



Parallel Works + OpenFOAM for Advanced CFD Analysis

Overview. OpenFOAM is the leading open source CFD application, popular amongst engineers in research, academia, and industry. OpenFOAM is very powerful yet flexible, and includes a range of solvers for most CFD analysis needs. Parallel Works has integrated OpenFOAM to serve as the primary CFD application for our advanced design offering. Shifting to open source frees users from the frustrating constraints of costly software licenses, enabling larger and more advanced studies than previously feasible.

About OpenFOAM. OpenFOAM is an open source simulation platform for computational fluid dynamics. It is very powerful and highly flexible, supporting a broad range of solvers including compressible and incompressible flow, multi-phase flow, combustion, and heat transfer. It also gives users the ability to create custom solvers to run on the OpenFOAM platform. OpenFOAM is multithreaded, allowing the solver to run in parallel without the obstacles of complex and costly parallel licensing. By going parallel, users are able to tackle larger jobs than before, and deliver rapid results for a faster time to insight. *Learn more about OpenFOAM at www.openfoam.org*

OpenFOAM on Parallel Works.

The integration of OpenFOAM on Parallel Works provides a powerful yet turnkey solution for advanced CFD design analysis and exploration. It brings together the accessibility and scale of the Parallel Works platform with the flexibility and power of the OpenFOAM CFD solvers. With the Parallel Works OpenFOAM solution, users will benefit from the following advanced features and capabilities:

- **Automated workflow.** Automate workflow from pre-process to post-process. The Parallel Works runtime engine will automatically distribute work across resources and seamlessly orchestrate data flow.
- **Coupled multi-physics models.** Execute sophisticated ensemble studies for complex and multi-physics design evaluation. Automate fluid-structure interaction problems using OpenFOAM with external FEA tools or the Parallel Works supported open source FEA solution, CalculiX.
- **Simple execution.** Launching new jobs is made simple with an intuitive user interface and pre-built templates. Workflows are deployed directly to the cloud from Parallel Works - no coding required.
- **Flexible Resources.** Seamlessly connect to a range of high performance computing resources on demand, or run on in-house computing resources.

Benefits.

The Parallel Works CFD solution removes the barriers to robust insights that can drive a meaningful change in the way organizations understand their designs.

- **Rapid Results.** Scale across hundreds to thousands of compute nodes to achieve significant speed ups. By reducing the time to solution, Parallel Works enables users to iterate rapidly and formulate meaningful insights within tight deadlines and be more nimble in decision making.
- **Easy Execution.** Users can pull from a range of pre-configured workflow templates for rapid set up. For those new to OpenFOAM, Parallel Works has developed a system to help users set up new models before porting them into the Parallel Works platform.
- **Meaningful insights.** Achieve higher fidelity results and test a larger design space by scaling up. Feel more confident in design decisions, knowing that all options were considered.

Contact us to learn how you can apply this powerful technology to
your company's most complex design challenges



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