

Zehnder ZFP

This document describes the Revit families for the Zehnder RHC ZFP system. The possible options and parameters will be explained in detail and also a couple of examples will be used to show how to successfully use these files in your Revit project.

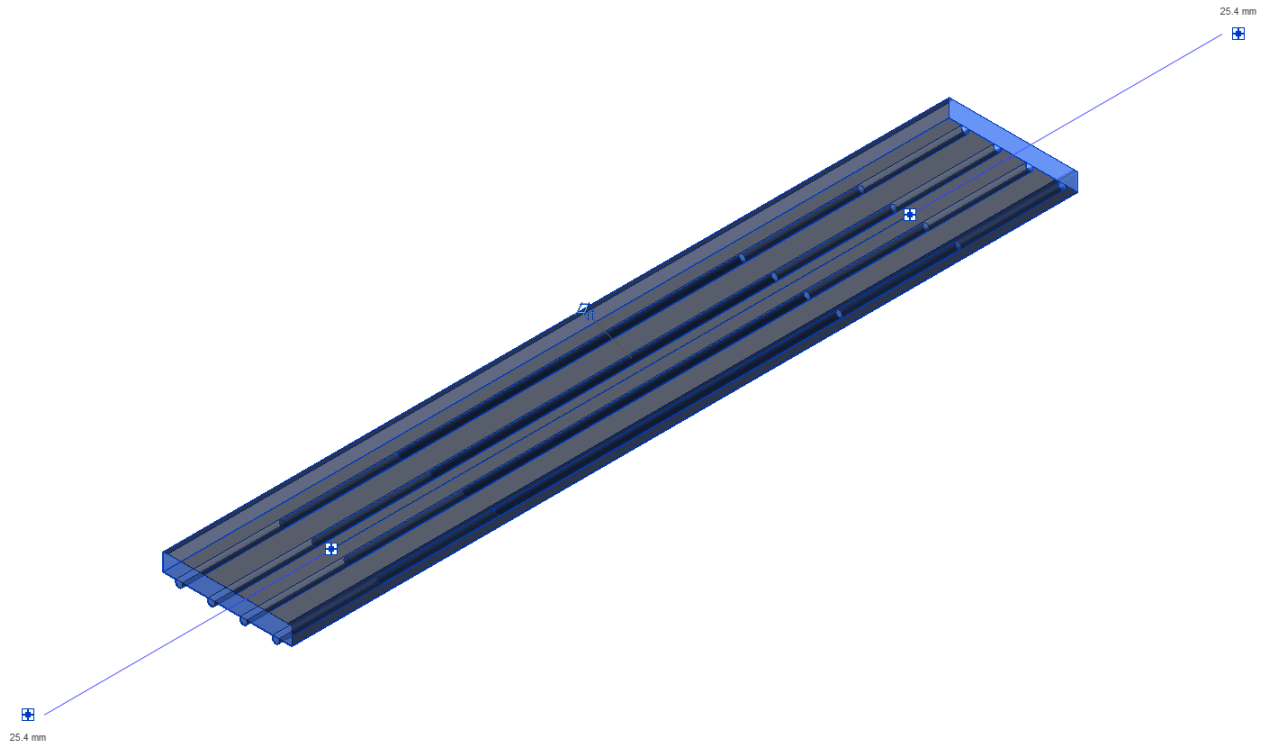


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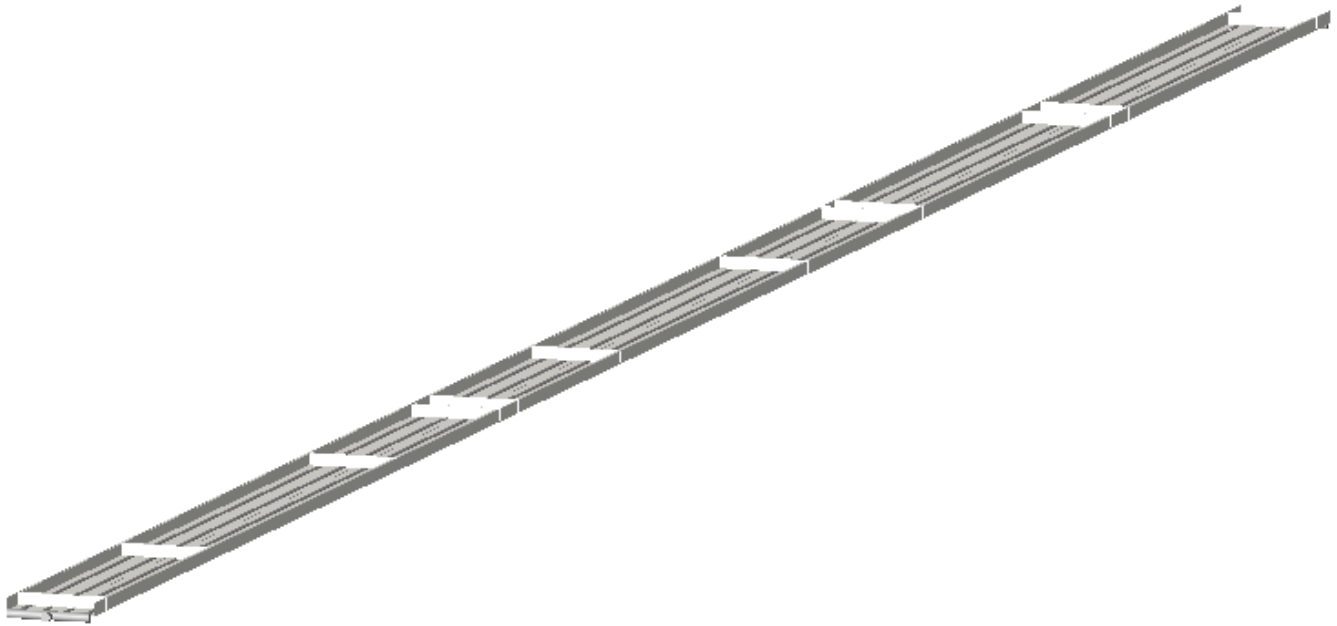
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I. Zehnder Revit families and their options

A. HC_Radiator_Panel_F_MEPContent_Zehnder_ZFP_Panel.rfa




The ZFP panel family is a highly configurable family that comes as a type catalog family. The family has 2 connectors, at these points the family can be combined with more panels, headers and collectors to create a fully connected strip of panels.

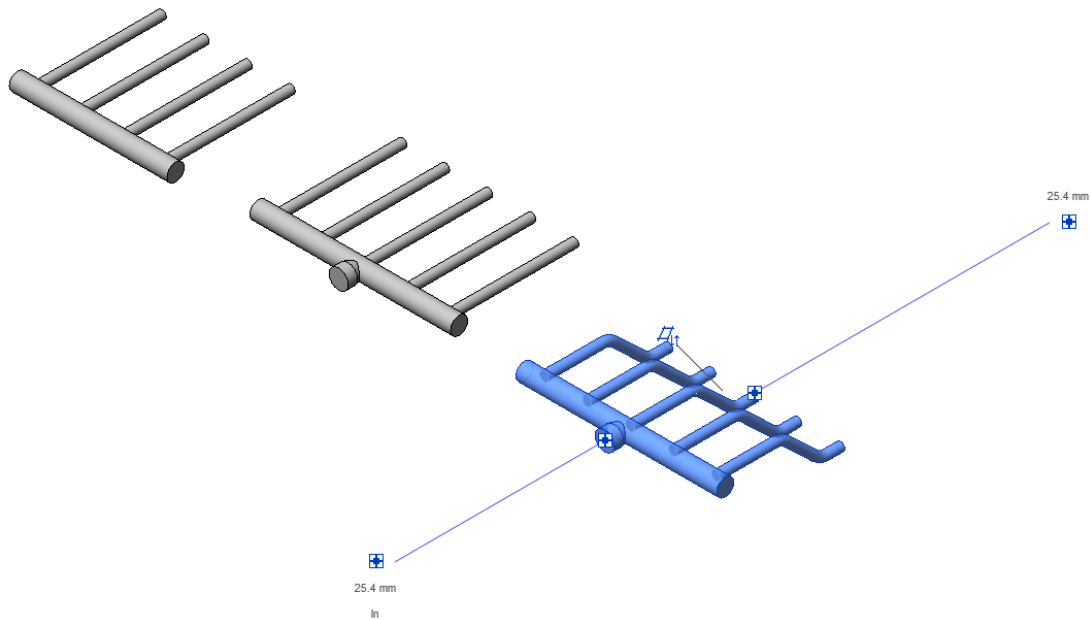


The panel family comes with an amount of options, below the parameters which can be found in the Revit properties screen are listed and their function is explained:

Dimensions		Used to set the offset from the ceiling after placing on the surface
Suspension Height	150.0	Set a negative/positive value in order to tilt the panel/strip in the length direction
Length Inclination	0.00°	Set a negative/positive value in order to tilt the panel/strip in the width direction
Width Inclination	0.00°	

		Number of Panels	Set the number of panels for this instance of the family
		Left Open Panel Connect	Set the left connector position to connect into another panel (for panel-to-panel connections, see P11)
		Right Open Panel	Set the right connector position to connect into another panel (for panel-to-panel connections, see P11)
		Left-Right Open Only Tubes	Left and right side of the panel are open (no covers) if this option is checked 
Visibility		Left Side Headers	Set the left connector position to connect into a Header/Collector
Number Of Panels		Right Side Headers	Set the right connector position to connect into a Header/Collector
Left Open Panel Connect		Raised Headers	Set both connector positions to connect into raised headers.
Right Open Panel Connect		Aluminium-Laminated Mineral Wool Insulation	Enable this insulation type. (this type is only available with smooth surface)
Left-Right Open Only Tubes		Mineral Wool Wrapped in Foil Insulation	Enable this insulation type. (this type is only available with smooth and perforated surface)
Left Side Headers		Acoustic Insulation	Enable this insulation type. (this type is only available with perforated surface)
Right Side Headers		Acoustic Insulation Black Side	Switch acoustic insulation to black color (this type is only available with perforated surface)
Raised Headers		Left End Cover	Switch left end cover on/off (not available with raised headers)
Aluminium-Laminated Mineral W...		Cover Plate	Switch Intermediate covers on/off (Number Of Panels>1)
Mineral Wool Wrapped in Foil Ins...		Right End Cover	Switch right end cover on/off (not available with raised headers)
Acoustic Insulation		Smooth Surface	Enable smooth surface (Default surface. Perforated if unchecked)
Acoustic Insulation Black Side		Ball Guard	Enable ball guard visualization.
Left End Cover		Dust Protector Panel	Enable dust protector panel geometry.
Cover Plate		Thermal Radiation Shield	Enable thermal radiation shield geometry (Increases effectiveness of thermal radiation)
Right End Cover			
Smooth Surface			
Ball Guard			
Dust Protector Panel			
Thermal Radiation Shield			

B. HC_Radiator_Panel_F_MEPContent_Zehnder_ZFP_Header-Collector_In.rfa

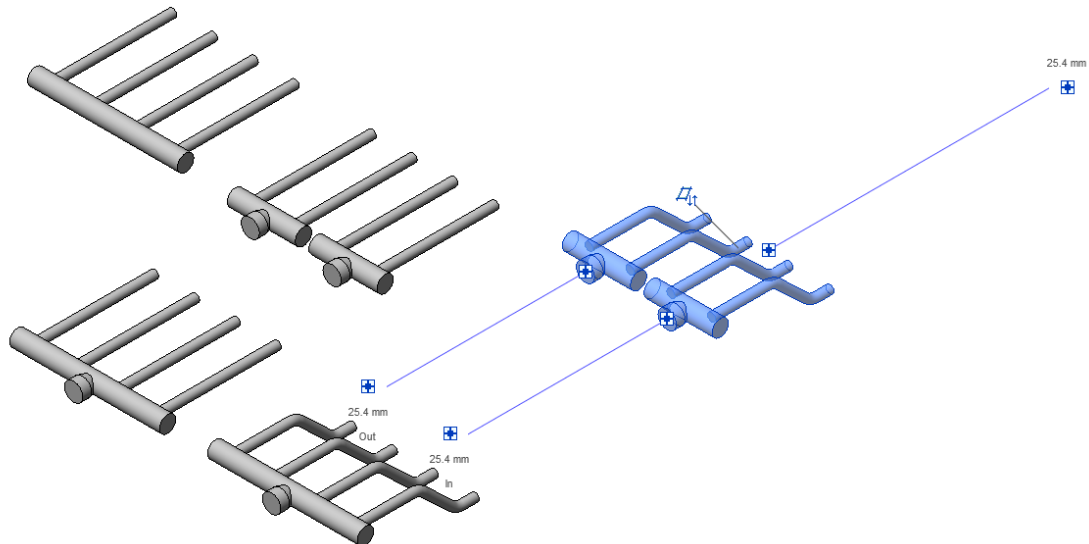


The Header-Collector family comes with a couple options to easily create the header or collector you need. This variant of the family comes with a flow that is directed into the panel (IN). By setting the correct type from the Revit properties menu and the desired options the number of connectors will change allowing you to complete your strip of panels in any desired configuration.

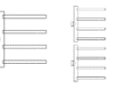
Visibility	
Right-Left Side Headers	<input type="checkbox"/>
Straight Header	<input checked="" type="checkbox"/>

Use the Straight Header option to switch between straight and raised headers (only applicable when a header type is selected).

C. HC_Radiator_Panel_F_MEPContent_Zehnder_ZFP_Header-Collector_Out.rfa

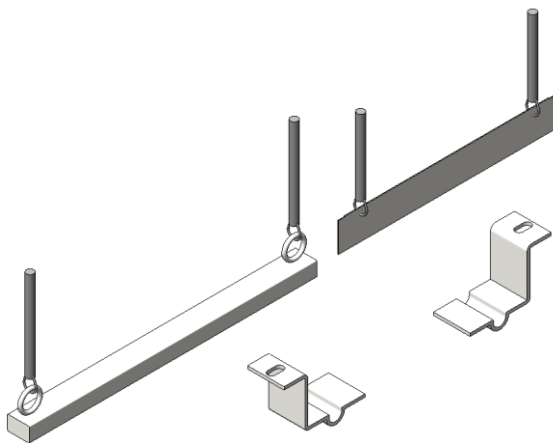


This family is very similar to the family described above. The difference is that this variant of the family comes with a flow that is directed out of the panel (OUT). Also this family has the option to have both the flow and the return connection on one end of the strip for a single-sided connection. A collector should be used on the other end of the strip in this case.

Visibility Right-Left Side Headers <input checked="" type="checkbox"/> Straight Header <input type="checkbox"/>	Switch between a single header or a double header. Double headers are used for strips with a one-sided connection  Use the Straight Header option to switch between straight and raised headers (only applicable when a header type is selected).
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D. HC_Radiator_Panel_MEPContent_Zehnder_ZFP_Suspension Kit.rfa

The suspension kit family comes with 3 different hanging systems: Support track, Suspension axis and Z-profile. This family can be placed on an assembled strip.

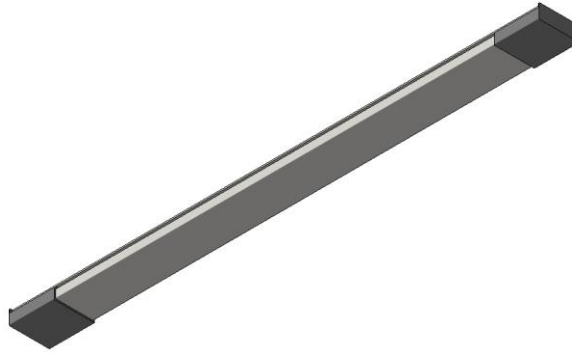


Dimensions Suspension Length 154.0 Panel Length 0.0 Panel Width 300.0 Panel Length Inclination 0.00° Panel Width Inclination 0.00° Ceiling Inclination Straight Panel 0.00°	Suspension Length	Length of the suspension system (Default minimum length set by type)
	Panel Width	Controls width of the hanger (Set a value similar to the panel width)
	Panel Length Inclination	Sets the inclination of the suspension system (length)
	Panel Width Inclination	Sets the inclination of the suspension system (width)
	Ceiling Inclination Straight Panel	Adjusts the length of the suspension system to match the ceiling's inclination
	Z Profile Fixing	Use the Z-profile mounting option (uncheck other options)
Visibility Z Profile Fixing <input type="checkbox"/> Support Track Fixing <input checked="" type="checkbox"/> Suspension Axis Fixing <input type="checkbox"/> Ceiling Parallel Panel <input type="checkbox"/> Support Track Tube Offset <input checked="" type="checkbox"/> Chain <input checked="" type="checkbox"/> Straight Panel <input checked="" type="checkbox"/>	Support Track Fixing	Use the support track mounting option (available only with horizontal panels)
	Ceiling Parallel Panel	Sets the length of the suspension system to be equal (used for situations where panel is parallel to the ceiling)

E. E_Lighting Fixture_F_MEPContent_Zehnder_Panel Light.rfa

F.

The LED light can be mounted on a panel, this is a face based family (type catalog).



Dimensions Left-Right Offset 0.0 Rotation W-Axis 0.00° Rotation V-Axis 0.00° Rotation U-Axis 0.00°	Left-Right Offset	Easily adjust position after placing between tubes (+/- values)
	Rotation W-Axis	Optional rotation after placement for fine-tuning
	Rotation V-Axis	Optional rotation after placement for fine-tuning
	Rotation U-Axis	Optional rotation after placement for fine-tuning

II. Step-by-step: Strip assembly and possible configurations

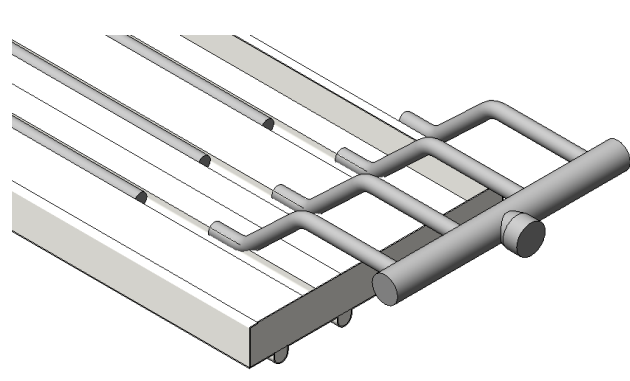
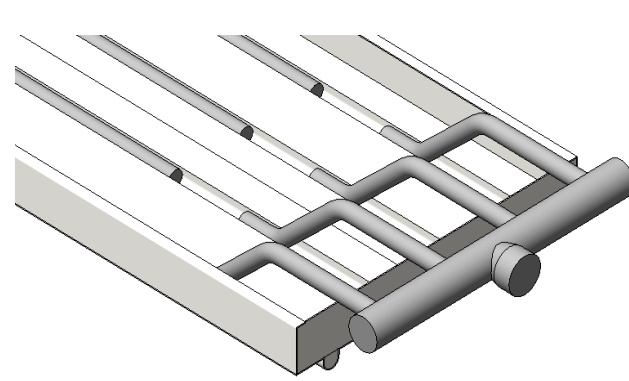
In this chapter the workflow of assembling a strip of radiant panels, headers and collectors is described. Also the method of placing a suspension system is explained step-by-step.

Panel family can be easily attached to the ceiling (inclined/straight) and after all the other items will be attached to it. Based on desired configuration all the families must be set correctly in order to have a good representation.

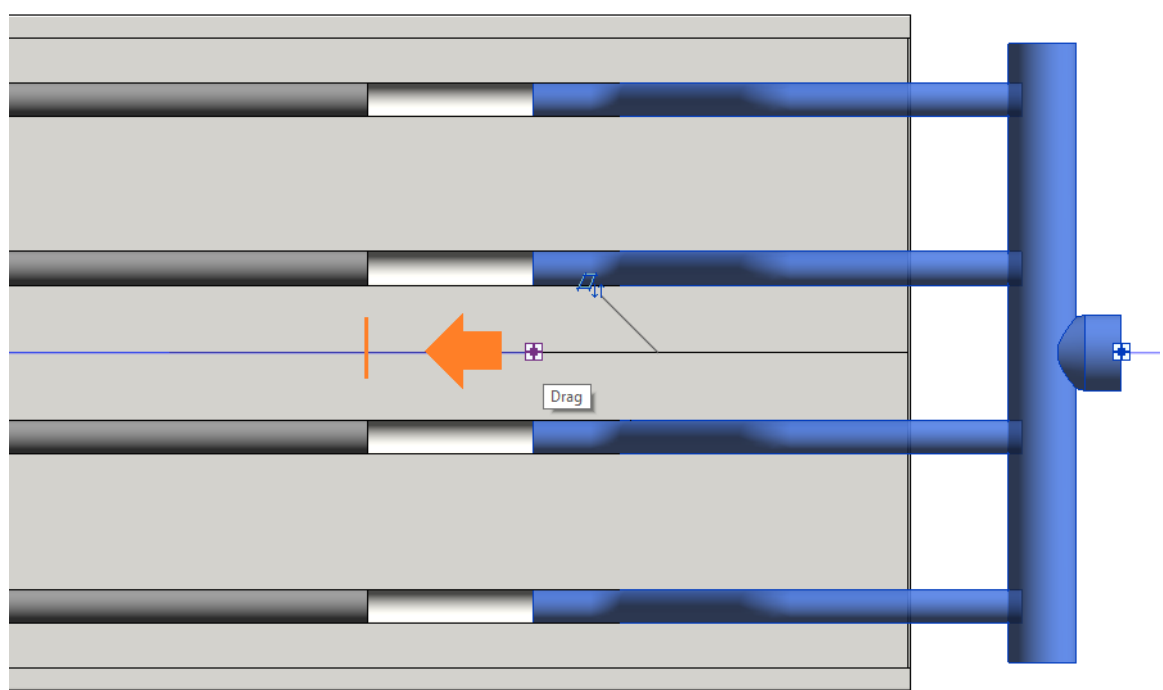
Below are some scenarios used for inclined/straight ceiling with different mounting types and lighting fixture.

A. Inclined Ceiling

1. **Load the Panel family (hosted) with desired types (type-catalog) in the project**
2. **Place one type on a inclined ceiling e.g. 30° (optional: set the suspension height to a custom value e.g. 500)**
3. **Place the header-collector (hosted) on top the panel. 3D views tend to work best for placement. Aligning and connecting works better in 2D views.**

Steps	Initial	Aligned
Align to the correct position (width)		

Make the
connection
with the panel

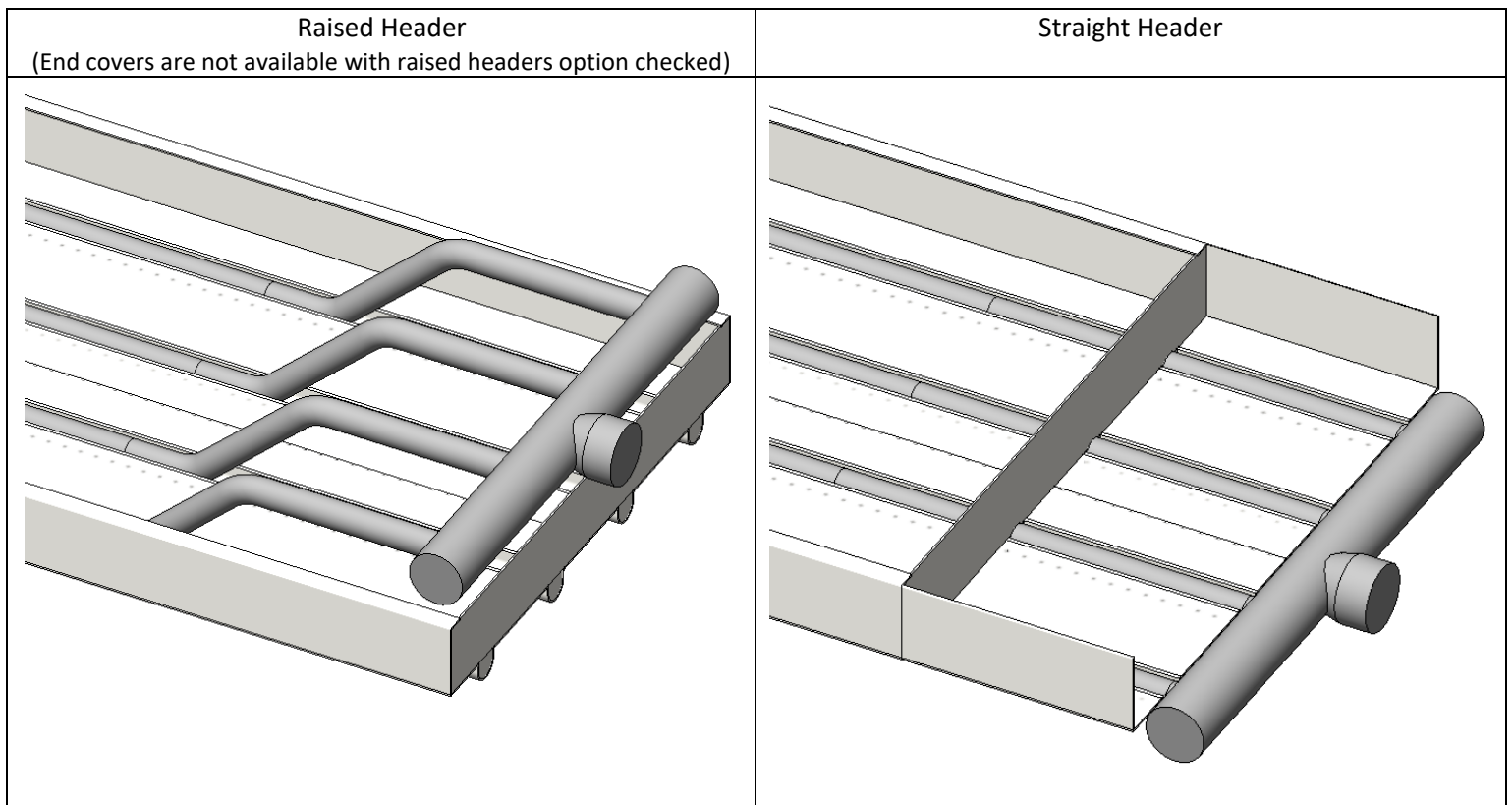



Drag the header connector to meet the panel connection point

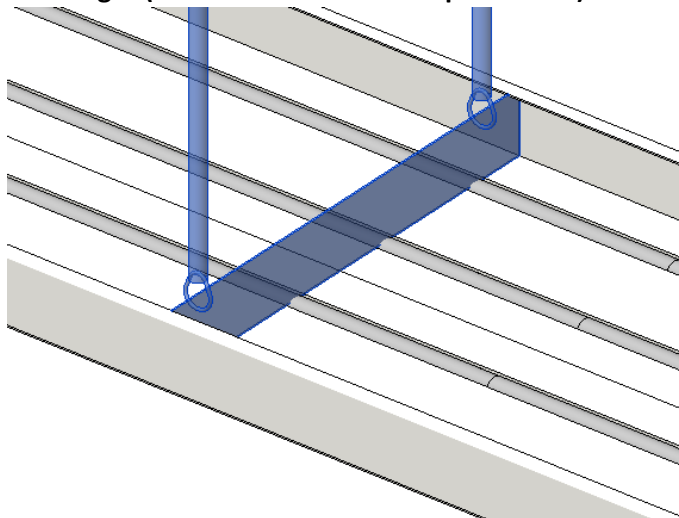


Connection symbol is represented by the following star :

Make sure everything is connected by selecting the header and press TAB until you select the entire group

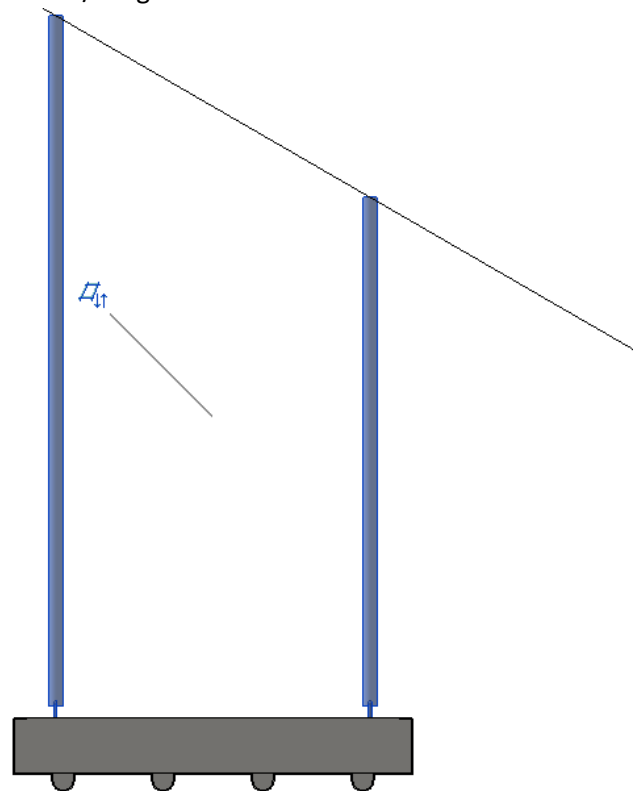


4. Place the suspension axis-fixing plate (hosted) on the top of the panel and align it  correctly by width and length (follow manufacturer requirements)



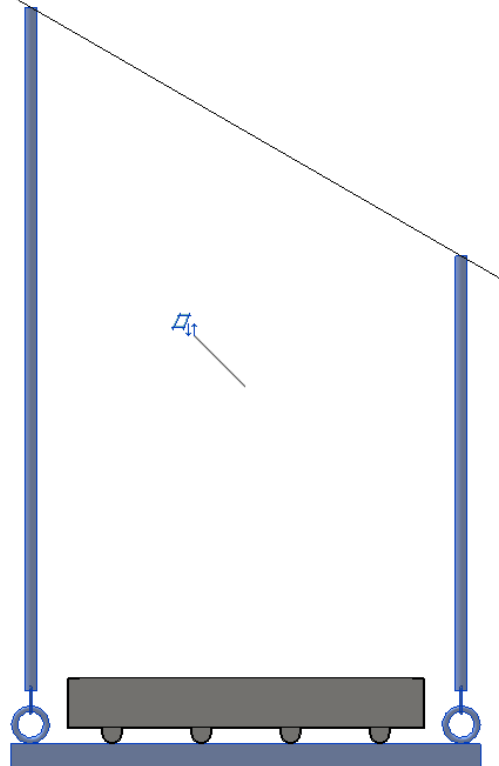
5. Set the following suspension axis-fixing plate options to have a correct representation of the chain
+/- values for Ceiling Inclination Straight Panel and Panel Width/Length inclination available

Dimensions	
Suspension Length	500.0
Panel Length	0.0
Panel Width	300.0
Panel Length Inclination	0.00°
Panel Width Inclination	0.00°
Ceiling Inclination Straight Panel	30.00°
Mechanical	
System Classification	
System Name	
Identity Data	
Function Code	
Image	
Comments	
Mark	45
Phasing	
Phase Created	New Construction
Phase Demolished	None
Visibility	
Z Profile Fixing	<input type="checkbox"/>
Support Track Fixing	<input type="checkbox"/>
Suspension Axis Fixing	<input checked="" type="checkbox"/>
Ceiling Parallel Panel	<input type="checkbox"/>
Support Track Tube Offset	<input checked="" type="checkbox"/>
Chain	<input checked="" type="checkbox"/>
Straight Panel	<input checked="" type="checkbox"/>
Other	
Support Track Fixing Restrictions	<input type="checkbox"/>
Support Track Tube Offset Safe	13.0
Length Difference	450.0
Positive Width Angle	0.00°
Positive Length Angle	0.00°
Fixing Offset	450.0
Suspension Length Safe	500.0
Height Offset	50.0



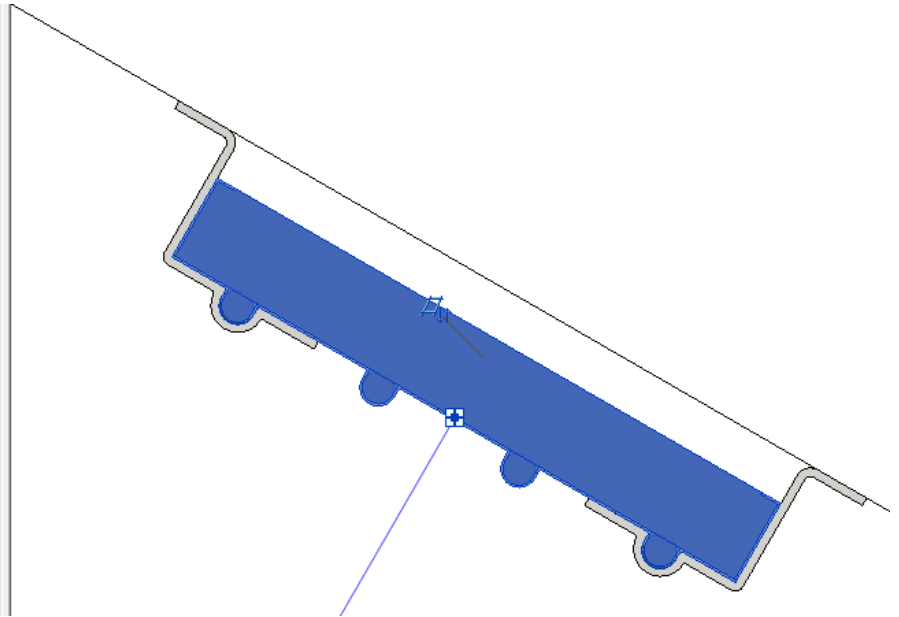
Using Support Track Fixing

Mechanical Equipment (1) Edit Type	
Constraints	
Host	HC_Radiator_Panel_F_MEPContent...
Elevation	2972.9
Materials and Finishes	
White	Color RAL 9016
Electrical - Loads	
Panel	
Circuit Number	
Dimensions	
Suspension Length	500.0
Panel Length	0.0
Panel Width	300.0
Panel Length Inclination	0.00°
Panel Width Inclination	0.00°
Ceiling Inclination Straight Panel	30.00°
Mechanical	
System Classification	
System Name	
Identity Data	
Function Code	
Image	
Comments	
Mark	45
Phasing	
Phase Created	New Construction
Phase Demolished	None
Visibility	
Z Profile Fixing	<input type="checkbox"/>
Support Track Fixing	<input checked="" type="checkbox"/>
Suspension Axis Fixing	<input type="checkbox"/>
Ceiling Parallel Panel	
Support Track Tube Offset	<input checked="" type="checkbox"/>
Chain	<input checked="" type="checkbox"/>
Straight Panel	<input checked="" type="checkbox"/>
Other	
Support Track Fixing Restrictions	<input checked="" type="checkbox"/>
Support Track Tube Offset Safe	13.0
Length Difference	470.0
Positive Width Angle	0.00°
Positive Length Angle	0.00°
Fixing Offset	470.0
Suspension Length Safe	500.0
Height Offset	30.0



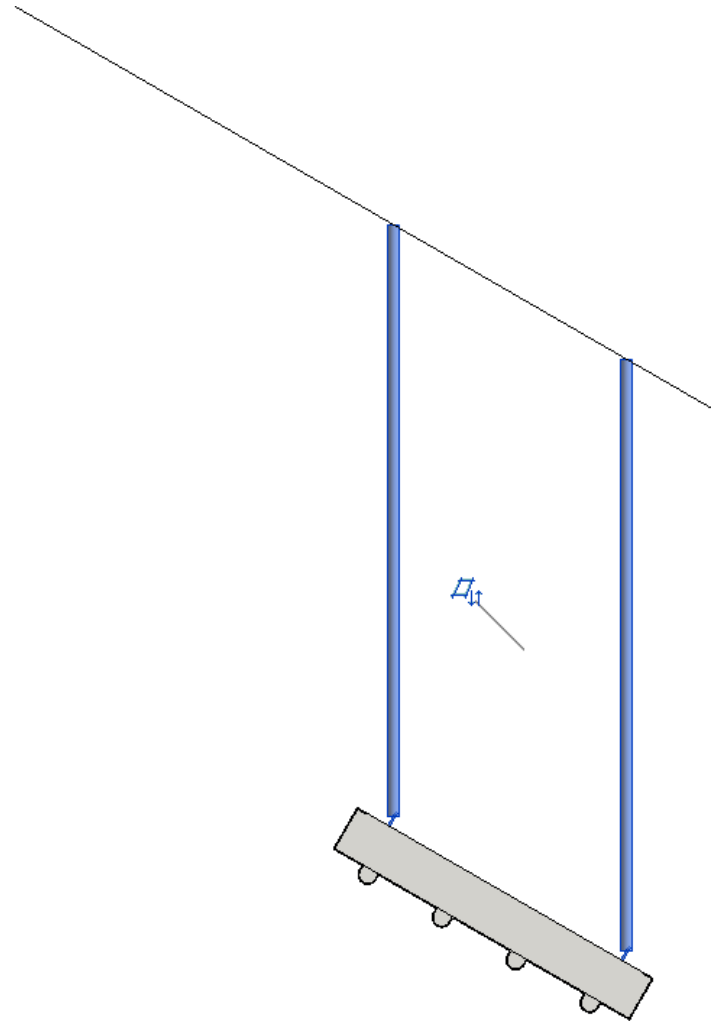
Using Z Profile Fixing (check only Z Profile Fixing)

Dimensions	
Suspension Height	63.0
Length Inclination	0.00°
Width Inclination	0.00°
Mechanical	
System Classification	Undefined
System Name	
Mechanical - Flow	
Connect 1 Flow	0.00 L/s
Connect 2 Flow	0.00 L/s
Identity Data	
Function Code	
Image	
Comments	
Mark	48
Phasing	
Phase Created	New Construction
Phase Demolished	None
Visibility	
Number Of Panels	1
Left Open Panel Connect	<input checked="" type="checkbox"/>
Right Open Panel Connect	<input type="checkbox"/>
Left-Right Open Only Tubes	<input checked="" type="checkbox"/>
Left Side Headers	<input type="checkbox"/>
Right Side Headers	<input checked="" type="checkbox"/>

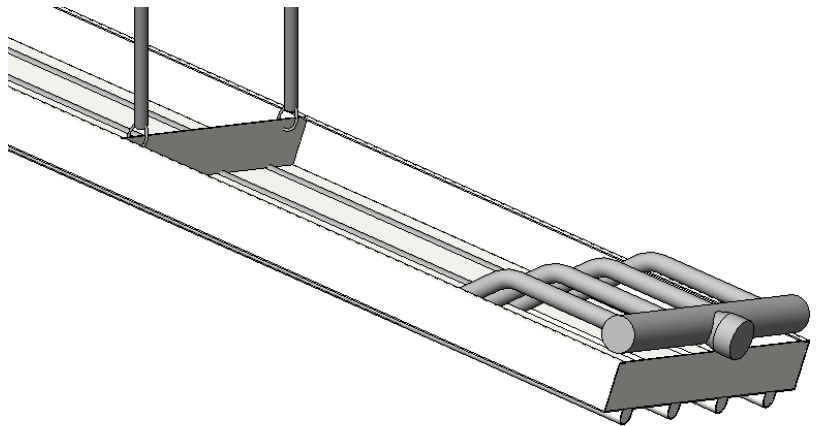
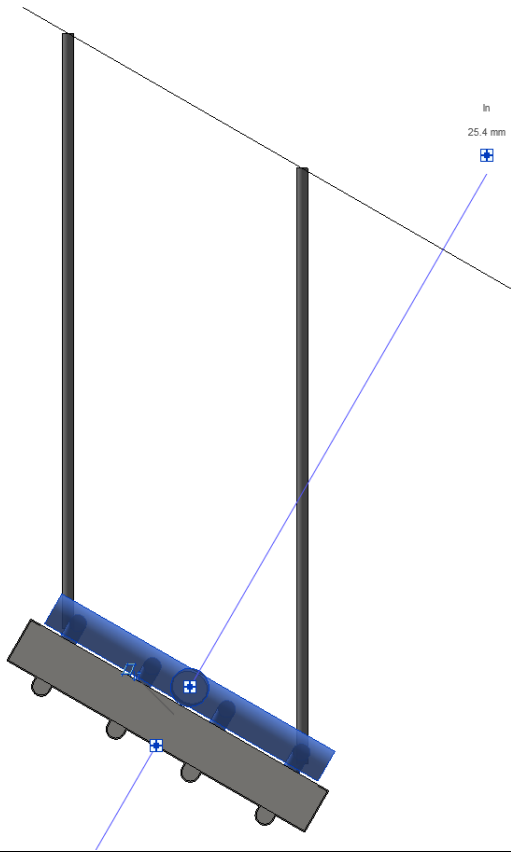


Using Suspension Axis Fixing (Panel parallel to the ceiling)

Mechanical Equipment (1) ▼ Edit Type	
Constraints ▲	
Host	HC_Radiator_Panel_F_MEPContent...
Elevation	3039.9
Materials and Finishes ▲	
White	Color RAL 9016
Electrical - Loads ▲	
Panel	
Circuit Number	
Dimensions ▲	
Suspension Length	500.0
Panel Length	0.0
Panel Width	300.0
Panel Length Inclination	0.00°
Panel Width Inclination	30.00°
Ceiling Inclination Straight Panel	0.00°
Mechanical ▲	
System Classification	
System Name	
Identity Data ▲	
Function Code	
Image	
Comments	
Mark	45
Phasing ▲	
Phase Created	New Construction
Phase Demolished	None
Visibility ▲	
Z Profile Fixing	<input type="checkbox"/>
Support Track Fixing	<input type="checkbox"/>
Suspension Axis Fixing	<input checked="" type="checkbox"/>
Ceiling Parallel Panel	<input checked="" type="checkbox"/>
Support Track Tube Offset	<input checked="" type="checkbox"/>
Chain	<input checked="" type="checkbox"/>
Straight Panel	<input type="checkbox"/>
Other ▲	
Support Track Fixing Restrictions	<input type="checkbox"/>
Support Track Tube Offset Safe	13.0
Length Difference	450.0



Results



6. Connecting panels with different lengths (panel-to-panel connections)

The panel family comes with the “Number Of Panels” option to place multiple panels in a strip with the same length. If different lengths of panels are required in a strip, panel-to-panel connections must be made. The steps below describe how to make such a connection.


1.1 Place 2 panels with different lengths (pick types from the Revit properties menu)



1.2 Configuration for each panel (panel-to-panel connections)

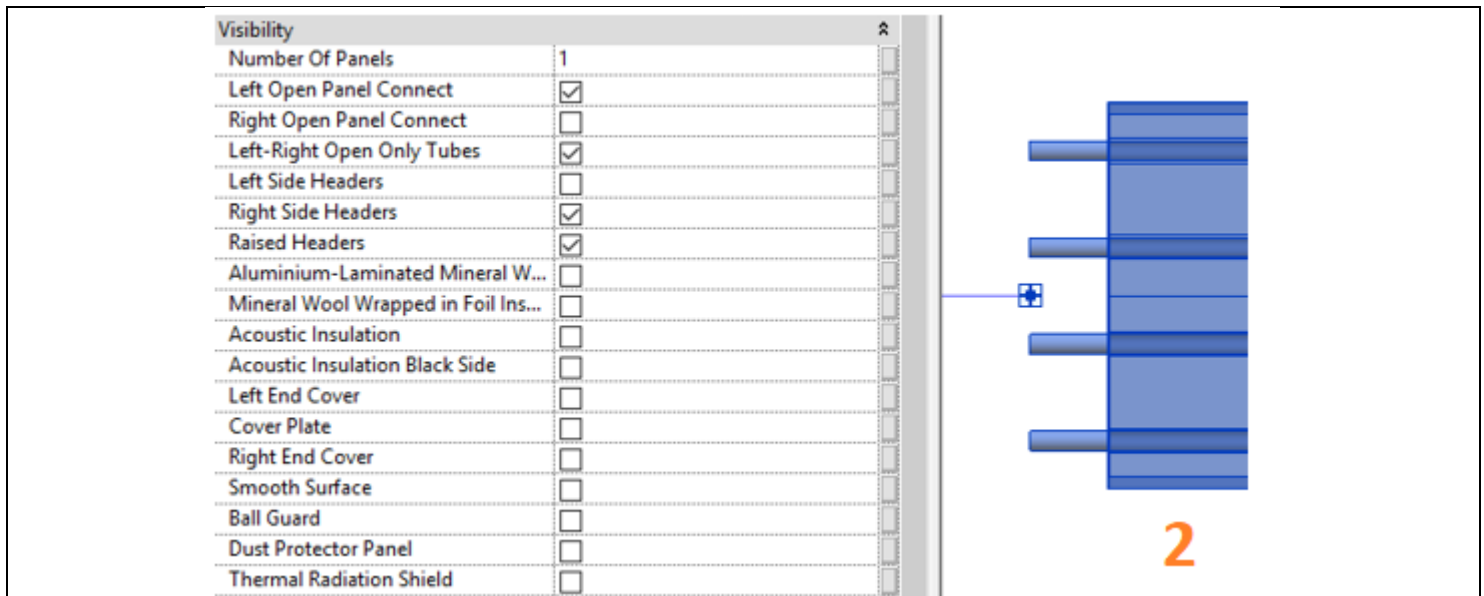
Left Panel (“Right open panel connect” enabled)↓

Visibility	
Number Of Panels	1
Left Open Panel Connect	<input type="checkbox"/>
Right Open Panel Connect	<input checked="" type="checkbox"/>
Left-Right Open Only Tubes	<input checked="" type="checkbox"/>
Left Side Headers	<input checked="" type="checkbox"/>
Right Side Headers	<input type="checkbox"/>
Raised Headers	<input checked="" type="checkbox"/>
Aluminium-Laminated Mineral W...	<input type="checkbox"/>
Mineral Wool Wrapped in Foil Ins...	<input type="checkbox"/>
Acoustic Insulation	<input type="checkbox"/>
Acoustic Insulation Black Side	<input type="checkbox"/>
Left End Cover	<input type="checkbox"/>
Cover Plate	<input type="checkbox"/>
Right End Cover	<input type="checkbox"/>
Smooth Surface	<input type="checkbox"/>
Ball Guard	<input type="checkbox"/>
Dust Protector Panel	<input type="checkbox"/>
Thermal Radiation Shield	<input type="checkbox"/>

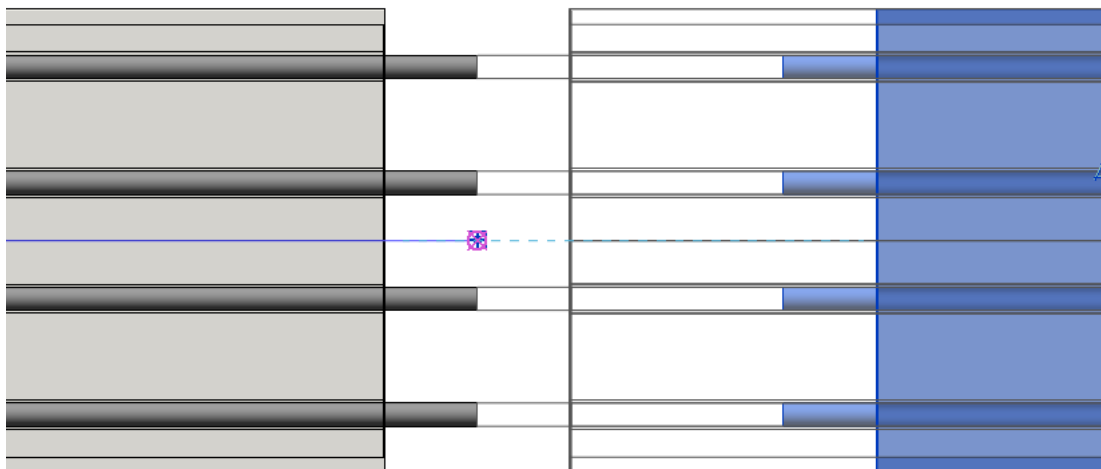


1

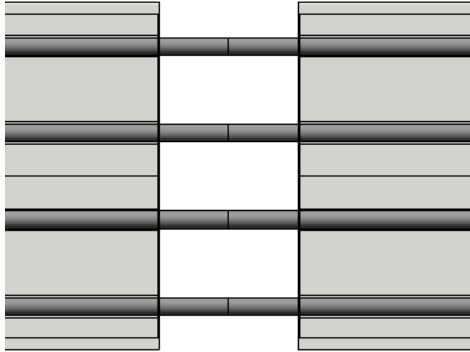
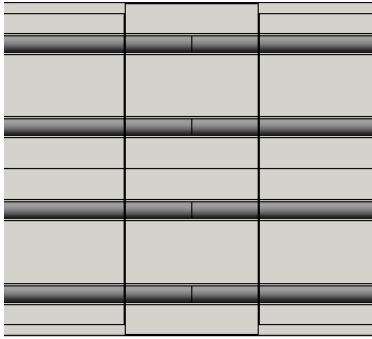
Right Panel (“Left open panel connect” enabled)↓



1.3 Click and drag one of the connectors towards to other panel until the connection symbol is visible (similar as with the headers)



Make sure everything is connected by selecting one panel and press TAB until you select the entire group

Left-Right Open Only Tubes option checked	Left/Right End Cover option checked
	

B. Straight Ceiling

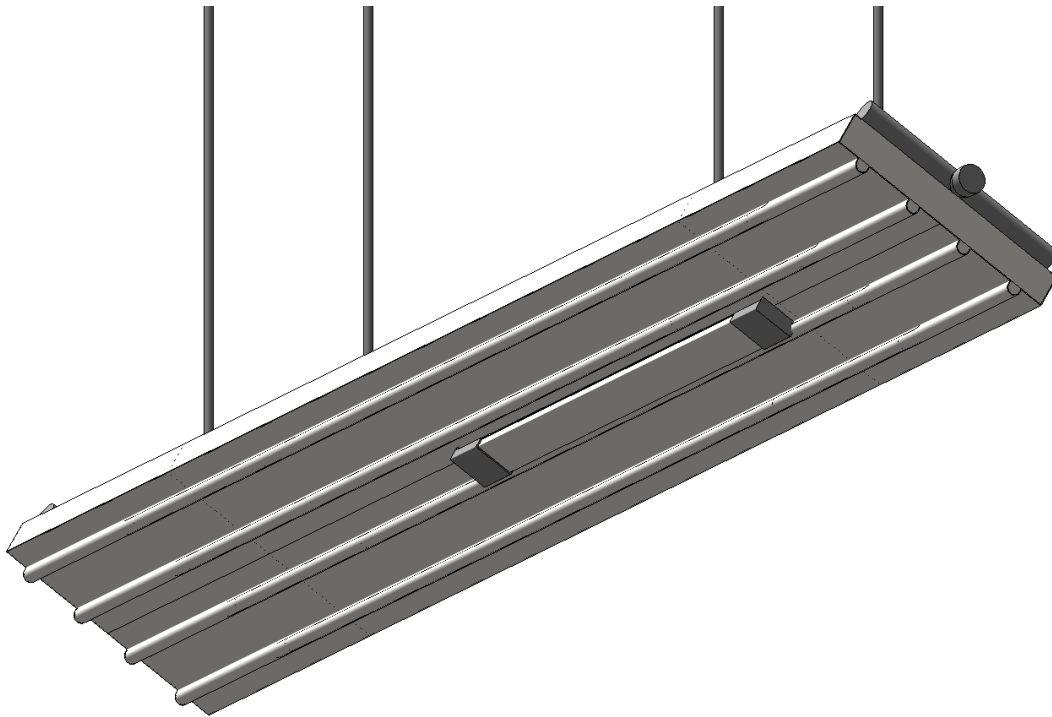
The workflow with straight ceiling mounting is similar with one inclined

Set Inclination angle parameters to 0 degrees for all items in order to have a correct representation

III. Step-by-step: Placing the light-fixture (hosted)

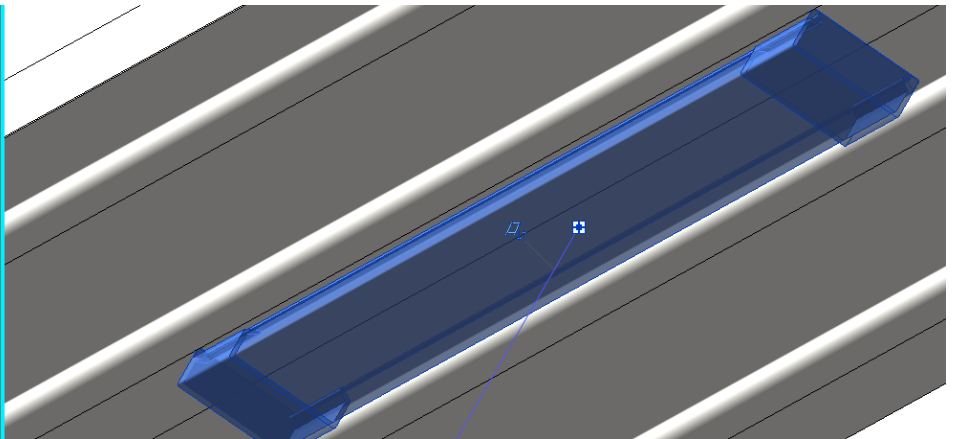
This chapter describes step-by-step how to place the LED light fixtures on a panel.

1. Load the light fixture family with desired types (type-catalog) in the project
2. Place one type on the bottom-surface of the panel using a 3D view. Light fixtures should always be placed between the tubes



3. Use align for proper position by length, align in a 2D view.
4. Optional: Use align again or use the Left-Right (+/-) parameter for exact positioning

Annotation Offset RL	0.0
Host	HC_Radiator_Panel_F_MEPContent...
Elevation	3034.3
Electrical - Lighting	
Calculate Coefficient of Utilization	<input type="checkbox"/>
Coefficient of Utilization	
Switch ID	
Electrical - Loads	
Panel	
Circuit Number	
Dimensions	
Left-Right Offset	9.5
Rotation W-Axis	0.00°
Rotation V-Axis	0.00°
Rotation U-Axis	0.00°
Identity Data	
Function Code	
Image	
Comments	
Mark	3
Phasing	
Phase Created	New Construction
Phase Demolished	None
Electrical - Circuiting	
Electrical Data	Power - Balanced 230 V/1-3 VA



5. Use the array function  to multiply the LED lights on a strip of panels