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Open Source Ventilator System using IOT

Mr. S.V.Borkar¹, Miss. Tupe Sejal², Miss. Gaikwad Tanuja³, Miss. Wakchaure Anushka⁴, Miss. Gunjal Aarti⁵

Prof., ETC Engineering Department, Vidyaniketan College of Engineering, Bota, India¹ Students, ETC Engineering Department, Vidyaniketan College of Engineering, Bota, India 2,3,4,5

Abstract: Corona virus Disease 2019 (COVID-19) threatens to overwhelm our medical infrastructure at the regional level causing spikes in mortality rates because of shortages of critical equipment, like ventilators. Fortunately, with the recent development and widespread deployment of small-scale manufacturing technologies like Rap-class 3-D printers and open source microcontrollers, mass distributed manufacturing of ventilators has the potential to overcome medical supply shortages. In this study, after providing a background on ventilators, the academic literature is reviewed to find the existing and already openly-published, vetted designs for ventilators systems. These articles are analyzed to determine if the designs are open source both in spirit (license) as well as practical details (e.g. possessing accessible design source files, bill of materials, assembly instructions, wiring diagrams, firmware and software as well as operation and calibration instructions). Next, the existing Internet and gray literature are reviewed for open source ventilator projects and designs. The results of this review found that the tested and peer reviewed systems lacked complete documentation and the open systems that were documented were either at the very early stages of design (sometimes without even a prototype) and were essentially only basically tested (if at all) ...



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