rescale | In partnership with Microsoft Azure

Vertical Aerospace Pioneers Urban Air Mobility with Cloud-First Strategy on Rescale

VERTICAL

Headquarters: Bristol, UK
Industry: Aerospace, Urban Air Mobility
Founded: 2016

4,300% increase
in performance for computational fluid dynamics simulations

75% reduction
in the cost per job for engineering simulation workloads

"Rescale is one of the key R&D partners that are part of our journey to transform the way people travel."

— Kurt Clement, Head of Aerodynamics, Acoustics, and Thermodynamics, Vertical Aerospace

Leading a New Frontier for Air Travel

In a race to be first to market for urban electric vertical takeoff and landing (eVTOL) taxis, Vertical Aerospace invests heavily in engineering talent and digital capabilities that give it a competitive advantage.

Adapting digital R&D techniques from automotive and aerospace sectors, the team uses simulation and high performance computing (HPC) to improve the aerodynamics, battery performance, and rotor drivetrain efficiency of their pioneering aircraft.

“We are at the forefront of technology, and so it stands to reason that we also are at the forefront of compute power,” says Kurt Clement, head of aerodynamics, acoustics, and thermodynamics at Vertical Aerospace. “Cloud HPC unlocks the ability for us to go much faster in the race to be the first certified eVTOL manufacturer.”

Building Engineering Speed

Vertical Aerospace evaluated the Rescale multi-cloud HPC platform to see how it could handle a variety of compute-intensive workloads from R&D simulation applications.

Clement explains that on-premises HPC systems are prohibitively expensive to scale up to meet today's growing demands for computational engineering.

“Anything we can do to maximize the output from our R&D activities helps our engineers achieve our vision faster,” Clement says. ”Additional on-premises HPC infrastructure would require significant capital and require ongoing support. We needed a better way to manage our scaling as we use increasing levels of detail in our aircraft designs as we matured the product.”

By moving to the Rescale platform, Vertical Aerospace was able to gain the benefits of cloud HPC while automating the management tasks for setting up computational jobs and running simulations. This allows the cutting-edge start-up to focus on engineering excellence rather than technical computing issues.

“In early testing of the Rescale platform, we realized that we could not only move our HPC operations into the cloud quickly without incurring large capital expenses, but it was also more than capable of handling a wide variety of our workloads,” Clement says.

With access to the latest Azure HPC hardware on Rescale, Vertical Aerospace engineers were able to easily find and use the highest performing and most cost-effective HPC cloud services for its R&D efforts.

"Rescale is incredibly useful in managing core architectures, projects, budgets, and the costs of running our HPC tasks,” Clement says. “Rescale’s existing list of supported R&D applications, coupled with its willingness to add new tools to its portfolio, made the transition to Rescale extremely easy for our engineers and IT team."

Charting a Flight Plan to Commercial Success

Vertical Aerospace’s improvements in time and cost efficiency have made them a global leader in eVTOLs. They also have an early lead in commercial offerings with preorders from major airlines including American Airlines and Virgin Atlantic.

“By partnering with Rescale, Vertical Aerospace has been able to increase the rate of development of our aircraft,” Clement says. “With Rescale, we are able to move faster while still guaranteeing zero compromise on the quality and safety of our designs as we work towards transforming the way people travel."

"The turnaround time-reduction for simulations that Rescale provides has been particularly useful when we need to perform large data generation quickly. Balancing time vs. cost, we have seen speed-ups of up to 300 percent within our aerodynamics, acoustics, and thermodynamics methods, which has helped us provide greater resolution of data matrices and more detailed investigations, as well as more generations of design search and optimization activities."

— Kurt Clement, Head of Aerodynamics, Acoustics, and Thermodynamics, Vertical Aerospace

Rescale Integrates Best-in-Class Tools For Streamline Digital R&D

Define Digital R&D Objectives

- » Accelerate Speed-to-Market
- » Speed Up Product Design
- » Maximize License Utilization
- » Improve Collaboration

rescale

Modern R&D Software
Computational Fluid Dynamics and Electromagnetics
Ansys

R&D Workflow Automation

IT / HPC Operations Automation

Policy-Based Reporting & Controls

Latest Multi-Cloud Hardware
Scale, global coverage, and broad optionality across hybrid and multi-cloud architectures.
Azure

Software Lifecycle Automation & License Management

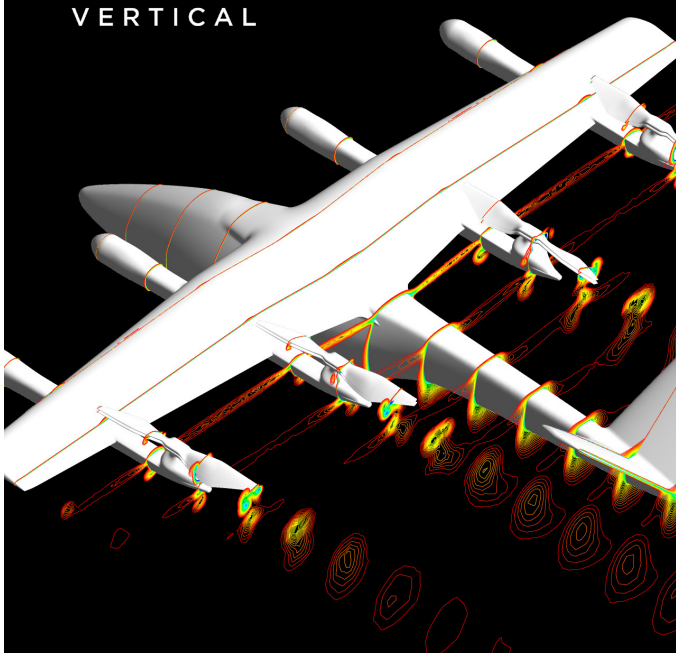
Full Stack Cost & Performance Optimization

Full Stack Security & Compliance

Strategic Business Outcomes

- » Faster Time-to-Market
- » Improved Quality & Competitiveness
- » End-to-End Automation
- » Decreased CapEx

VERTICAL



Ansys CFX simulation powered by Rescale

"The complexity and accuracy that Vertical Aerospace requires for our simulations is second to none. Rescale allows us to ride the very cutting-edge of what is possible and beyond."

- Kurt Clement, Head of Aerodynamics, Acoustics, and Thermodynamics, Vertical Aerospace

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