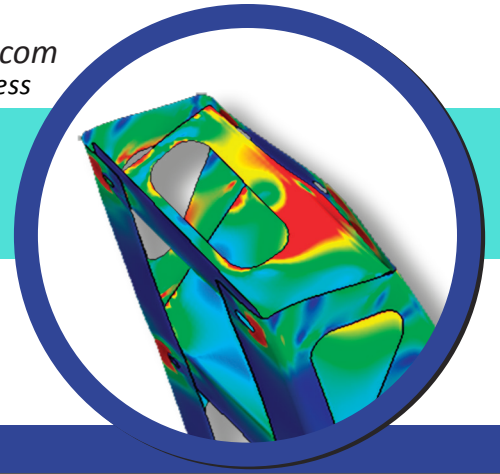


www.fathom4.com
A Service-Disabled Veteran-Owned Small Business

Finite Element Analysis Capability

Fathom 4



Capabilities

The **Fathom 4 FEA Team** is able to perform simulations based on parameters set forth by the client's specified standard (*for example: MIL-STD 810G or 901D*). Some of the practical applications include:

- 🔍 Structural analysis of systems
- 🔍 Thermal analysis
- 🔍 Impact or crash analysis
- 🔍 Determination of stresses under dynamic loading
- 🔍 Simulation of drop test or impact
- 🔍 Optimization of designs
- 🔍 Prediction of buckling or collapse
- 🔍 Simulation of forced vibrations
- 🔍 Interaction of components in assemblies
- 🔍 Simulation of welded structures

FEA allows for a detailed visualization of where structures bend or deform, and indicates the distribution of stresses and displacements. In addition, FEA is capable of a wide range of simulation options controlling the complexity of both modeling and analysis of any design.

Fathom 4 FEA Team

Our FEA team consists of multiple degreed mechanical engineers and full-time drafters dedicated to providing superior FEA services. Each of our engineers is experienced in the fields of part creation, finite element analysis and product performance. Every team member evaluates and provides input into each new FEA project in order to guarantee precise, thorough and detailed solutions.

What is FEA?

Finite Element Analysis (FEA) is a powerful computer-based engineering tool used to study the mechanics of physical systems. Our engineers employ the Finite Element Method to simulate how a system responds to various loading conditions. FEA is used to determine stresses, strains, displacements, forces, accelerations and many other details critical to a quality design. With FEA, a design is easily subjected to the same conditions it will experience in the real world – ***without ever building a single part!***

FEA simulation possibilities include:

Vibration	Linear dynamic
Non-linear	Thermal
Optimization	Fatigue
Static Loading	Impulse
Frequency	Buckling

FEA is extremely beneficial in scenarios where time, cost, material, weight, and strength need to be optimized.

Cost and Time Saving Benefits of FEA

Since FEA is a computer based tool we are able to complete the entire process remotely – ***absolutely no travel involved!*** Additionally, FEA enables multiple test scenarios to be completed before fabricating a single part. This translates to ***considerable fabrication cost savings*** and a ***significantly reduced turnaround time between concept and production.*** FEA is an extremely cost effective tool to assist in the design and development of a multitude of structures. The many benefits of utilizing FEA to simulate complex problems include:

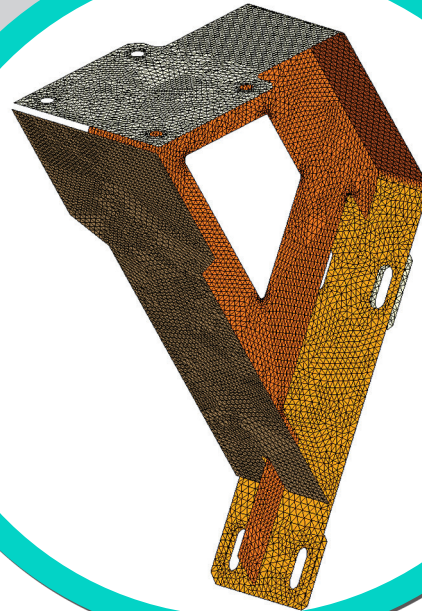
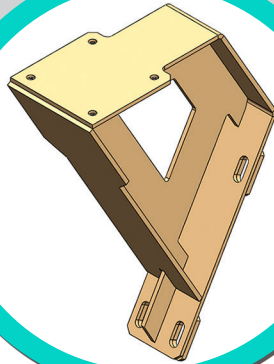
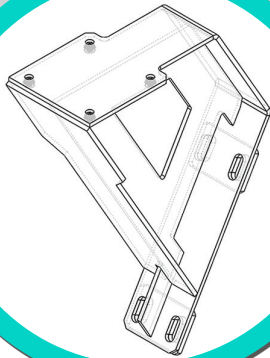
- 🔍 Determine states of stress in complex problems
- 🔍 Determine concept viability
- 🔍 Enhance the prototyping design iteration cycle
- 🔍 Significantly reduce testing cost
- 🔍 Provide cross-referencing with field testing
- 🔍 Reduce validation time

No matter your location we can provide FEA services to any of your projects. **Whether it is a single part or an entire assembly, let the Fathom 4 FEA Team help make your project a success!**

FEA Process

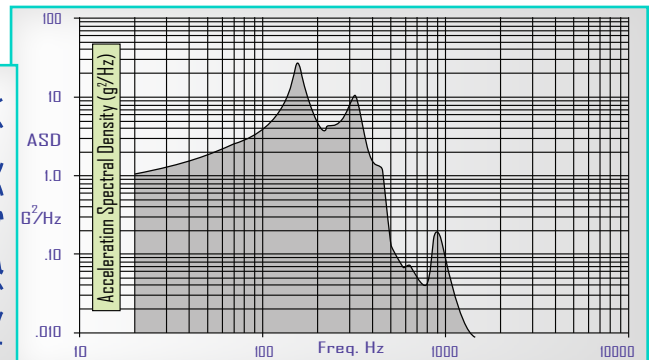
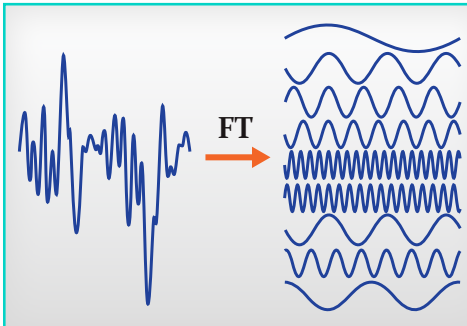
Step 1: Generation of FEA model

The first step in the FEA process is transforming the original customer design into a finite element model. The primary objective of the finite element model is to realistically replicate the critical features of the design. To do this, the client provides a 2D drawing package or 3D geometry of the design. We use this data to generate a CAD model that is compatible within the FEA environment.



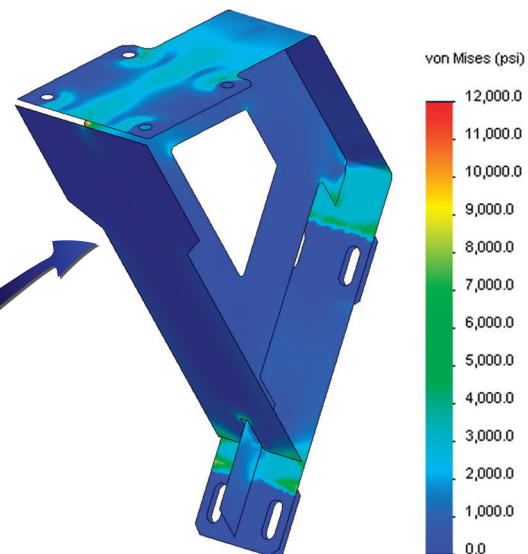
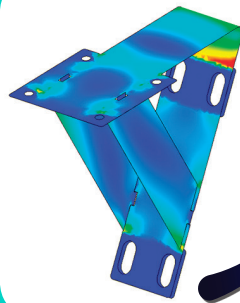
Step 2: Setup and Solution

Every design is unique, so we work with each client individually to establish specific test parameters. These parameters are based on design intent, required specifications and anticipated operating environment.



Step 3: Results and Recommendations

Results are analyzed using visualization tools within the FEA environment. A comprehensive technical report is provided detailing data such as stresses, strains and deformations. Based on the FEA results, recommendations are made for design optimization.



Fathom 4

We Believe in People
Our Troops. Our Clients. Our Team.

Fathom 4 has a simple mission: Engineering Freedom - for our country, our clients, and our employees. We delight our DoD clients by providing the best value engineering services. Fathom 4 employees are critical members of the DoD programs we support, by being highly professional, competent, industrious, and ethical.

We are a service-disabled veteran-owned small business and an employee-centric company. Fathom 4 was founded on the belief that if we take care of our employees to the best of our ability, then they will do the same for our clients.

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