



# CUSTOMER SUCCESS STORY

## VALIANT TMS



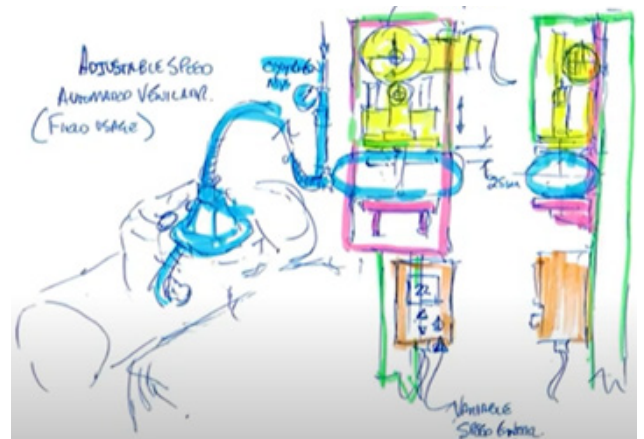
*On September 17, 2020, Automation company Valiant TMS was nominated at the Industry Leadership Honours event for the concept of a Bag Valve Mask Actuator to be used in emergency cases to help combat COVID-19. The project was completed from design to production in under 3 weeks.*





## Valiant TMS designs a flexible, dynamic ventilation solution to serve Covid-19 patients, backed by Rittal, EPLAN and partners.

When COVID-19 was declared a global pandemic in March 2020, Canada and the world rallied together to combat a common enemy. As a company that takes ideas and automates them by building connected, optimized and agile production solutions, Valiant TMS, a full-service Industry 4.0 system integrator, decided to convene a task force to do something fast.



### The Covid Ventilator Challenge

The word spread that hospitals in the most affected countries such as Italy, were in desperate need of Personal Protective Equipment (PPE) gear for first responders as well as medical ventilators and masks for those infected. Valiant TMS and its partners brainstormed to find a way to use their expertise and contribute to finding solutions amidst the crisis.

**If we could build this, and even one person survives, we would be happy!**

The goal of their project was to design a low-cost, simple, easy-to-use, and easy-to-build ventilator that could serve COVID-19 patients, in an emergency timeframe. Chris LeChien, Application Engineering Manager, Valiant TMS explained his motivation for getting involved in the project as follows: "If we could build this, and even one person survives, we would be happy!"

### The BVM Ventilation Solution

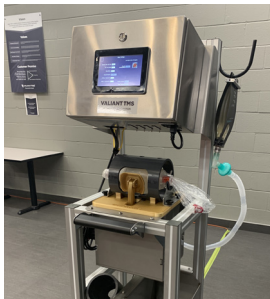
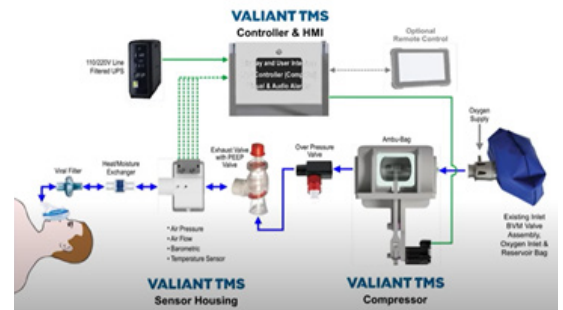
Valiant and partners collaborated to develop an actuation system that interfaces with existing manual BVM (Bag Valve Mask) ventilation system. They realized such a project using EPLAN software for the designs, medically graded enclosures from Rittal and additional support from all their other partners.

**Some of the partners who made it possible include: EPLAN Canada, Rittal Systems Ltd. (Rittal Canada), Shelley Automation, Electra-Tech Manufacturing LLC., San-tron, Siemens, Machine Guard & Cover Co., Universal Fabricating, FCF Custom Fab Incorporated, UWindsor Engineering, St. Clair College**

The entire team provided expertise, manpower and resources. Even direct competitors offered their assistance. The automated bag valve mask actuator, face and intubation shields would not have been possible without the support of the doctors, health care professionals, educational institutions and government officials who provided guidance to bring these initiatives to life.

## Support from all partners

EPLAN provided the electrical prints for the ventilator, and Valiant decided to use the EPLAN software for its ease of use in providing bill of materials as well as the quick and efficient manner in which it allowed them to generate the behind the scene schematics. Working with EPLAN has help the project progress a lot quicker, which was important because of how dynamic the project was. With traditional products, Valiant typically has ample time to evaluate, research and review. But given the reduced timeframe, they needed a solution that would allow them to make design changes quickly and reliably.



Models of the ventilator were enclosed in medically graded NEMA 4X Stainless Steel Wall mount enclosure graciously offered by Rittal Systems. These enclosures are IP 66 rated, offering a sealable, “dust tight” panel in the required size, providing the necessary protection against powerful jets of water and easy wipe downs of chemicals. The medical grade of the enclosure was essential because of the environment where the ventilator was going to be used. Rittal is one of the only companies offering options with all the proper of certifications to be used in the medical field.

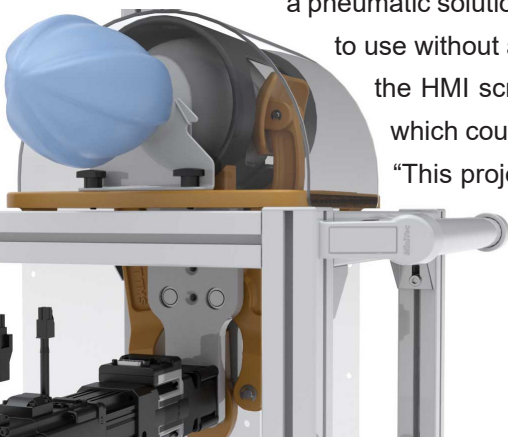
In addition, Valiant was able to rely on its other partners to finalize the production and review of their ventilator. For example, Shelley Automation contributed a PLC HMI server system and other components and did some of the software work to get the project off the ground quickly and efficiently, as the team could not afford to lose valuable time to international shipping. Medical professionals, local physicians, and respiratory therapists from St Clair College provided valuable counsel and advice such as how to obtain a medical license. Local government officials in Windsor-Essex County had weekly meetings to move the project along. Even competitors like CenterLine were quick to share information to get the solution off the ground.

Valiant took a middle-to-high-end approach, as they wanted to build a solution that was affordable and accessible, as opposed to being too costly to acquire. Thanks to EPLAN, Rittal and others involved, the project took one month to get from sketch to prototype, before the ventilator was powered on Valiant’s Plant Floor.

## Breathtaking Results

The solution is Servo-powered which drives the cost up marginally, but turns out to be more effective in the long run by offering dynamism and flexibility in control, additional programming ability, and overcoming some limitations that a pneumatic solution would pose. It offers a familiar interface for the respiration therapists and is easy to use without additional devices such as a computer. In addition, information can be entered on the HMI screen, with real-time adjustment taking place, without having to stop the machine which could potentially harm the patient. Zack Filioglou, Control Designer, Valiant TMS adds “This project was a great testimony of how we can accomplish anything when great teams converge. Initially, the challenge seemed far-fetched, but with teamwork and resilience, success was finally achieved.”

 [Watch video about the project](#)



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