

# Covid-19 Ventilator Design & Manufacture

*Responding to the national emergency*

## Introduction

In the early stages of the COVID-19 pandemic, a worldwide shortage of ventilators led the UK government to issue a call to arms to the most innovative companies in the UK manufacturing sector - the Ventilator Challenge UK (VCUK) to quickly develop a working ventilator to the to a new Rapid Manufactured Ventilator Specification (RMVS) devised by the Medicines & Healthcare products Regulatory Agency (MHRA), to address the current requirements.

## Solution

MetLase developed their own ventilator, with design emphasis focussed on availability of components within the supply-chain and manufacturability, while remaining compliant to the MRHA's specification. The first prototype was tested within 14 days.

MetLase knew that meeting the MHRA's specification would be challenging, so brought together a regulatory compliance team equal in size of their engineering team. Including MetLase's own compliance lead, and expertise from parent companies Rolls-Royce and Unipart Rail, external contributors included Sheffield Teaching Hospitals, innovation experts CPI and the public health and safety organisation NSF.

Manufacturing and supply-chain activities were led by Unipart Manufacturing, who sourced components and designed production lines within their Coventry manufacturing facilities.

Additionally, MetLase supported other VCUK partners with design work:

**Meggitt PLC:** with the design, manufacturability, and initial production runs of the enclosure for their Spiritus ventilator project.

**Rolls-Royce:** MetLase designed and produced 72 bespoke manufacturing workstations in just 10 days, for the new production lines in their Bristol facility, to scale up production of Smiths Medical paraPAC Plus ventilators.

**Cambridge Consultants Ltd:** Understanding the detailed workings of a ventilator, and with Unipart Manufacturing's earlier efforts, MetLase became the preferred manufacturing partner for their Veloci-Vent ventilator.

## Summary

The Government eventually halted the efforts of all the VCUK consortia companies working on RVMS Ventilators, in favour of ramping up the production of existing products. However, this project demonstrates how MetLase can rapidly mobilise its team of skilled engineers, and apply the patented MetLase technology, which was born out of the aerospace sector, to solve problems across the broadest spectrum of applications.



The MetLase designed ventilator



The MetLase workbench at  
Rolls Royce in Bristol

## About MetLase

MetLase, a joint venture between Rolls-Royce and Unipart, specialises in the manufacture of world-class engineering solutions with speed and precision. Using unique patented methodologies, laser cutting, press-brake forming and in-house developed digital technologies, MetLase can design and produce simple and complex tooling, intelligent fixturing and components for a wide range of industries, bringing lead times of months down to hours or days.

### MetLase

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