



Ministry of Defence



# INDIAN ARMY ENGINEERS INNOVATE A SOLUTION FOR EFFICIENT CONVERSION OF LIQUID OXYGEN TO LOW PRESSURE OXYGEN GAS FOR COVID PATIENTS

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India's response to the second COVID wave dictated an exponential demand for oxygen and oxygen cylinders. Since oxygen was transported in liquid form in cryogenic tanks, quick conversion of liquid oxygen to oxygen gas and ensuring availability at the patients' bed was a critical challenge faced by all hospitals managing COVID patients.

An Indian Army Engineers team under Maj Gen Sanjay Rihani undertook an initiative to find a solution to this challenge. A specialised task force was quickly put together for early execution of an innovation to ensure that oxygen is made available without the use of gas cylinders, thus obviating the need to refill them frequently.

Over seven days, the team of Army Engineers in-direct consultation and material support from CSIR & DRDO put together a working solution using vaporisers, PRVs and liquid oxygen cylinders. In order to ensure continuous conversion of liquid oxygen into oxygen gas at the requisite pressure and temperature at the COVID bed, the team used a self pressuring liquid oxygen cylinder of small capacity (250 litres) and processed it through a specially designed vaporiser and directly usable outlet pressure (4 Bar) with requisite leak proof pipeline and pressure valves.

A prototype with two liquid cylinders capable of feeding oxygen gas for 40 beds for a period of two to three days has been made functional at Base Hospital, Delhi Cantt. The team has also tested a mobile version to cater for typical shifting requirements in hospitals. The system is economically viable and is safe to operate since it obviates high gas pressure in the pipeline or cylinders and does not require any power supply to operate. The system is capable of replication in a quick time frame.

This innovation is another example of Indian Army's commitment to promote innovations in bringing simple and practical solutions to complex problems. The Indian Army stands steadfast with the nation in this fight against Covid 19.



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