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Omnis Design Differentiators

As the Omnis ventilator incorporates a microprocessor, mobile app, and closed loop sensor feedback we are able to incorporate the same modes and accuracy as current ventilators being used today

✓ **Mobile App**

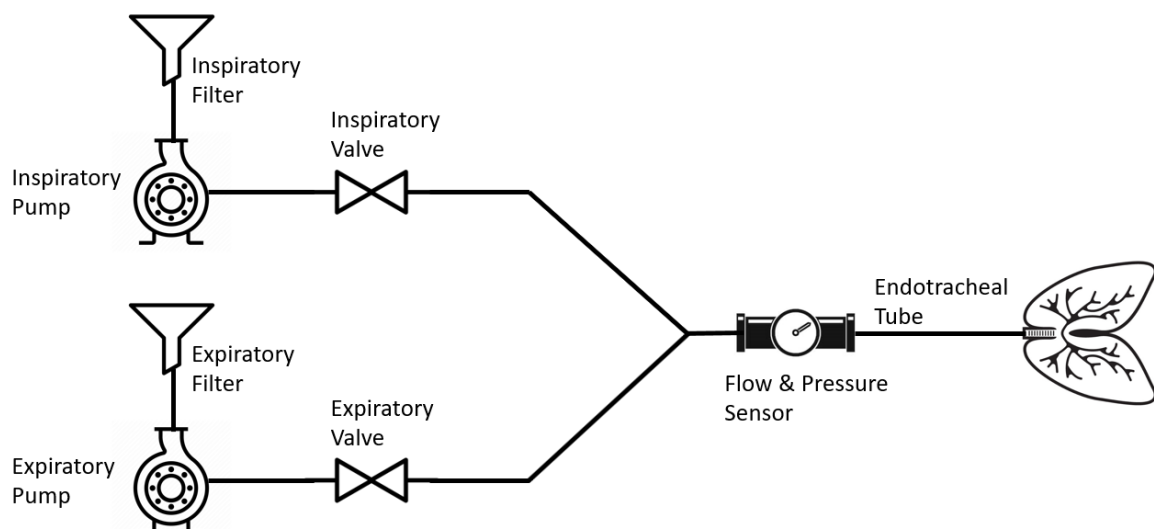
✓ **Ventilator Modes:**

- Assist Control Volume Ventilation
- Assist Control Pressure Ventilation
- Continuous Positive Airway Pressure (CPAP)

✓ **Settings:**

- Tidal Volume
- Support Pressure
- Respiratory Rate
- Inspiratory/Expiratory Ratio
- Positive End Expiratory Pressure

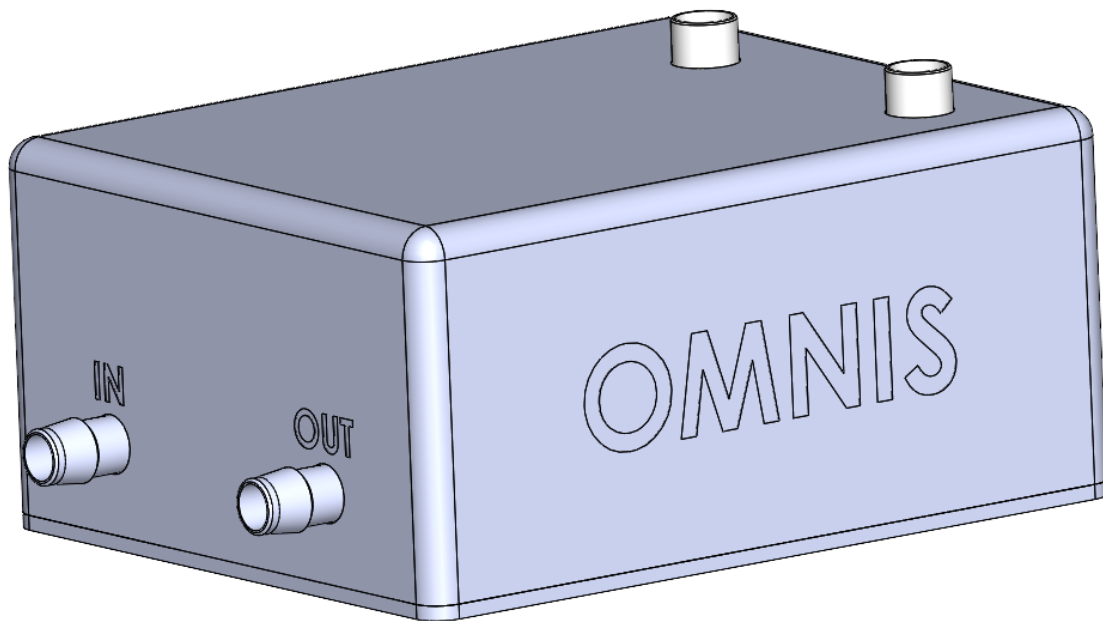
Omnis Schematic

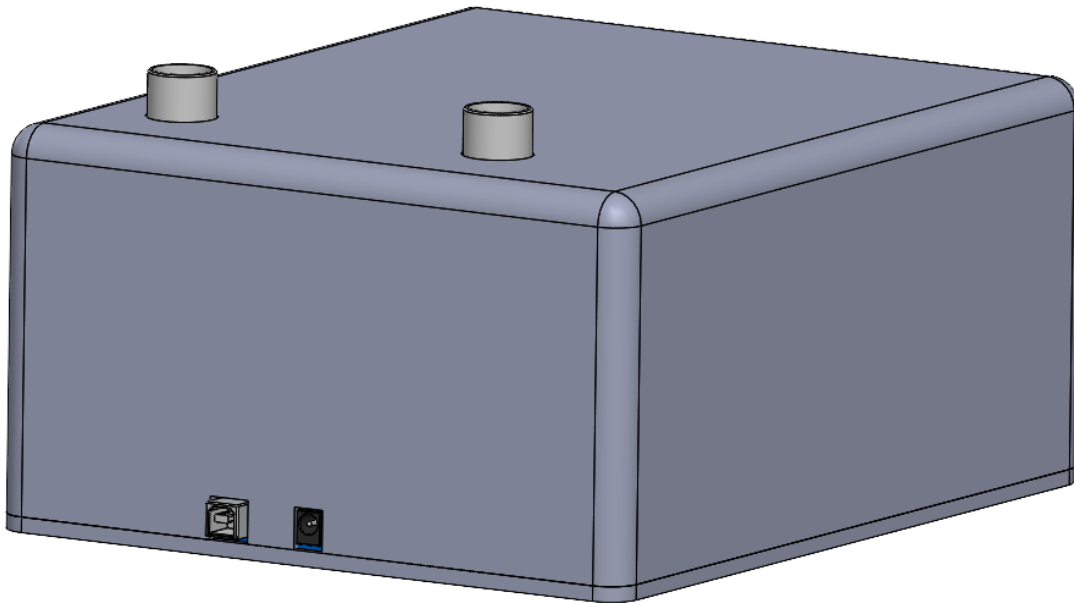
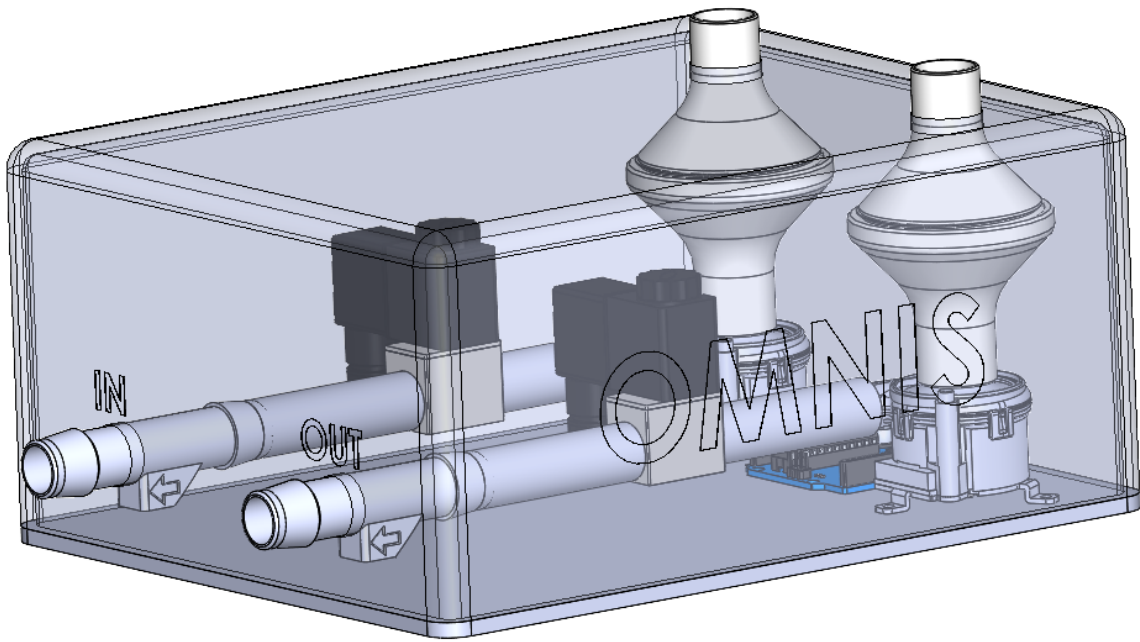


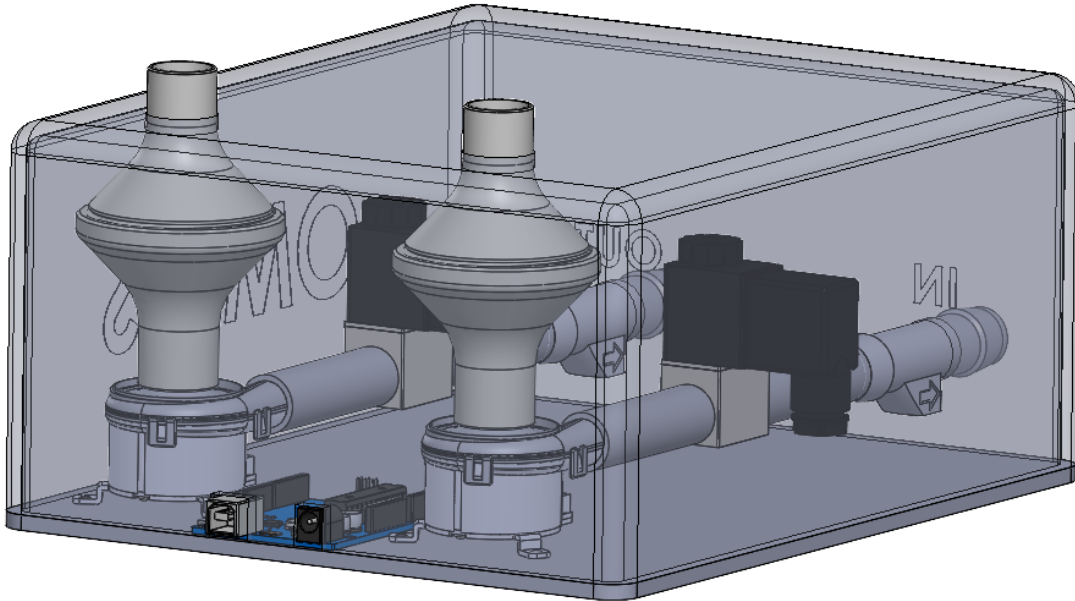
Omnis Parts List

- [Inspiratory Pump](#)
- [Inspiratory Valve](#)
- [Flow and Pressure Sensor](#)
- [Expiratory Valve](#)
- [Expiratory Pump](#)
- [Microprocessor](#)
- [Arduino Shield](#)
- [Motor Shield](#)
- [Power Cord](#)
- [Power Supply](#)

Omnis Enclosure





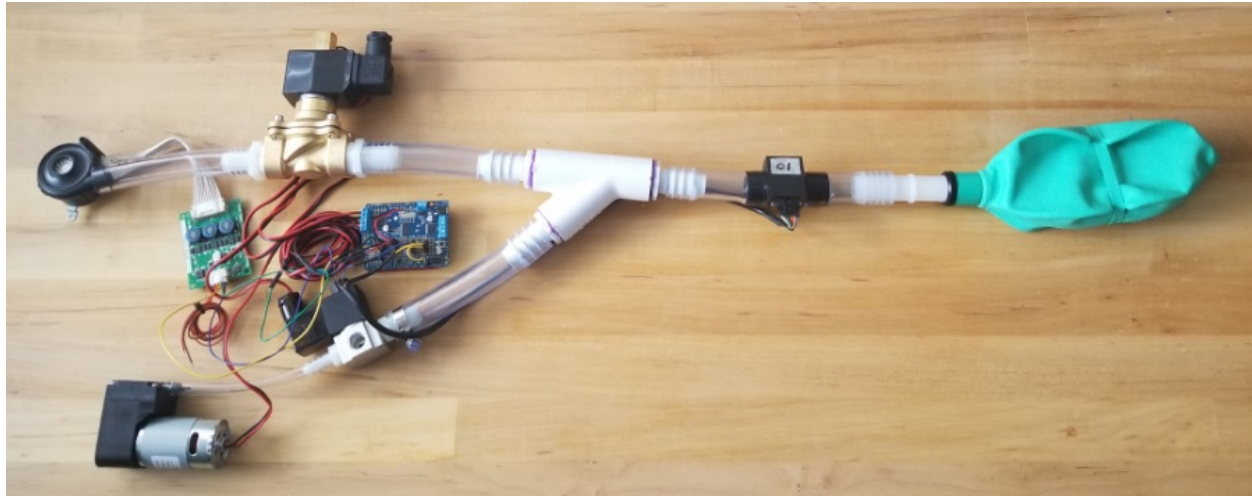


Omnis Specifications

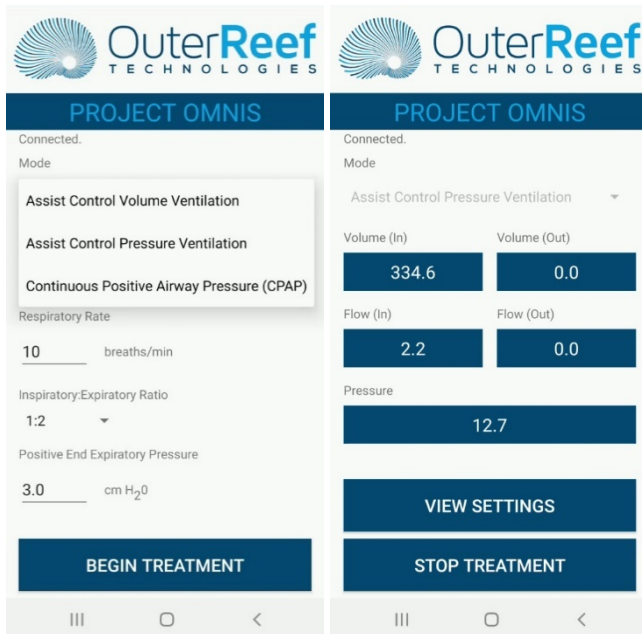
- Open Source
- Less than \$500 in parts
- Only 6 parts required
- All parts are readily available and pre-existing
- Dimensions 11" x 9" x 5"
- Supports all modes of any modern FDA approved ventilator
- Can be assembled in less than an hour
- Designed by Outer Reef Technologies which is an ISO 13585 compliant medical device engineering firm

Omnis Product Photos

Prototype



Mobile App





Omnis Press Release

Outer Reef Technologies Develops Free Ventilator from Six Simple Parts

*Step-by-Step Instructions and Open Source Patient Monitoring App
Available Online*

Ft. Lauderdale, FL (April 28, 2020) – Medical engineering and technical solutions firm Outer Reef Technologies <https://outerreeftech.com> announced today the company has developed an open source ventilator. The ‘Omnis’ ventilator design offers the same functionality and modes of FDA-approved ventilators on the market, including Assist Control Volume/Pressure Ventilation and CPAP. Made from six readily available components, the ventilator is constructed in less than an hour costing only \$500 in parts. Step-by-step instructions are available along with materials list, videos, mobile patient monitoring app and supporting firmware on its website: <https://outerreeftech.com/pages/ventilator>.

Outer Reef Technologies is an ISO 13485 compliant medical device engineering firm. The company named its Omnis design from the Latin word for ‘everyone’, aligned with the team’s goal to design and build an affordable and effective ventilator available to all, worldwide. The high number of COVID-19 patients suffering from respiratory failure who require assistance from a ventilator has overwhelmed demand for the device both in the U.S. and around the world. Mechanical ventilation is utilized in intensive and long-term care settings to assist patients who require additional respiratory support. Current ventilators on the market cost up to \$50,000 and are made from custom parts manufactured by a limited number of vendors, making quick ramp-up of manufacturing impossible.

“We all want to do our part to help battle COVID-19. At Outer Reef Technologies we felt the best way we could help was to develop an effective ventilator which can be constructed simply and affordably in order to save lives around the world.” said Jonathan Azevedo, founder and Chief Executive Officer of Outer Reef Technologies. “Our design goal for Omnis was to use as few parts as possible, include only readily available and mass-produced components, and to ensure assembly required only standard tools so that nearly anyone can manufacture the product.”

About Outer Reef Technologies

Outer Reef Technologies provides engineering design solutions. Its engineering consulting services include medical device development, robotics, electronics, firmware, software, mechanical design, QA/RA support, and manufacturing. The company supports educational programs and non-profit organizations, including FIRST Robotics, Habitat for Humanity, and the Boys and Girls Clubs of Broward County.



Additional Information

- Outer Reef Company Website: <https://outerreeftech.com>
- Omnis Ventilator Operations Video: <https://youtu.be/OaeeoizCTr4>
- Omnis Ventilator Overview Video <https://youtu.be/GN8pelwMoEQ>