MFG468488 - Working in Fusion 360 for Inventor Users: How and Why

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About the speaker

Jim Swain

I am an Applications Consultant with Synergis Technologies LLC, specializing in mechanical design and analysis. I have worked with CAD/CAE tools for over 40 years as a design engineer, CAD manager, trainer and consultant. My primary focus has been in the mechanical design and manufacturing areas. I have taught design classes at Autodesk University, our own Synergis University and at the college level.
Agenda

• Introduction – Why this class?
• When would I choose Fusion 360 for a project?
• When would I choose Inventor for a project?
• Some key differences in Fusion 360’s workflow.
• A sample project.
  o Model
  o Analyze
  o Machine
Fusion 360 for Inventor Users – Why This Class?

• The workflow in Fusion 360 is very similar to Inventor’s workflow.
• Trying to use an identical workflow in Fusion 360 will cause different results and frustration.
Using the tools the “right” way.

• Fusion 360 is a wonderful suite of design tools for the Product Design field.
• When I first tried to use Fusion 360, I tried to run it just like Inventor.
• Learn from my mistakes and successes:
  o When to use Fusion 360, and when not to.
  o Tips I learned as I explored the software.
• Sample project.
• The sample is an actual hobby project of mine.
  o A model railroad steam locomotive.
When Do I Choose Fusion 360?

- **Conceptual Design Work**
  - Working from Pictures or Sketches
  - Generative Design*

- **Organic Shapes***
  - Free-form modeling
    - T-Spline Bodies
    - Meshes

- **Simulations**
  - Simplify tools
  - Easy to use simulation tools

*Not covered in this class.
When Do I Choose Inventor

- Large Assemblies
  - Thousands or tens of thousands of components.
- Routed Systems
- Frame Generator
- Content Center
- Detailing Plastic Parts
- Detailing Sheet Metal Parts
- Design Assistants
- Interacting with Revit
- Families of designs

_Boat images courtesy of Viking Yacht Company_
Preferences are tied to your login.

- You need an Autodesk login.

Some key settings to note:

- **General**
  - Recovery time intervals = Autosave!
  - Y up or Z up?
  - Pan/Zoom/Orbit shortcuts set to match Inventor
    - *This does cause trouble with my 3D mouse.*
- **General > Design**
  - *Capture Design History by default!*
  - Clear 3D Sketching by default
- **Default Units**
  - Design v. Manufacture v. Simulation
Preferences - Previews

You can access technology previews through your preferences.

[Image of a software interface showing the Preferences window with options for different categories like General, Simulation, and Manufacture, and a section for Preview Features.]
Some Conceptual Differences

INVENTOR

- **Projects = Search Paths**
  - Save goes to Workspace
- Typically “Bottom-up” design workflow
  - Always external components
- No Autosave
- Browser is the timeline
- Components, with included bodies, in files
- Assembly Constraints and Joints
  - Use either type in an assembly.
  - Always ground at least one component.

FUSION 360

- **Project = Folder in the Cloud and Team Member Management**
  - Save goes to the Cloud folder or local cache.
    - CTRL+Shift+S = local save
- Typically “Top-down” workflow
  - Typically internal components
- Autosave (Recovery file)
- Browser and Design History
  - Design History must be turned on.
- Bodies and Components in the design
- Only Assembly Joints
  - Joints are only between components, not bodies.
  - As-built Joint between at least one component and the top Browser node
Some Workflow Differences and Recommendations

• Always start a new component
  o Good starting technique
    ▪ Unless you are working on a single part design
• Be aware of which component is active!
• There isn’t a “Replace Component” tool
  o Delete the old and insert the new
• Joints, not Assembly Constraints
• As-Built Joints if components are already in the right position
• Lock joints to temporarily fix moving parts
• Rigid Groups to lock several components in their current relative position
• Grounding doesn’t work the same as Inventor.
  o Use an As-built Joint between a component and the top node in the Browser
Some Workflow Differences and Recommendations

• Be careful to select desired type of object for Modify tools.
  o Bodies vs. components
• For “cuts” and “all” – pick which bodies are being cut (at the bottom of the dialog box)
• Capture position when asked.
• Edit features in the Design History
• Insert individual fasteners
  o There isn’t a Content Center.
  o There is Insert from McMaster-Carr and Manufacturer list
Key Highlights

- Make sure your Design History is on.
- Make a new component.
  - Joints can only be between components.
- Make sure you know which component is active.
- Make sure you know what type of object you are selecting.
Fusion 360 Workflow Demonstration
I hope this helps you avoid using an excellent suite of tools incorrectly.

Thank you for your time.