

FABRICATION OF LOW COST AUTOMATIC VENTILATOR WITH KEEP TRACK OF PATIENT

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Abstract:

Ventilator is a machine that helps you take breaths if you can't do it on your own. Your doctor might call it a "mechanical ventilator." People also often refer to it as a "breathing machine" or "respirator." Technically, a respirator is a mask that medical workers wear when they care for someone with a contagious illness. A ventilator is a bedside machine with tubes that connect to your airways. When your lungs inhale and exhale air normally, they take in oxygen your cells need to survive and expel carbon dioxide. COVID-19 can inflame your airways and essentially drown your lungs in fluids. A ventilator mechanically helps pump oxygen into your body. The air flows through a tube that goes in your mouth and down your windpipe. The ventilator also may breathe out for you, or you may do it on your own. The ventilator can be set to take a certain number of breaths for you per minute. Your doctor also may decide to program the ventilator to kick in when you need help. In this case, the machine will blow air into your lungs automatically if you haven't taken a breath in a set amount of time. The breathing tube may be uncomfortable. While it's hooked up, you can't eat or talk. Some people on ventilators may not be able to eat and drink normally. If so, you'll need to get your nutrients through an IV, which is inserted with a needle into one of your veins.

This project shows the construction of a low-cost, open-source mechanical ventilator. The motivation for constructing this kind of ventilator comes from the worldwide shortage of mechanical ventilators for treating COVID-19 patients—the COVID-19 pandemic has been striking hard in some regions, especially the deprived ones. Constructing a low-cost, open-source mechanical ventilator aims to mitigate the effects of this shortage on those regions. The equipment documented here employs commercial spare parts only. This project work also shows a numerical method for monitoring the patients' health condition. The method considers pressure measurements from the aspiratory limb and alerts clinicians in real-time whether the patient is under a healthy or unhealthy situation. Experiments carried out in the laboratory that had emulated healthy and unhealthy patients illustrate the potential benefits of the derived mechanical ventilator. when the face mask is properly applied and the bag is squeezed the device forces air through into the patients' lungs, when the bag is released, it self inflates from its other end, drawing in either ambient air or low-pressure oxygen flows supplied by a regulated cylinder while also allowing the patients lungs.