

# Low-Cost Ventilator with the Facility of Variable Beats per Minute and Oximeter using Arduino Based ESP32

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**Abstract:** *This project aims to develop a low-cost ventilator using Arduino and ESP32 platforms. The ventilator will be designed to provide basic respiratory support for patients in need, particularly in resource-constrained settings. The Arduino will be utilized for controlling the ventilator's functions, such as adjusting the breathing rate and volume, while the ESP32 will enable wireless communication for monitoring and data logging. Safety and accuracy will be paramount considerations in the design process, with adherence to medical guidelines and standards. Collaboration with healthcare professionals and engineers will ensure that the ventilator meets necessary requirements for effective and safe use. This project seeks to leverage the capabilities of Arduino and ESP32 to create an affordable solution that can potentially help address the global need for ventilators.*

**Keywords:** Low-cost ventilator, resource-constrained regions, variable beats per minute (BPM), oximeter, silicon ventilator bag, blood oxygen sensor

## REFERENCES

- [1] This "tank ventilator" was first described by the Scottish physician John Dalziel in 1838
- [2] Permanently exposed at the Museum of Life (Livet's Museum) in Lund Photo reproduced with kind permission of Björn Jonson in 1971.
- [3] the modern age of ventilators was ushered in by Sven-Gunnar Olsowho introduced the first electrically controlled ventilator (the Servo Ventilator 900).
- [4] In 1864, Alfred Jones invented one of the first such body-enclosing devices. The 1955 release of Forrest Bird's "Bird Universal Medical Respirator" in the United States changed the way mechanical ventilation was performed.
- [5] Famed inventor Alexander Graham Bell even took a crack at the problem of artificial respiration, developing a "vacuum jacket" with some success.
- [6] In 1952, Roger Manley of the Westminster Hospital, London, developed a ventilator which was entirely gas driven, and became the] Rapidly Manufactured CPAP System (RMCPAPS) Document CPAP001-Specification Issued by MHRASHTRA.
- [7] Europe. In 2007, Morley Safer interviewed the man who invented it—Forrest Bird. For many patients with COVID-19., a ventilator can be the difference between life and death.
- [8] CBS News Aptamer inventor Alexander Graham Bell even took a crack at the problem of artificial respiration, developing a "vacuum jacket" with some success.
- [9] John Emerson: He co-invented the iron lung, or "negative pressure ventilator," in the 1920s.