

UNLOCKING THE POWER OF FUSION

FUSION MODULAR TRAINING GUIDE

AUTODESK FUSION MODULAR TRAINING

Building your course allows you to choose exactly what you want to learn. These course subjects are 1-hour long sessions, you have the option to develop your training days with subjects that make sense to your training level and needs.

These courses are not a substitute for the deep dive courses but are simply a foundation level to help users get a very short sharp idea of the subject. Also, note that some of the subjects listed need the appropriate Fusion Extension, these are highlighted in this document.

Using this document

The purpose of this document is to provide a fundamental understanding of the various aspects of Fusion. Please review the modular options and select the topics for your training. Each session will last approximately one hour. A full training day consists of six hours, so if you select ten options, you will need to choose additional modules to complete two full days of training.

Once you have made your selections, please coordinate with Symetri to confirm the options and timings. Some modules may require different timings if paired with other options

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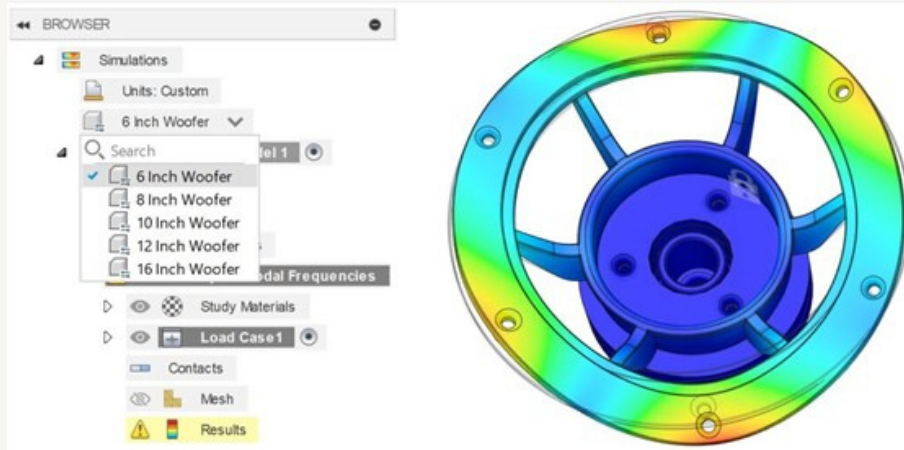
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1 DESIGN

1.1 CONFIGURE

- **Learn to build configurations (1 hour)**

Does your design come in various sizes and materials? Learn to build design configurations in this short session. This session will include parameters and properties.



1.2 RENDERING

- **Learn to render (1 hour)**

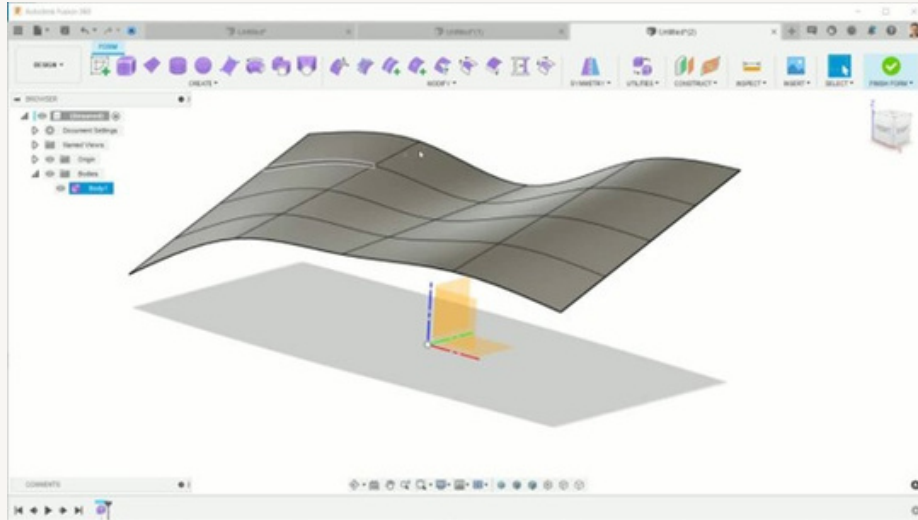
Do you want to learn how to quickly use the render tools in Fusion then this session will give you exactly what is needed to give you the skills to run through a simple rendering example.



1.3 SURFACE AND FORM

- **Create a Surface and Form model (1 hour)**

Do you have a need to create a surface or freeform model but never tried to use the tools, this quick start session will give you the skills needed to get a start on the workflow of complex modelling.



1.4 SHEET METAL

- **Understand sheet metal rules (1 hour)**

What are sheet metal rules and how do they work? Learn about sheet metal rules in this short session.

- **Build a sheet metal part (1 hour)**

This session will work through a simple example of how to create a sheet metal part.

- **Modify sheet metal parts (1 hour)**

In this short session, you will be introduced to the modified tools for sheet metal parts.

- **Create a flat pattern (1 hour)**

In this session, you will learn to create a sheet metal flat pattern as an essential stage in the creation of sheet metal parts.

- **Learn to build configurations (1 hour)**

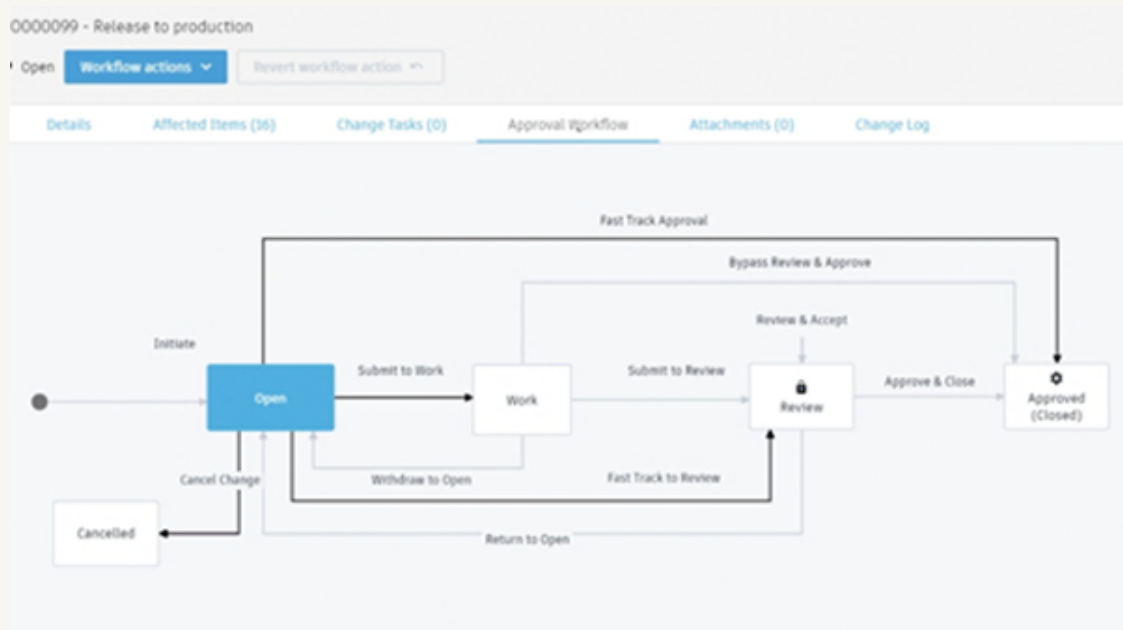
Does your design come in various sizes and materials? Learn to build sheet metal design configurations in this short session. This session will include parameters and properties.



1.5 MANAGE

- **Learn to release data using Fusion Manage** (1 hour)**

This course is a quick start guide to help you learn to release data using the Fusion Manage Extension. When you need to control your data by stamping history this short session can help give you the guidance needed to get started.

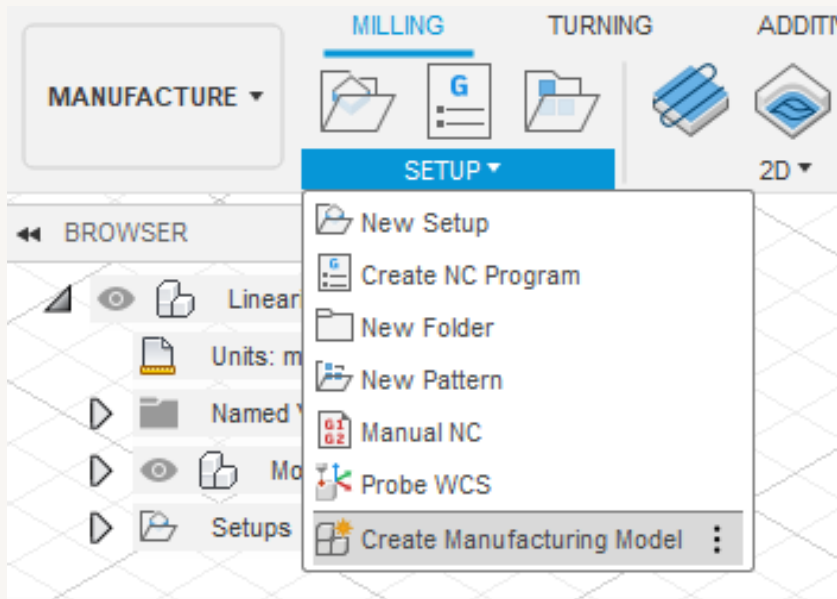


2 MANUFACTURE

2.1 MACHINING

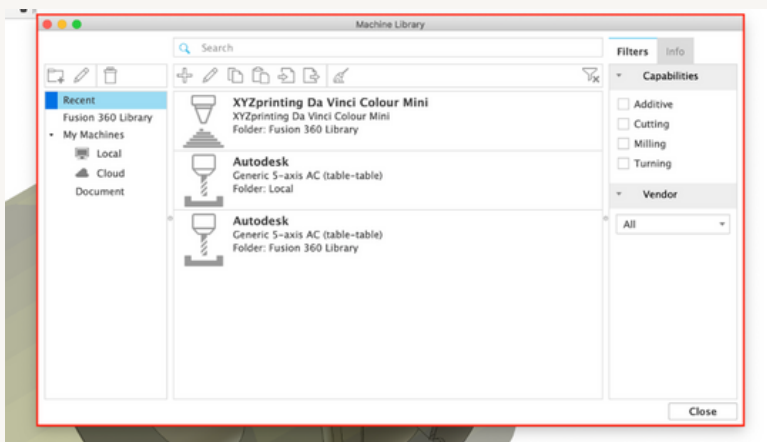
- **Create a Model for Manufacture (1 hour)**

Creating models specifically for manufacture can be a necessity as you progress towards the creation of your product. This session will give you an understanding of how this process works.



- **Understand the Manufacture Libraries (1 hour)**

Fusion has several libraries that are essential to store manufacture tools and data. This session will help get you started with how these libraries work and how to gain access to existing data.



- **Build a 2D Milling feature (1 hour)**

Learn to build 2D milling features with this short session. Examples will be used to give you confidence using the fusion workflows.

- **Build a 3D Milling feature (1 hour)**

Learn to build 3D milling features with this short session. Examples will be used to give you confidence using the fusion workflows.

Please note you will need the Manufacture Extension to use the skills provided in the sessions below:

- **Create an Automated Part machining operation** (1 hour)**

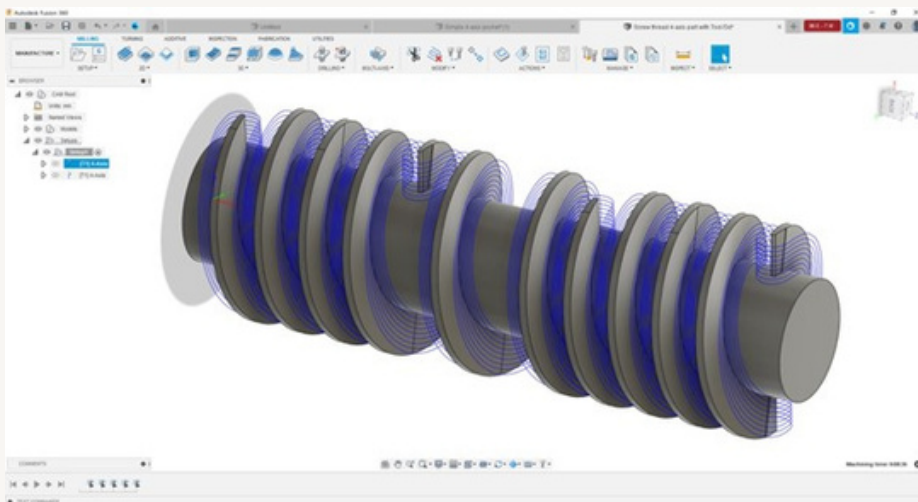
This short session is a guide to creating automated programming of complex parts. A quick introduction to 3-axis steep and shallow, deburr, geodesic and corner finishing.

- **Build a 4-Axis Toolpath** (1 hour)**

Learn to build 4 axis features with this short session. Examples will be used to give you confidence using the fusion workflows.

- **Build a 5 Axis Toolpath** (1 hour)**

Learn to build 5-axis features with this short session. Examples will be used to give you confidence using the fusion workflows.



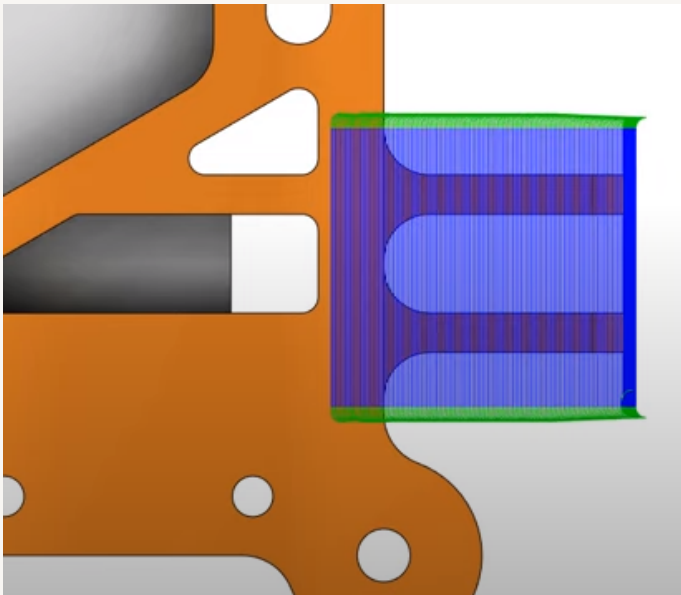
Please note you will need the **Manufacture Extension** to use the skills provided in the sessions below:

- **Understand Automatic Hole recognition** (1 hour)**

Understand the use of automatic hole recognition to speed up your toolpath creation.

- **Modify a Toolpath** (1 hour)**

You may need to modify toolpaths after creation. This session will be used to help you understand the various methods and how to apply them.



Please note that these sessions are specifically tailored for milling machines

- **Understand the Machine Builder (1 hour)**

Machine Builder, a powerful feature within Fusion, allows users to quickly create prototype simulation models from CAD models of CNC machines. This introductory session will guide you through the process of using this environment to simulate milling machine operations.

- **Build a Mill/Turn Setup (1 hour)**

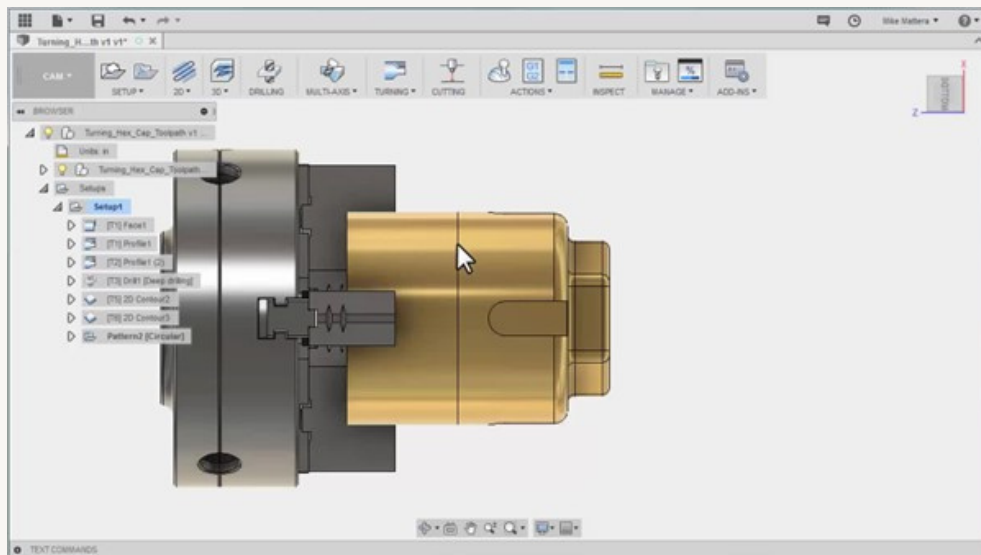
Learn and understand the workflow needed to build a mill/turn set-up in preparation for milling and turning operations.

- **Create a Mill/Turn toolpath (1 hour)**

Learn to build setups with milling and turning operations. This is a quick start guide to get you started with combining milling and turning toolpaths.

- **Understand Mill/Turn Part Handling Features (1 hour)**

If you have a machine that is capable of milling and turning, then you may need to learn to use the part-handling features in Fusion.



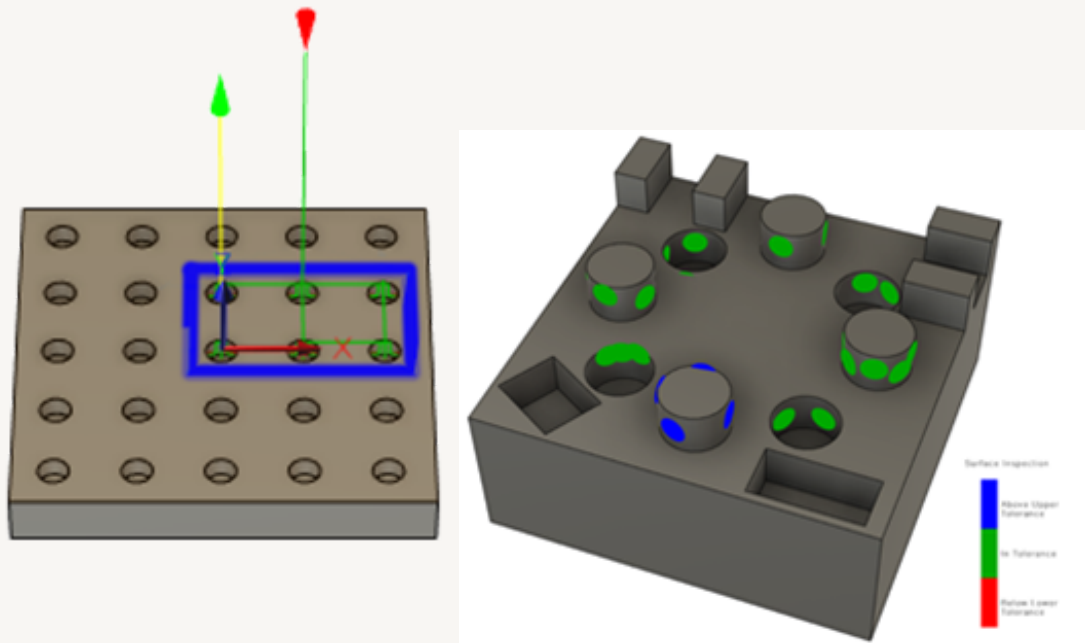
2.2 INSPECTION

- **Probe Geometry** (1 hour)**

Do you need to probe your part for inspection if so, this short session will help you learn the process of probing geometry.

- **Inspect Surface** (1 hour)**

In this session, you will learn to inspect surfaces using the Fusion Inspect Surface command.



2.3 ADDITIVE

- **Create a Model for Manufacture (1 hour)**

Creating models specifically for manufacture can be a necessity as you progress towards the creation of your product. This session will give you an understanding of how to create a model for the manufacture

- **Print setting and libraries (1 hour)**

Creating, editing, copying and pasting, importing, and exporting printer settings is essential for defining your additive part. This session will give you the knowledge of how to perform these tasks

- **Positioning models (1 hour)**

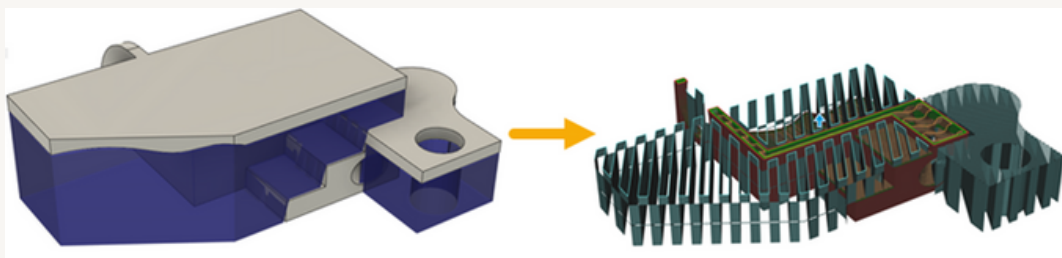
Learn how to position your part using tools for orientation and manipulation. This short session will give you the foundations needed to get started.

- **Modification tools (1 hour)**

Understand and learn about building volumes and splitting support structures. These techniques are essential to the additive manufacture workflow.

- **Support Structures (1 hour)**

There are various support structures for holding your additive part in place. Learn to pick and choose which one suits your machine in this short session to help you get started.



- **Process simulation** (1 hour)**

Simulation of thermo-mechanical properties can be an essential part of metal powder bed fusion. This is a short session on how to get started. Please note you will need the Manufacture Extension to use the skills provided in this session

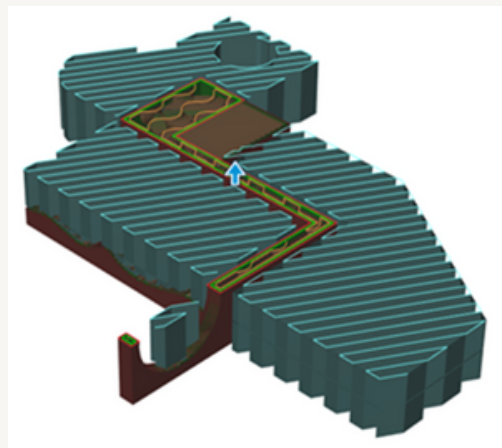
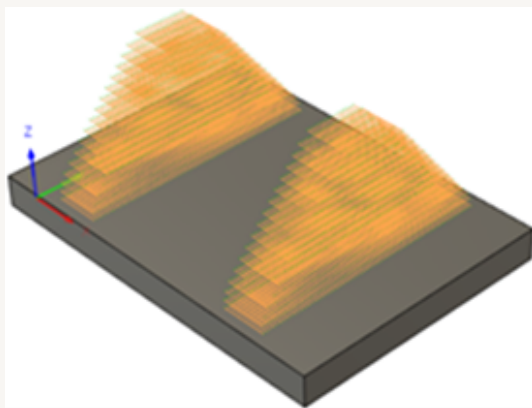
- **Simulation and Exporting builds (1 hour)**

Simulation of your additive toolpaths is essential to make sure your part is supported enough during additive manufacture this short session will give you the tools to get started.

- **Multi-Axis Feature Construction** (1 hour)**

This short session is an introduction to DED (Direct Energy Disposition). In this session, you will gain basic knowledge of the use of the feature construction strategy.

Please note that you will need the Manufacture Extension to use the skills provided in this session.



2.4 FABRICATION

Please note you will need the **Manufacture Extension** to use the skills provided in these sessions:

- **Advanced Arrange** (1 hour)**

Gain control of your arrangement with advanced arrange features. Using tools for orientation as part of the manufacture extension.

- **Nest preparation** (1 hour)**

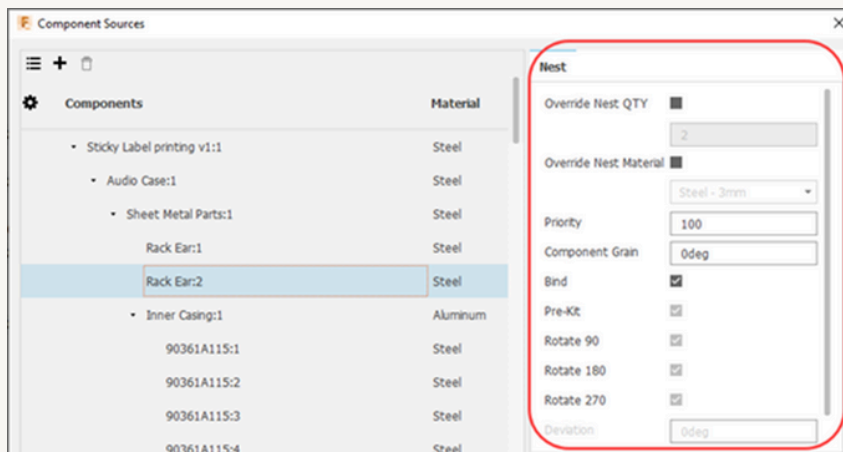
Learn to use the nest preparation dialog box. This session will walk you through certain types of settings to get you started.

- **Materials and Packaging** (1 hour)**

During nest creation you are presented with a list of available materials learn to use the library dialog to pick and choose these materials.

- **Component Sources** (1 hour)**

Learn how to adjust the appropriate settings of source details of your nests.



Please note you will need the **Manufacture Extension** to use the skills provided in these sessions:

- **Nest studies** (1 hour)**

Learn how to create a new nest study in this short session you will be walked through all the appropriate settings for creating a new nest study

- **Nest comparisons** (1 hour)**

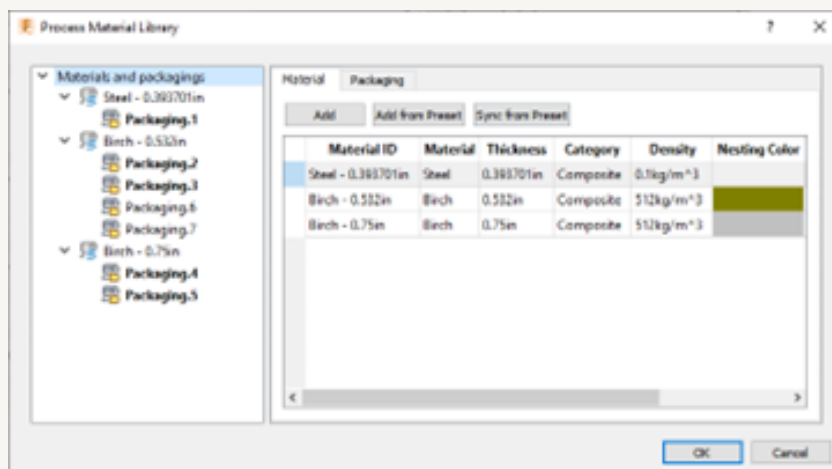
In this short session, you will learn to compare your nest studies giving you full transparency of the process.

- **Nest Export** (1 hour)**

You can export nest for future processes, in this session you will learn about the different types of files you can export to.

- **Materials and Packaging pre-sets** (1 hour)**

Pre-sets are a fantastic way to load new materials and packaging quickly. In this session, you will learn how to work with these pre-sets.



2.5 SIMULATION

2.5.1 ADVANCED FINITE ELEMENT ANALYSIS

Please note you will need the Simulation Extension to use the skills provided in these sessions:

- **Modal Frequencies** (1 hour)**

Are you looking to determine modal frequencies in your model then this session will get you started with how to build a new modal analysis.

- **Electronics Cooling** (1 hour)**

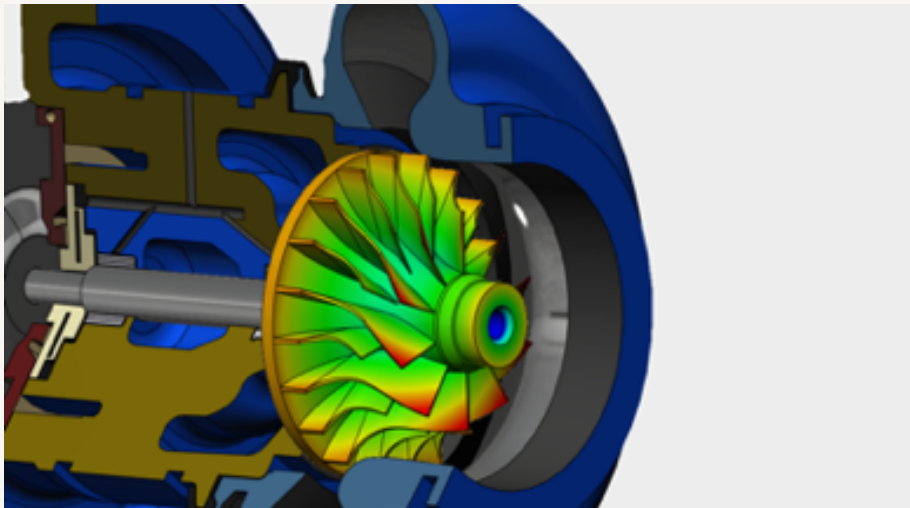
Analyse the temperature of your circuit board by applying thermal loads generated by electronic bodies.

- **Thermal, Steady State** (1 hour)**

Looking to find out how your model responds to heat loads and thermal boundary conditions? This session will give you a great start on how to work with your model under steady-state conditions.

- **Thermal Stress** (1 hour)**

This short session will give you knowledge of thermal and structural loads.



Please note you will need the Simulation Extension to use the skills provided in these sessions:

- **Structural Buckling** (1 hour)**

Learn how to determine the buckling modes of your model by applying corresponding load multipliers.

- **Nonlinear Stress** (1 hour)**

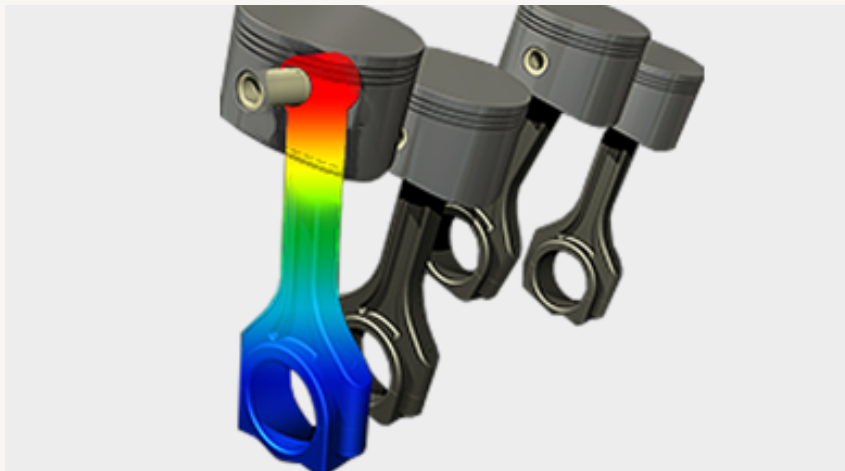
Are you ready for nonlinear analysis but don't know where to start this is a short sharp lesson to get you started.

- **Quasi-Static Event** (1 hour)**

This session is ideal for users looking to determine large motions where contact conditions can transition from one body to another.

- **Dynamic Event** (1 hour)**

Determine rapidly changing time-dependant loads and constraints in the short session.



2.6 MANUFACTURABILITY

Please note you will need the **Simulation Extension** to use the skills provided in these sessions:

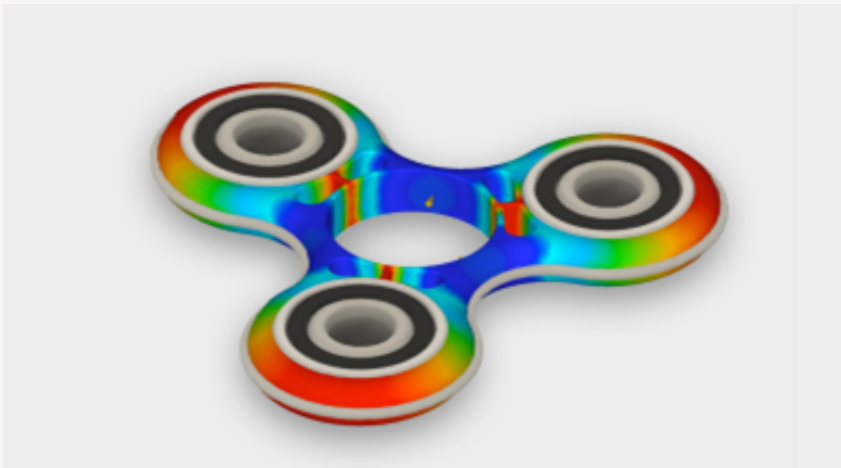
- **Shape Optimisation** (1 hour)**

Learn the basics of shape optimisation by understanding loads and boundaries for lightweight and structural efficiency



- **Injection molding** (1 hour)**

Learn how to utilise injection molding tools to determine how well your part will fill. This is a great session to get you started.



2.7 GENERATIVE DESIGN

Please note you will need the Simulation Extension to use the skills provided in these sessions:

- **Preserve and obstacle geometry** (1 hour)**

Learn to create or select preserved or obstacle geometry. In this short session, you will understand the use of geometry for generative designs.

- **Apply loads and constraints** (1 hour)**

In this short session, you will learn to add loads and constraints to your model in preparation for a generative design study.

- **Set Design Criteria** (1 hour)**

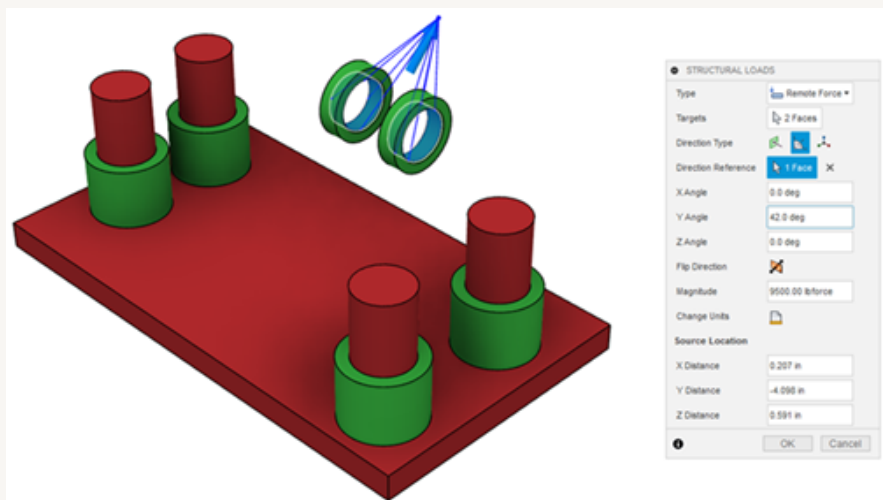
Understand the use of design criteria by applying various objectives and manufacturability settings to your model in preparation for a generative design study.

- **Control materials** (1 hour)**

Apply materials to your design study in preparation for your generative design study.

- **Run and explore your design study** (1 hour)**

In this short session, you will learn how to explore your study sessions after the study has run



ABOUT SYMETRI



WE CHALLENGE PEOPLE TO WORK SMARTER FOR A BETTER FUTURE

Symetri helps manufacturing and engineering companies to optimise working methods and increase the quality of their projects. Our mission is to help you remove waste from engineering and business processes to create more value and increase productivity by incorporating Lean solutions. Our passion is to help you resolve everyday challenges, so your team can focus on innovation and business-critical tasks.

The solutions and services we offer cover the whole lifecycle of your products from Design to Production, Sales, and After Sales & Services. We focus on helping you improve your company's business performance based on high-quality design output, automated routines and efficient use of product information throughout your business operations.

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