

Parallel Works + CalculiX for Advanced Structural Analysis

Overview. CalculiX is a 3D structural Finite Element software capable of modeling a range of analyses types with industry-standard inputs and highly flexible outputs. Parallel Works has integrated CalculiX to serve as the primary FEA solution for advanced design exploration. With this package, users are freed from the frustrating constraints of software licenses, and empowered with advanced frameworks for structural analysis. This will allow users to perform far more advanced analyses than previously possible.

About CalculiX. CalculiX is an open source software package that solves three-dimensional structural problems using the finite element method. With a common input format used frequently across the industry, it allows users to easily build or import models, run both linear and non-linear calculations, and post process results. The powerful solver can model a range of common calculations – Static, Dynamic, Heat Transfer, and Electromagnetic. CalculiX 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 CalculiX at www.calculix.de*

Calculix on Parallel Works.

The integration of CalculiX on Parallel Works provides a powerful yet turnkey solution for advanced structural design analysis and exploration. It brings together the accessibility and scale of the Parallel Works platform with the flexibility and power of the CalculiX FEM solver. With the Parallel Works CalculiX 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 external CFD tools or the Parallel Works supported open source CFD solution, OpenFOAM.
- **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 Advanced Structural Analysis solution removes the barriers to robust insights that can drive a meaningful change in the way organizations understand their designs.

- **Rapid Results.** Scale across large 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 to be more nimble in decision making.
- **Easy Execution.** CalculiX uses the Abaqus input format and naming conventions to help users get up and running quickly. The intuitive UI enables users to scale up to 100s of cores without a line of code.
- **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



Parallel Works

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