to treat COVID-19 patients. NAL has named it 'SwasthVayu'.

BiPAP Ventilator is an electronic breathing device used in the treatment of sleep apnea, lung disease, and to treat respiratory weakness. Non-invasive ventilation is the delivery of oxygen via a face mask and, therefore, it eliminates the need of an endotracheal airway. CSIR-NAL has enabled a spin-off technology based on its expertise in the aerospace design domain.



CSIR-NAL SwasthVayu trials under the supervision of Dr. Amarnarayan D

Ventilator – SwasthVayu is a micro-controller-based precise closed-loop adaptive control system with a built-in bio-compatible “3D printed manifold and coupler” with Highly Efficient Particulate Air (HEPA) filter. These unique features help to alleviate the fear of the spread of the virus. SwasthVayu has features like spontaneous, continuous positive airway pressure (CPAP), timed, auto BiPAP modes with provision to connect oxygen concentrator or enrichment unit externally.

The major advantages of this ventilator are that it is simple to use without any specialized nursing, cost-effective, compact and configured with majority of indigenous components, say researchers. The scientists developed this new ventilator in a record time of 36 days. CSIR-NAL

is in the process of getting approval from the regulatory authorities. In anticipation of quick approval for the product, CSIR-NAL has already initiated dialogues with major public/private industries as a partner for mass production.



SwasthVayu BiPAP machine in Auto Test mode with Test Lung

SwasthVayu has undergone stringent biomedical tests and beta clinical trials at NAL Health Centre. The system has been certified for safety and performance by National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited agencies. NABL is a Constituent Board of the Quality Council of India.

“Based on global experience and specific inputs from pulmonologists in India and abroad, the BiPAP non-invasive ventilator with externally connected oxygen concentrator, developed by NAL, will be ideal to treat moderate or mid-stage severe COVID-19 patients who do not require intubation and invasive ventilation. This is ideal for treating COVID -19 patients in wards, make-shift hospitals, dispensaries and home in the current Indian COVID-19 scenario”, said Jitendra J. Jadhav, Director CSIR-NAL.

The development of this ventilator is a culmination of efforts of a team of technocrats and medical practitioners under the leadership of Dr. CM Ananda, Head of Electronics Department; Dr. Amarnarayan D, Chief Medical Officer, CSIR-NAL; Dr. Viren Sardana, Respiratory Physiologist, CSIR-IGIB; and team of scientists at CSIR-NAL who have worked relentlessly during COVID-19 restrictions. (India Science Wire)

Keywords : CSIR-NAL, COVID -19, Non Invasive Ventilator, BiPAP, CPAP