Researchers at IISER, Pune design low-cost ventilator

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HT Correspondent
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Umakant Rapol and Sunil Nair, both associate professors at IISER, have developed a low-cost ventilator which they have put together with readily available material.(Rahul Raut/HT Representative photo)

Researchers of the Indian Institute of Science Education and Research, Pune (IISER), have developed a low-cost ventilator, which is a hybrid version of US and Italian ventilators for the ICU (intensive care unit).

This will bridge the gap between the demand and supply during the ongoing Covid-19 (coronavirus) crisis to treat patients, say researchers.

“We started work on the project on April 2 and we finished it by April 20. After which we are working on the calibrating and packaging the device so that it can be in some presentable form,” said Rapol.

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“We have developed a hybrid version of both the designs which we were studying because of the unavailability of the components that were used in designing those two ventilators. So we came up with our own build of materials and designed the ventilator,” said Rapol.

“One advantage of this device is one can monitor the ventilator, parameters of the patients remotely and also through a mobile phone,” said Rapol.

The other members of the team consisted of technical officer Nilesh Dumbre, IISER Pune alumni Sainath Motlakunta, now a PhD student at Institute for Quantum Computing, Waterloo, Canada; and Mohammad Noaman, now a postdoctoral fellow at University of Southern Denmark, Odense, Denmark.

Nair said, “The genesis of the ventilator in IISER started when our international office got in touch with Umakant, and later me, to help in the design and development of a mechanical ventilator which is known as a ‘Bharucha ventilator’.”

“While doing that we realised that was a very basic machine which would not suffice for the use of Covid-19 patients. At around the same time we got to know about a couple of open-source ventilators which had been released. One of them was called Mechanical Ventilator Milano (MVM) from Milan and the other one was an open-source ventilator from Florida. That got us thinking about how we could try and implement these ventilators in our context” said Nair.

“It is simple, efficient as well as incorporates most of the design requirements from which ventilators who cater to Covid-19 patients have,” added Nair.