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Revit Fabrication

Bridging the Gaps with eVolve MEP

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Learning Objectives

- Learn to quickly place hangers on entire pipe and duct systems
- Create spool sheets automatically create views, schedules, annotation, dimensions and spool continuation tags
- Use customized tags placement tools to speed up your documentation
- Learn to use our Utilities toolset to help improve your productivity

Description

Revit Fabrication is transforming yearly and yet we still have gaps in the Fabrication workflow. This session will cover Revit Fabrications process for specific detailing task like the automation of hanger and sleeve placement with built-in coordination. Easily create Spools from assemblies and package them for the fabrication shop. The idea of a single solution is what we are striving for. eVolve MEP helps leaders in the mechanical, electrical and plumbing industries to harness the power of Revit for increased revenue, improved productivity, a stronger workforce, and enhanced quality. We do this through software and services that enable faster detailer workflow, smarter use of skilled labor, fewer errors, higher quality, and ultimately more projects.

Speaker(s)

Gabe Hernandez

Specializes in the MEP and Architectural products and provides training, implementation, and product support services. Gabe has expertise in designing and implementing BIM processes and workflows. He is an Autodesk Certified Instructor and a Certified Product Support Professional. He has also achieved Autodesk Technical Sales Professional status in multiple categories. Gabe previously worked for architectural firms and MEP consulting engineers. Gabe assisted in obtaining one of the first Autodesk Fabrication Specialization authorizations in 2013. Other key highlights • Autodesk University Instructor • Autodesk Fabrication Specialization • Autodesk Certified Instructor • Certified Support Professional

Introduction

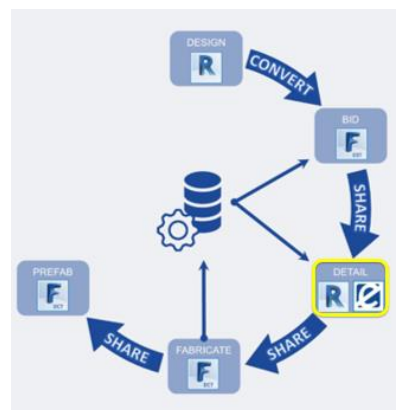
In the course we address the topic of Revit Fabrication and its current workflows. I have taught a course we create to get users of all kinds to understand how to utilize their software to make it work. Like most firms and programs everyone does it a little differently. We started to understand the need in the industry. It became clear how we could focus our efforts to make a better workflow and meet the demands of change. Instead of just workarounds we wanted to fill in the gaps as they say. Find ways to integrate an existing detailer's CAD knowledge to make the change from one solution easier. The tool set that eVolved became the fastest workflow for MEP detailing in Revit.

Gaps in the Workflow in Revit

Early adopters in Revit Fabrication quickly knew that a hybrid workflow and using the entire power of the Autodesk Fabrication Suites was going to be key in a complete start to end workflow. Revit did not accommodate for some fabrication automation we had in CADmep. Only if it were more like CADmep was a common theme or comment about the product. Spooling in Revit with assemblies is difficult to maintain / manage at best. So we created solutions not workarounds to solve some gaps and complement the change to Revit as a single solution. The goal is to make it easier for the user and keep it in one program from start to finish.

Bridging the Gaps

The top detailing department leverage technology to do more, with less. eVolve MEP makes it easier to make the transition over to Revit and automate detailing tasks, so you can speed up and be more productive.



eVolve MEP Workflow

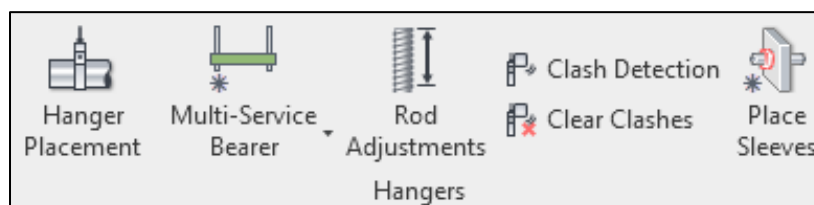
This session will discuss using eVolve Mechanical V4.2.4 enhanced detailing tools for Revit 2021. You will gain knowledge on a 3rd party applications solutions for workflow issues users experience. The following tools will enable users to effectively and quickly place hangers and label them according to your field technology's requirements. We will create spools and manage batch spooling for both pipework and ductwork systems. Utilities and Annotation are essential to customized and automate to meet your unique company standards. User will tag fab parts and get more productive visualizing and modifying services and layouts with ease.

Placing Supports / Hangers

The ability to use designline and services to automatically generate your support placement is a huge time saver for MEP detailers. You can create rules that allow placement of hangers and sleeves per service types and project requirements. Generate more accurate reports and exports to field equipment by managing the hanger points in our Points manager.

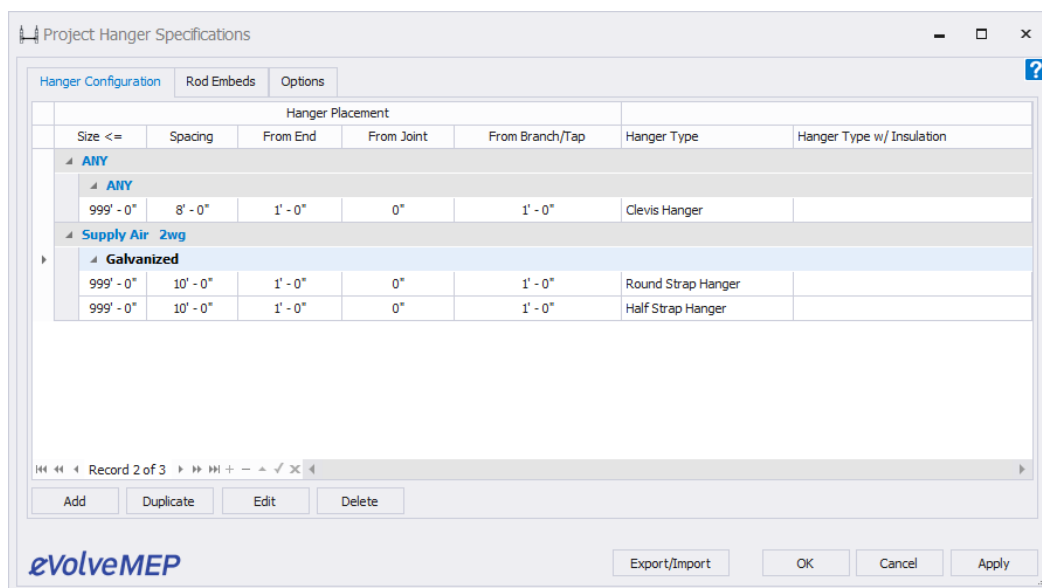
Built-In coordination and place a multitude of supports with embeds

Automate your placement of supports and even place multi-service trapeze hangers to correctly support your systems. With built-in Clash detection you quickly place them on service after service or by entire portions of the model.



Hanger and Sleeve tools.

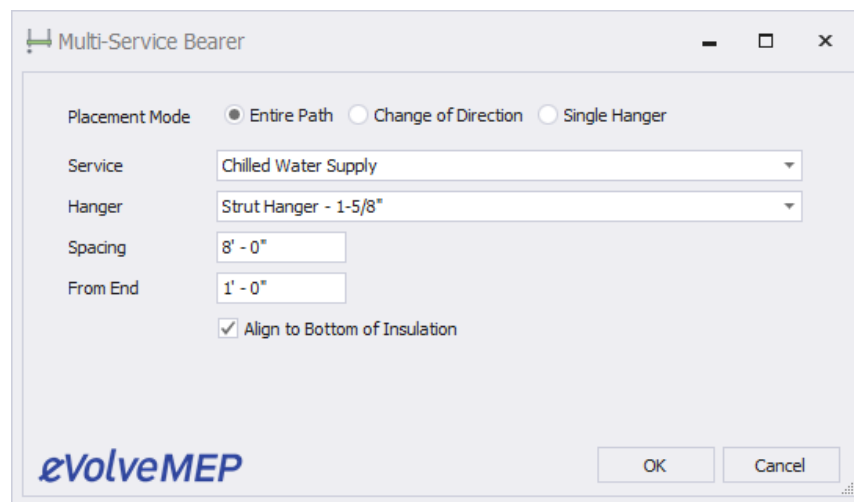
First we will need to configure our Hanger settings to make sure we have our standards set. Then we will be able to place supports on all services in the model with a quick window selection. You can create a ANY rule for duct and pipework to quickly standardize support placement by a general rule.



Sample Configuration

Tip! If you are placing a large amount of hangers on multiple services. Create a 3D view and then use the Hanger Placement tool.

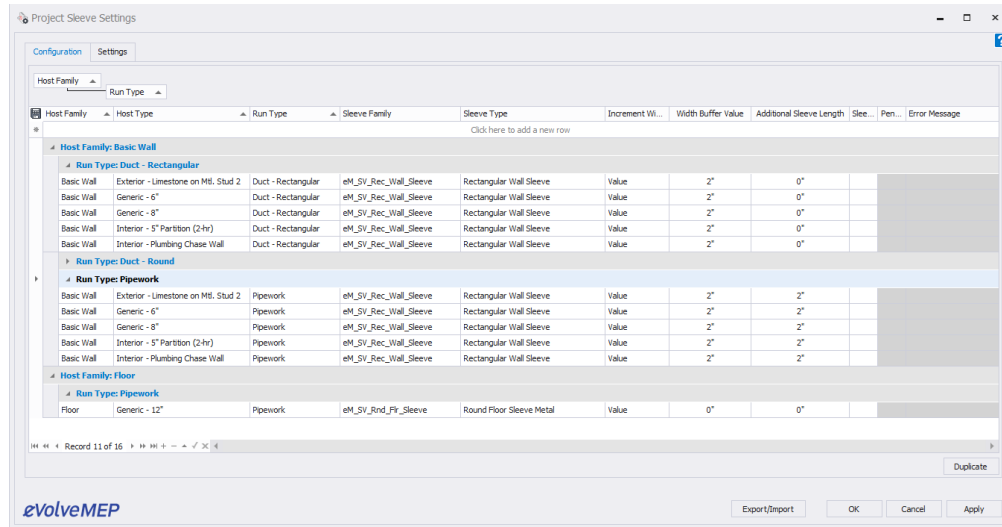
The Multi-Service bearer allows users to place a specified hanger on parallel services in the model. Currently users have to stretch the rods to encompass more than one service at a time. Selecting the parallel runs you will get the Multi-Service Bearer dialog requesting the following settings. Placement mode, Service, Hanger, Spacing and From End. You can also choose to Align to Bottom of Insulation for proper placement.



Sample Configuration

Tip! The Hanger is dependent on your services. Also you might want to consider running the tool after adding insulation to parts to use the align to bottom feature. Also after the initial run the dialog will NOT reappear. You need to hold the <Shift> key down and click the command to display the dialog box for changes.

Our Place Sleeve tool allows you to automate the time-consuming process of placing sleeves. As with hanger placement, our sleeve feature is dynamic and driven by user-defined rules and options under Sleeve Settings. You can use our Family Browser to ensure you have defined the family in your project so you can setup which sleeves are placed.

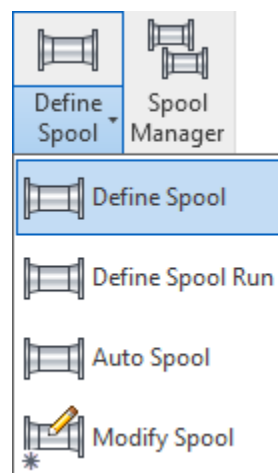


Sample Configuration

Tip! Sleeve placement does not support links based on shared coordinates or those that are manually moved into place. Linked models must align through project base points as well as standard project north alignment. Use non-hosted families for projects with linked models.

Spool Overview

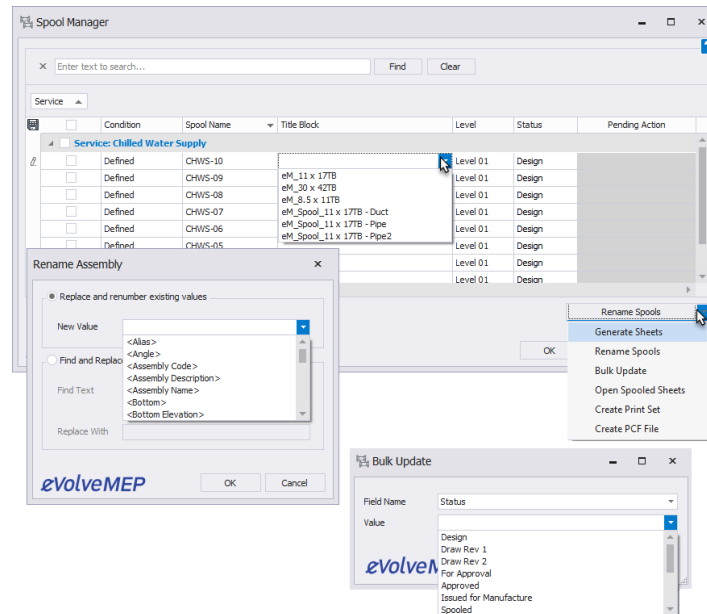
We offer a wide range of spooling commands to facilitate your custom workflows. These tools allow for quick creation, dynamic view options, and robust management. Users will be able to quickly define spools with a standard window selection or automatically with defined (height x width x depth and weight) settings. Gain the ability to seamlessly modify spools and combine spools when updates occur.



Spooling

Spool Manager

The Spool Manager will list all the Assemblies/Spools in the current project. Using the headers in the manager you can quickly work with spools by filtering parameters like By Level or By Service.



Spool Manager

Tip! Drag any column into the open row at the top of the dialog to group by the data in the column. Note that all Assemblies will appear in the manager.

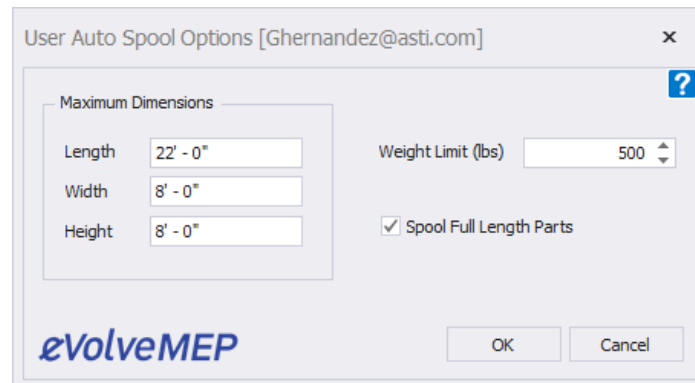
To Define a spool

1. From the eM ribbon, click **Define Spool** from the **Spooling** menu.
2. From the *Create/Define Spool* window, enter a spool name, select desired option, and click **OK**.
3. From the drawing area, using a window selection or crossing window selection, chose the desired elements to spool and click **Finish** in the Options Bar.
4. Continue to select elements to spool or click **Finish** in the Options Bar to complete the session

Tip! Make sure you have our eVolve Mechanical Titleblocks or Spool templates loaded in the project you are currently want to generate spools. Refer to the *Getting Started Guide* for local copies under your program files / eVolve directory.

Auto Spool

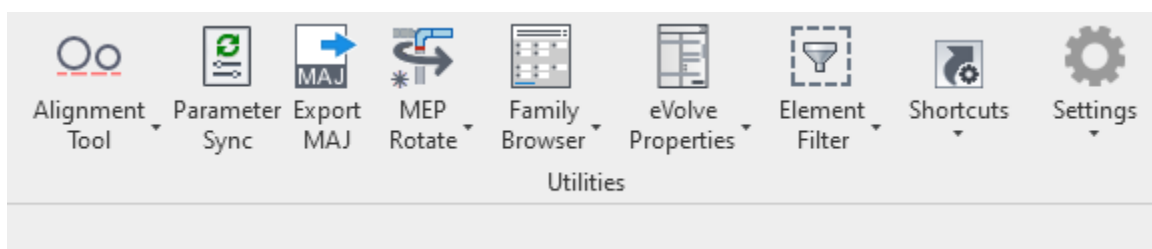
Based on the specified dimension, eVolve essentially creates a bounding box, traverses the path from the specified start point and direction to determine which fittings will fit into the enclosed area. After the spool is defined, eVolve continues traversing the path to the end of the run.



Sample Auto Spool Options

Utilities

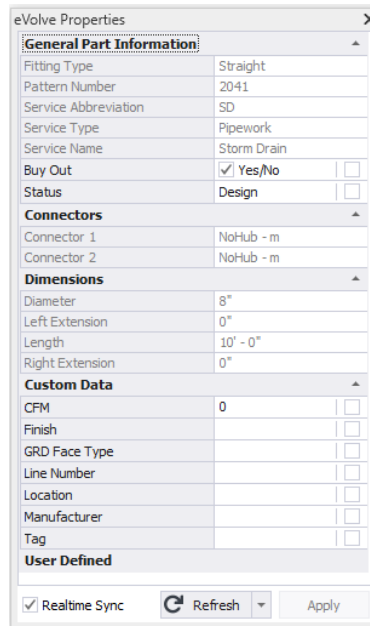
eVolve MEP Utilities were developed with the end user in mind. These tools are complimentary to the rest of our tool set. You will use our eVolve Properties delivers data that is missing from your ITM content in Revit. You can also manage content with custom libraries or what we like to call AutoCAD tool palettes in Revit with our Family Browser. You no longer need to front end load your project templates with a large amount of families. You can use our family browser to manage content per company standards or by project type. Using Parameter Sync and Element Filer will really boost your ability to customize your Revit environment with automated scripts and synchronizing of data across the entire model. Shortcuts in eVolve MEP could have a huge impact on firms needing to train, implement standards, get quick access to external resources.



Utilities and Settings

eVolve Properties

eVolve Properties is an interactive dock-able palette which displays extended data related to a selected element. When multiple elements are selected, eVolve Properties displays data common to all selected elements. Some parameters can be edited, these values available in both Revit and Fabrication parameters. Editable parameters are visually more bold.



General Part Information	
Fitting Type	Straight
Pattern Number	2041
Service Abbreviation	SD
Service Type	Pipework
Service Name	Storm Drain
Buy Out	<input checked="" type="checkbox"/> Yes/No <input type="checkbox"/>
Status	Design <input type="checkbox"/>
Connectors	
Connector 1	NoHub - m
Connector 2	NoHub - m
Dimensions	
Diameter	8"
Left Extension	0"
Length	10' - 0"
Right Extension	0"
Custom Data	
CFM	0 <input type="checkbox"/>
Finish	<input type="checkbox"/>
GRD Face Type	<input type="checkbox"/>
Line Number	<input type="checkbox"/>
Location	<input type="checkbox"/>
Manufacturer	<input type="checkbox"/>
Tag	<input type="checkbox"/>
User Defined	
<input checked="" type="checkbox"/> Realtime Sync <input type="button" value="Refresh"/> <input type="button" value="Apply"/>	

eVolve Properties

Carry Over Values (Checkbox)

When adding fittings to a model, if the Carry Over checkbox is enabled then the value(s) of the previously placed element is applied to the next connected element.

Tip! Users are required to set a path to a folder that has read/write capability. The installed Shared Parameters file resides in Program Files and is read-only. If you path to this file you may receive an error. Create a new folder on your shared project server and once pathed eVolve will create any files needed in that directory. Typically this resides on a server or network share for all users to path to.

Element Filter

The purpose of the Element Filter feature provides highly customizable and storable rule sets which help you to quickly select, isolate, hide, halftone or apply transparency to specific items in your model. This ability not only allows for quick view changes, but also fully tailor all evolve and even Revit commands to your needs.



Element Filter

Element filters are similar to view filters but use parameter data to filter by and you can add functionality that is customized to your production needs. With our Filter Designer you can generate all types of custom filters to streamline placement and coordination.

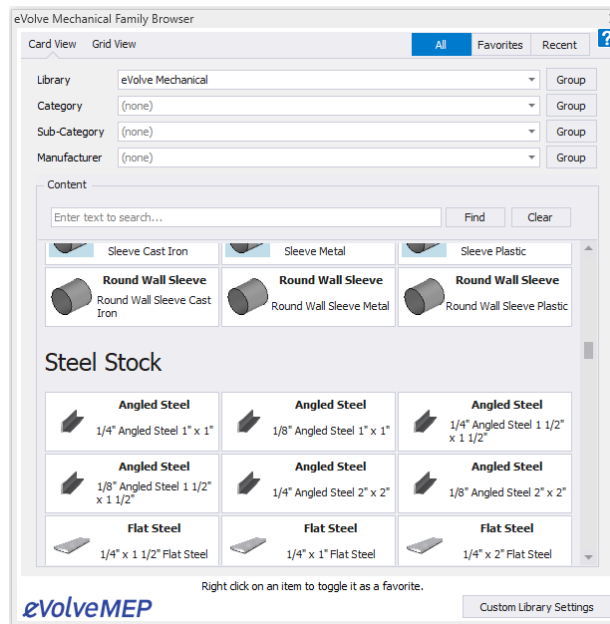
Adding a custom Element Filter

1. Select the categories you want this filter to apply to. (*Pipe Fittings, Duct Fittings*)
2. Click on the Rules tab and start to build your rule. “Add Condition”
3. For Parameter select the appropriate condition (**eM_Service Name**)
4. Select your Operator. Most commonly used (“**Contains**”) for partial match.
5. Input Type can vary use, (**Prompt for Value**) to type a partial value.
6. Value will allow you to ask the user for input. (**What Service are your Sleeves on?**)
7. Click **OK** to run the new filter in the project. (**Air, Chilled, Water**)

Tip! If you do not see any parameters or if you only see a few then this is because you have selected multiple categories and the parameter you are looking for may not exist in all categories you selected.

Family Browser

The eVolve Family Browser is designed to easily locate content based on family parameter values. Families may be grouped, filtered, and/or searched to to limit content and fine tune the displayed results. Expand functionality by adding custom libraries which may reside on a local machine or company network.



Family Browser

When setting up the Family Browser you can create a Custom Library for your current content requirements. You can also create custom libraries for project specific management of content outside of your template.

Adding a custom library to the eVolve Family Browser

8. If the eVolve Family Browser is not already displayed, from the ribbon, click the **eVolve Mechanical** tab and click **Family Browser** in the **Utilities** panel.
9. From the **eVolve Family Browser**, click **Custom Library Settings**.
10. From the *Custom Content Library Configuration* window, click **Browse**.
11. From the *Browse For Folder* window, navigate to the directory where the custom library is located, click the folder containing the .xlm file, and click **OK**.
12. Click **Create Definition File** and follow the prompts.
13. Click **Create Library** you should see the.xlsx file created previously.
14. From the *eVolve Mechanical: Restart Required* window, click **OK**.
15. Restart Revit to apply changes.

Tip! For Categories separate your families into different folders. Before creating a custom library make sure you have a corresponding image that is named the same as the family. (Ball valve.rfa and Ball valve.png)

Conclusion

eVolve MEP was developed by industry detailers and project managers to give new and existing users tools that can benefit production. Keep MEP detailing all in the Revit software. eVolve MEP will continue to transform our industry and push for excellence.

Credit:

Thanks to Autodesk and all Attendees
Applied Software and eVolve MEP
Brett Stacks
James Simpson
Mark Sebiert
Development Team

Resources:

Online Help and Knowledge base

<https://help-mechanical.evolve MEP.com/>

eVolve MEP – YouTube Channel

https://www.youtube.com/playlist?list=PLKwP_H_I4lorl0ej0MQeTXtsIApGsvrsr

Applied Software

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