BaxterOSV – Electronics | 2020

Final Report

Travis Libsack

Objectives

Given the risk COVID-19 poses to under-developed countries, especially the lack of medical equipment and infrastructure needed for ventilators, the Baxter Open Source Ventilator (BaxterOSV) was designed to work in under-developed countries with limited access to medical supply chains

BaxterOSV utilizes **off-the-shelf** components and design that **creates its own pressure** to ventilate patients and does not need expensive hospital infrastructure

BaxterOSV also performed **more consistently** between breaths when compared to industry products

Proof of Concept

BaxterOSV went through **3 iterations** before completing a design that was fully functional

At each stage the ventilator was tested by a ventilator technician to confirm it's performance and test the user experience

V2 of BaxterOSV being tested on a test dummy

Approach

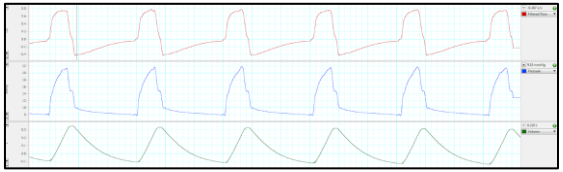
The key design features of our ventilator were:

- **Safety** – using an Open Source Ventilator you need to be confident in safety. The worst failure in our ventilator is one additional breath
- **Manufacturing Speed** – in a crisis time is of the essence. By using "satellite manufacturing" we were able to shift manufacturing to end users to ramp up production in high-need areas much faster
- **Versatile Construction** – using off-the-shelf components means that parts can easily be replaced in other countries if they break or are not available/compatible. For example, our back-pressure regulator was replaced with SCUBA regulator on v2 when the US supply chain was low on regulators

Results

The BaxterOSV was chosen as one of the **Top 7** finalists in the CoVent-19 Challenge

Our final design was able to reliably perform at a range of different settings. It is ready for further testing and manufacturing if needed



Ventilation graph, created with BaxterOSV

V3 of BaxterOSV