

DST funded company to scale up device to enrich oxygen supply in air for treatment of COVID-19 patients

Genrich Membranes, a spin-off company, based on proprietary technology licensed from CSIR-National Chemical Laboratory, Pune is being funded by the Department of Science and Technology (DST) to scale up membrane oxygenator equipment (MOE) that it has developed to treat COVID-19 patients. Based on innovative, indigenous hollow-fiber membrane technology, the MOE enriches oxygen in the air up to 35% under pressure (4-7 bar, using oil-free compressor).

The equipment consists of membrane cartridge, oil-free compressor, output flowmeter, humidifier bottle, nasal-cannula, and tubing & fittings. The compressed, filtered air from the compressor is fed to the membrane cartridge, which selectively permeates oxygen over nitrogen offering oxygen-enriched air as the product at the ambient pressure. The membrane cartridge capable of distinguishing oxygen and nitrogen restricts the passage of viruses, bacteria, and particulate matter. The product air is of medical grade.

The device is safe, does not require trained manpower for its operation, needs minimum maintenance, is portable, compact, and with plug-and-play facility provides on-site, quick-start oxygen-enriched air.



"Medical grade oxygen-enriched air is needed in a variety of patient care settings including COVID-19 situations where the global experience is about 14% infections require some kind of respiratory support, but only about 4% need ICU based ventilators. The rest of this population, as well as in many other conditions involving chronic breathing problems, this innovation promises to be of excellent value", said Prof Ashutosh Sharma, Secretary, DST

With an urgent requirement of respiratory interventions to treat breathlessness, one of the critical symptoms of COVID 19, the equipment can be used to treat patients who have been released from Intensive Care Units (ICU). The device can also be helpful for patients suffering with chronic breathing problems like Chronic Obstructive Pulmonary Disease (COPD), Asthma, Interstitial lung disease (ILD), pre-term babies, snake bite, and so on.

The testing and validation of Prototype have been demonstrated in a relevant environment and Genrich, the startup that has supported by DST- National Science & Technology Entrepreneurship Development Board (NSTEDB) Seed Support System and incubated by Entrepreneurship Development Center, (Venture Centre), Pune is planning to join hands with established medical device companies to mass manufacture MOE which can get this device ready, within three months.

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