



Help

Help Software Tutorial

Building a load sizing project with an
MH Humidifier

Help Tutorials provide step-by-step examples of complete load sizing projects and browser projects with the various humidifier and distributor technologies.

In this tutorial, you will learn how to build a load sizing project with an MHTC Reflow Humidifier.

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Log In and Projects List

To begin, start by logging into your Help account. Once completed, hover your mouse over the “Projects” tab and then select “List all Load Sizing Projects” as shown in Figure 1: Projects List. The Projects list is where all of your projects are stored. Projects are stored in the cloud and are available from whatever device you access Help with.

There are two types of Projects:

Load Sizing Projects: Allow you to calculate humidification loads and select product step by step through a wizard style approach. Selections can be supplemented by adding product from the Product Browser Catalog.

Browser Projects: Allow you to create your own Bill of Material with product from the Product Browser Catalog.



Figure 1: Projects List

Create a New Project

To create a new project, select “Add” to add a new load sizing project by clicking the button circled in Figure 2: Create Project.

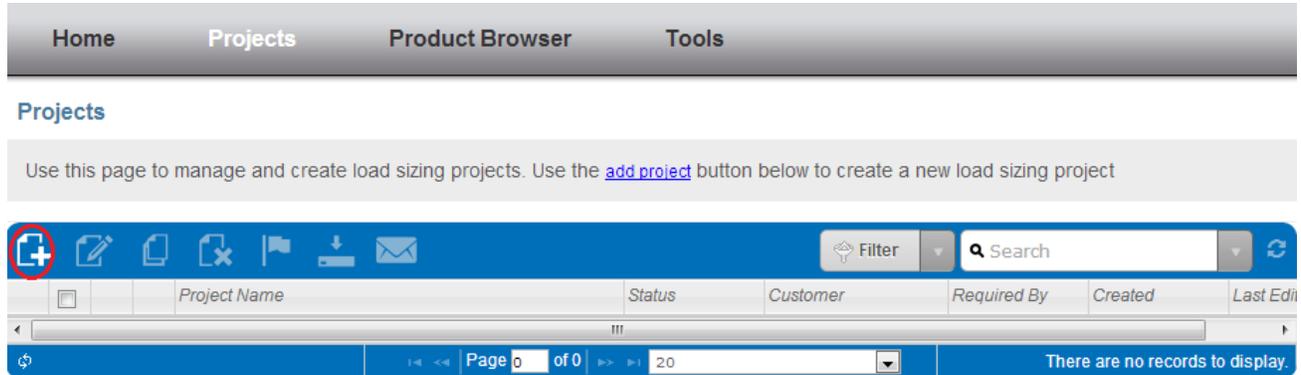


Figure 2: Create Project

A popup will appear, asking for project information. Give the project a name such as “MHTC ReFlow Tutorial”, set the units to imperial, and set the city to Ottawa Macdonald-Cartier Int’, Ontario, Canada. Help includes weather data for a variety of locations, setting the city allows Help to use appropriate conditions for your region.

Now click “Save” at the bottom-right. Other fields can remain at their default values for now.

Project Home Page

You will be taken to the Project Home Page, shown below. This is the main page from which your project will be built. Here you can modify the name, units, dates, weather data and notes, as well as add zones.

All product selections that you will make are grouped together in zones. Zones represent an area being served by a humidification system. Buildings will often contain multiple zones.

Your project must contain at least one zone in order to be complete. To add a zone, click the “Add” button as highlighted in the Figure 3: Project Home Page.

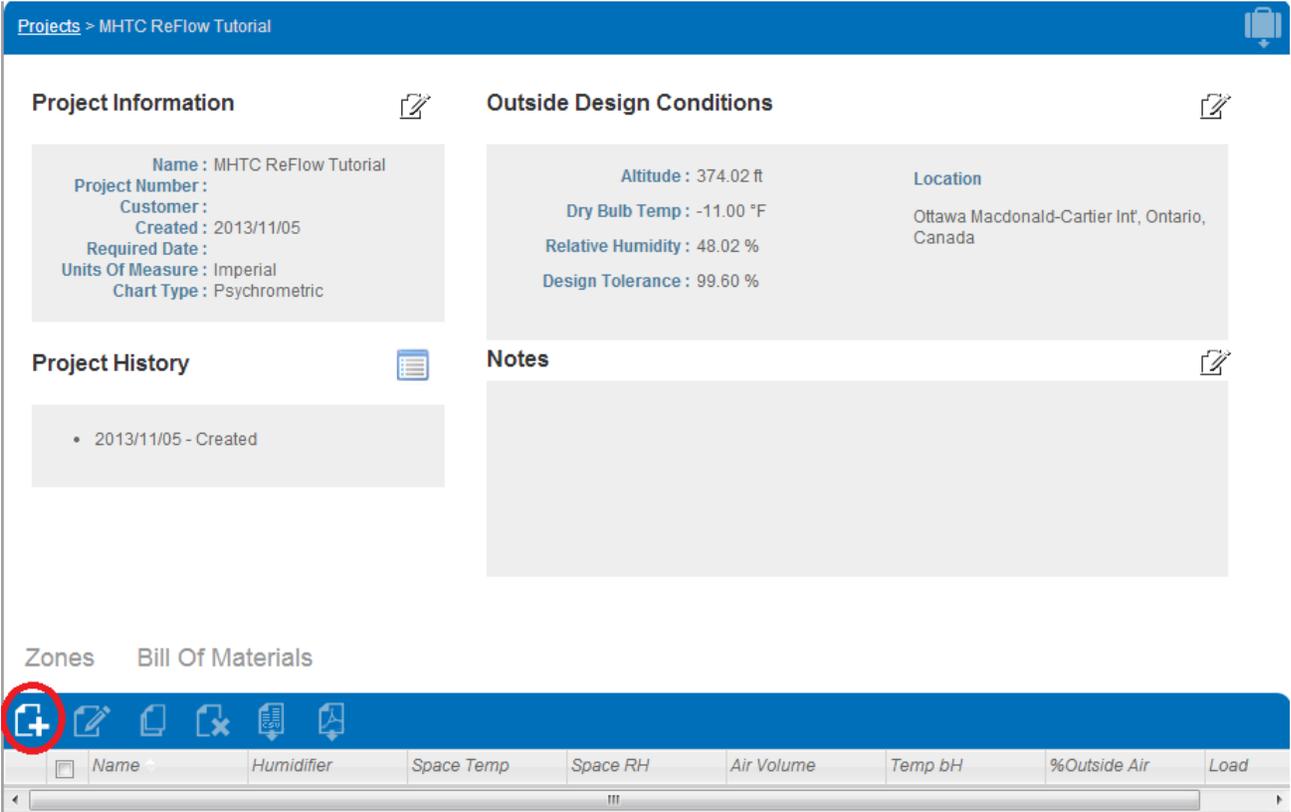


Figure 3: Project Home Page

Load Sizing Tab

Once you've clicked add, you will be redirected to the Load Sizing tab as shown in Figure 4: Load Sizing. The Load Sizing tab is where you will enter the specific parameters for your zone.

[Load Sizing](#) [Humidifiers](#) [Distributors](#) [Controls](#) [Summary](#)

Zones: Zone(1) [Projects > MHTC ReFlow Tutorial > Zone\(1\)](#)   

Provide zone design parameters to calculate a load, then proceed to select humidifiers, distributors, controls, and accessories.

Name :

Load Size Method :

Calculation Method :

In Space Humidification:

Air Volume (CFM) :

Duct Width (in.) :

Duct Height (in.) :

Duct Orientation :

Load Calculations

Humidification Load (H):	63.54 lbs/hr
Natural Exchange Load (H):	0.00 lbs/hr
Water Vapour Absorption Losses (L):	0.00 lbs/hr
Internal Moisture Gains (S):	0.00 lbs/hr
Total Humidification Load (Htot):	63.54 lbs/hr
Low Absorption Distance:	0 ft
High Absorption Distance:	0 ft
Duct Velocity	416.67 ft/min

Calculation Values

Outside Temp (°F) :

Space Design Temp (°F) :

Natural Exchange Temp (°F) :

Moisture Gains (lb/hr) :

Discharge Temp (°F) :

Outside Humidity (%) :

Space Design Humidity (%) :

Natural Exchange Humidity (%) :

Vapour Losses (lb/hr) :

Outside Air (%) :

Temp Before Humidity (°F) :

Natural Exchange Volume (CFM) :

Override Outside Design Conditions:

Naturally Vented:

Use Natural Exchange:

Use Economizer:

Figure 4: Load Sizing

For this exercise, the following settings will be used:

1. **Load Size Method:** *Calculated*. This permits you to enter in air flow and conditions to calculate a load. The alternative, *Manual*, allows users to specify a load directly.
2. **Calculation Mode:** *Adiabatic Humidification*. *Isothermal* is used for steam systems, while the two *adiabatic* options are used for nozzles and evaporative media systems which generate sensible cooling while adding moisture to the air. *Adiabatic Cooling* requires the user to enter the duct temperature upstream of the humidifier, Help will then calculate the cooling achieved and discharge temperature from the humidifier. *Adiabatic Humidification* requires the user to enter the desired discharge temperature from the humidifier. Help will then calculate the required upstream temperature to offset the cooling effect through the humidifier.
3. Ensure that **In Space Humidification** is unchecked. By default Help will select components to distribute steam in duct unless you specify that it will be in-space.
4. Enter the following values:
Air Volume: 10000 CFM
Duct Width: 72 inches
Duct Height: 48 inches
Duct Orientation: *Horizontal*
5. Under the Calculation values heading, set the following conditions:
Outside Air %: 25%. This is the percentage of the air volume that will be outdoor air. The balance will be return air from the space.
Space Design Temp: 72 °F. This is the temperature of the space you are humidifying.
Space Design Humidity: 35% RH. This is the humidity setpoint of the space you are humidifying.
Discharge Temp (°F): 55 °F. This is the temperature of air entering the steam distributor in the duct.

Scroll down and review the schematic drawing shown in Figure 5: Schematic Drawing. The schematic drawing, Psychrometric Chart, and Parameter table can all be viewed by clicking on their respective tabs. They provide a graphical representation of the parameters entered above.

Clicking the Export Icon () will export any of these documents as either a PDF or CSV file. Alternatively these graphics can be exported from the Project Home Page.

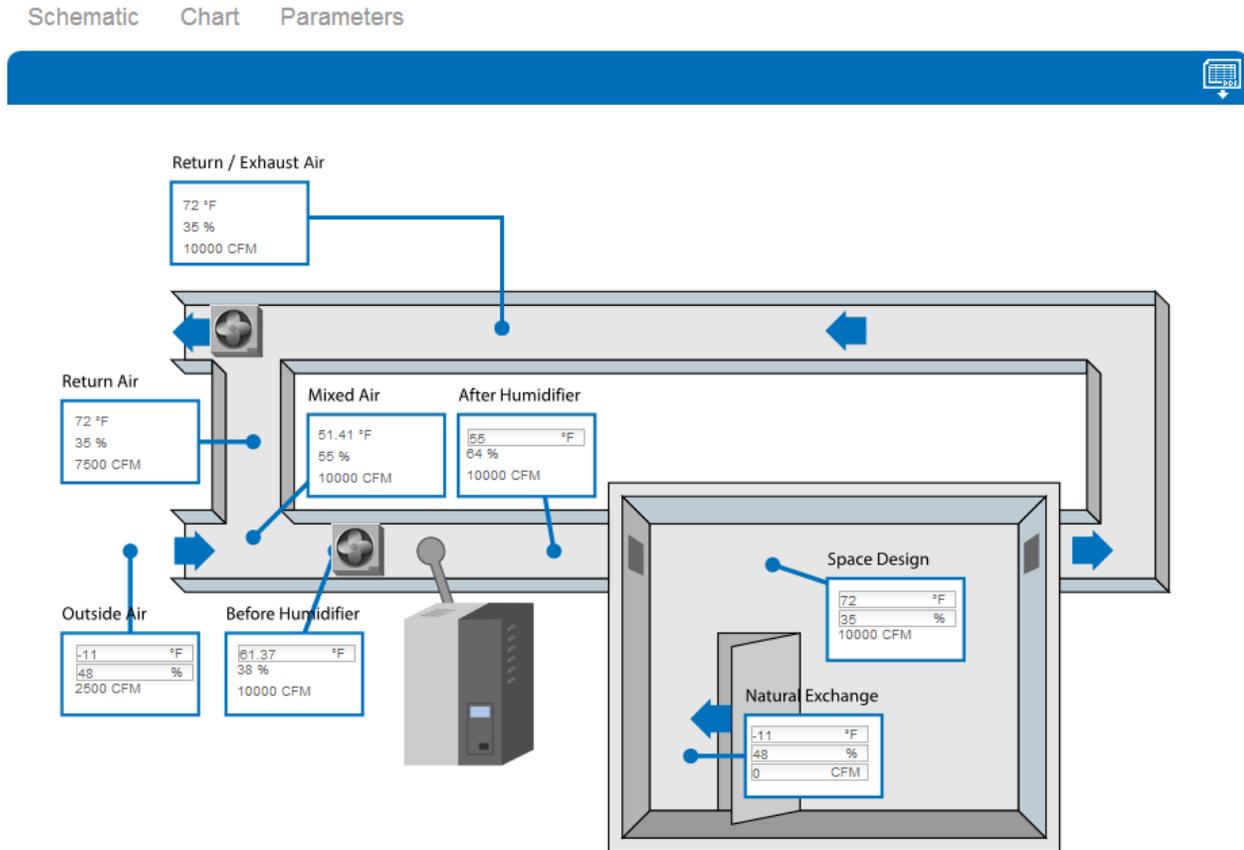


Figure 5: Schematic Drawing

Back at the top of the Load Sizing page, the grey **Load Calculations** box will have calculated a Humidification load of 63.54 lbs/hr and a duct velocity of 416.67 feet per minute. This box updates automatically as you type values and click other fields on the page.

From the schematic drawing it can be seen that Help has calculated an upstream temperature of 61.37 °F to offset the adiabatic cooling effect. In other words adding 63.54 lbs/hr to this airstream will result in 6.37 °F of sensible cooling.

Humidifiers Tab

The next step is to select a humidifier. Do this by clicking on the **Humidifiers** tab as shown in Figure 6: Humidifiers Tab.

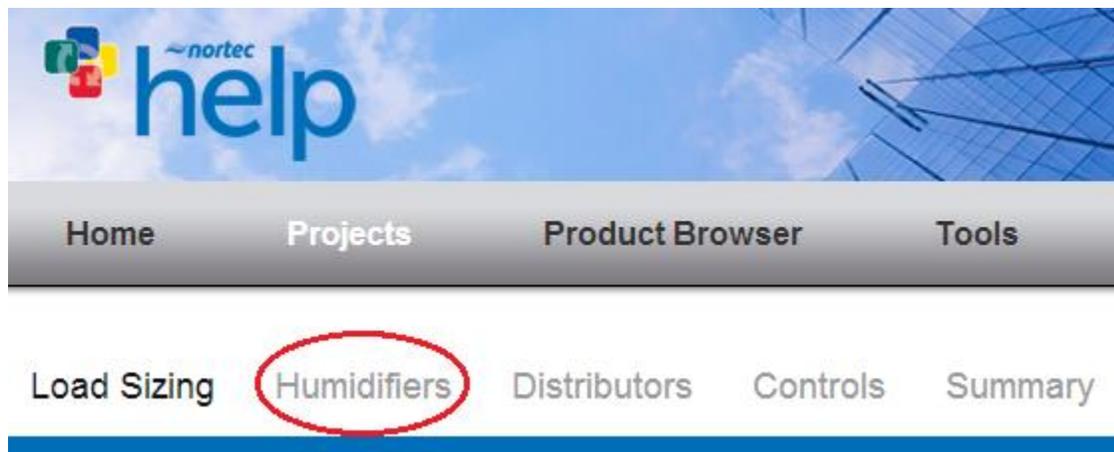


Figure 6: Humidifiers Tab

The humidifiers tab contains a listing of humidifier technologies that match your selections and load from the Load Sizing Tab.

For this tutorial, select **Evaporative Media**. Evaporative media humidifiers place a wetted media bank directly into the airstream. Passing airflow will evaporate water from the media bank causing an increase in humidity as well as cooling of the airstream. Because of the cooling effect evaporative media humidifiers are ideal for data centers, manufacturing, electronics, and any other operation that would benefit from simultaneous humidification and cooling. Clicking on the blue evaporative media button will invoke a dialog box asking for you to select the model.

There are 3 models available:

MHB Flow models are economical evaporative media humidifiers that feature a basic control panel with few user adjustable parameters. They do not support two way building automation communications. Any water that does not evaporate is sent directly to drain or can be recovered through a central water recovery system elsewhere in the building.

MHTC Flow models are mid-range evaporative media humidifiers that feature an advanced control panel with an LCD display and feature many user adjustable parameters. Two way building automation communications are available for a variety of protocols. Any water that does not evaporate is sent directly to drain or can be recovered through a central water recovery system elsewhere in the building.

MHTC ReFlow models are top-range evaporative media humidifiers that feature an advanced control panel with an LCD display and feature many user adjustable parameters. Two way building automation communications are available for a variety of protocols. Any water that does not evaporate is recovered through a dedicated hydraulic module that includes a pump, staging valves, UV water treatment, and sump tank.

For this tutorial select **MHTC ReFlow** and click **Save**.

The MH Series models are configured from a variety of different tank, frame, media, and valve options. Help configure an MH unit for your specific project and display a complete bill of materials.

Options for the MH Series are configured through the options button (✎). Click this button and add a Duct Seal Kit, 10 feet long, MH by checking the box and clicking **Save** as shown in Figure 7: Humidifier Options. Note that Help has automatically calculated the appropriate quantity required for this size of unit.

The screenshot displays the 'Choose Humidifier' dialog box within the MHTC ReFlow software. The dialog box has a title bar 'Choose Humidifier' and a close button (X). Below the title bar, there is a message: 'Please select any options you would like for this humidifier. You may edit the quantity where applicable.' Below this message is a table with the following data:

Option	Quantity	Part Number	Description
<input type="checkbox"/>	1	2560234	Conductivity Sensor Kit, MH2
<input checked="" type="checkbox"/>	2	2544913	Duct Seal Kit, 10 feet long, MH

At the bottom of the dialog box are 'Save' and 'Cancel' buttons. In the background, a table lists items for Zone(1). A red pencil icon is visible in the top right corner of the background table.

Zone	Part Number	Description	Humidifier	Quantity
Zone(1)	2559476	MHTC ReFlow Control Box		1
Zone(1)	2559486	MHTC ReFlow Hydraulic	2559476	1
Zone(1)	2563785	CSA Approval	2559476	1
Zone(1)	2529872	Mist Eliminator 4 ft w X 4 ft h	2559476	2
Zone(1)	2559487	Staging Kit A, MH2	2559476	1
Zone(1)	2544350	500 x 450 x 200 MH Media Box	2559476	1
Zone(1)	2565059	Right Side Panel, MH2 Variant 8	2559476	1
Zone(1)	2548999	Hose, 0.5 in ID, DI Compatible	2559476	216
Zone(1)	2544351	500 x 525 x 200 MH Media Box	2559476	1
Zone(1)	2560419	Mist Eliminator Kit, ME, MH2	2559476	1
Zone(1)	2565097	Top Bracket, MH2 Variant 12	2559476	1
Zone(1)	2559640	Basic Hardware Kit, MH2	2559476	1
Zone(1)	2559487	Staging Kit A, MH2	2559476	1
Zone(1)	2565025	Left Side Panel, MH2 Variant 8	2559476	1
Zone(1)	2544356	600 x 525 x 200 MH Media Box	2559476	2
Zone(1)	2565130	Intermediate Member, MH2 Variant 8	2559476	2
Zone(1)	2544307	600 x 450 x 200 MH Media Box	2559476	2
Zone(1)	2560427	Int Hardware Kit, ME, MH2	2559476	1
Zone(1)	2559641	Intermediate Hardware Kit, MH2	2559476	2
Zone(1)	2564991	Drain Pan, MH2 Variant 12	2559476	1
Zone(1)	2569344	Packaging, Crate, MH2	2559476	1
Zone(1)	2559487	Staging Kit A, MH2	2559476	1
Zone(1)	2565218	Spray Bar Assm, MH2 Var 17, 3-stage	2559476	1

Figure 7: Humidifier Options

Distributors Tab

The next step is to view the duct module that Help has calculated. Do this by clicking on the **Distributors** tab at the top of the page as shown in Figure 8: Distributors Tab.

Help will display a drawing of the duct module as well as key information such as media depth, weights, and pressure loss. Clicking the PDF icon () will export the drawing to a PDF file. Alternatively, the distributor drawings can be accessed from the Project Home Page.

Zones : Projects > MHTC ReFlow Tutorial > Zone(1) > Distributors  

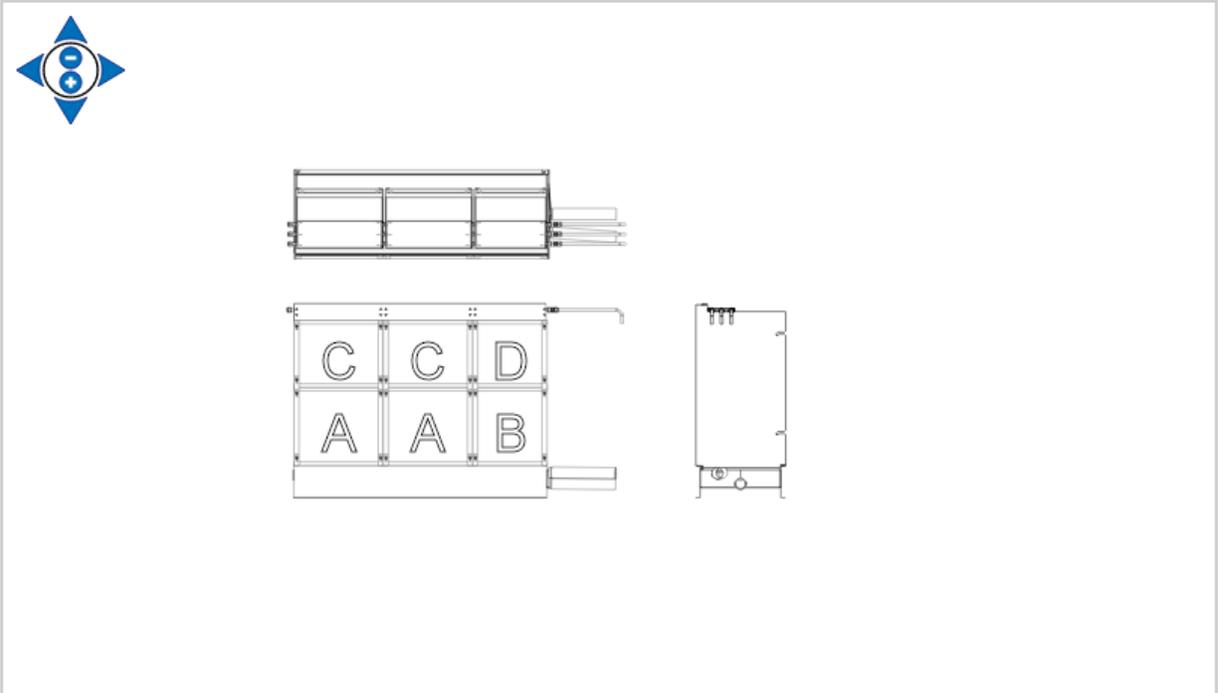
All distributor parts are listed on the humidifier page. The builder information and drawing are shown below.

Distributor Configuration

Duct Width : 72.00 in	Dry Weight : 149 lbs
Duct Height : 48.00 in	Operating Weight : 381 lbs
Load : 63.54 lbs/hr	Media Depth : 8 in
Total Water Usage : 75 lbs/hr	
Total Pressure loss : 0.64 iwc	



Use the +/- to zoom in and out and direction arrows to pan the drawing left, right, up and down.



The drawing shows three views of the distributor: a top view, a front view, and a side view. The top view is a rectangular grid divided into six sections labeled C, C, D in the top row and A, A, B in the bottom row. The front view shows a rectangular duct with a horizontal line across the middle and a small protrusion on the right side. The side view shows a vertical rectangular duct with a small protrusion at the bottom.

Figure 8: Distributors Tab

Controls Tab

Next click the **Controls** tab at the top of the page. The controls tab allows you to configure controls for your project. Controls are optional; this step can be skipped if controls will not be provided.

There are two options; **Controls by Nortec** configures a complete control package provided by Nortec. **Controls by Others** configures a control package with the primary control signal coming from another source such as a building automation system. In either case safety switches and building automation gateways can be included.

In this example, the controls will be configured to connect a Modbus based building automation system already present at the site. Sensors and controls will be provided by a third party controls contractor.

Select **Controls By Others** to activate the configuration menu shown in Figure 9: Controls Configuration.

Signal Type: *Demand*. Demand signals which simply instruct the humidifier to operate at a given percentage of output. As an alternative transducer signals report the relative humidity in the space to the humidifier. The humidifier then uses an internal proportional – integral (PI) loop to determine the output.

Channels: *Single*. Select whether you will have one or 2 modulating control signals controlling the humidifier. The humidifier will operate until the first signal has been satisfied before becoming idle.

Signal Type: *0-10 VDC*. Select the primary control signal format that will be provided. If the primary control value will be written over a building automation system network set this value to 0 – 10 VDC.

Include Air Proving Switch: *CHECK*. This on/off safety device prevents humidifier operation unless air is flowing in the duct.

Include On/Off High Limit Switch: *UNCHECK*. This on/off safety device prevents condensation in the duct by stopping humidification if the duct humidity levels exceed a certain level. The MH series are inherently self-limiting since the air cannot evaporate more water than it can hold. As a result high limits are generally not required.

Building Automation System Gateway: *Modbus*. Select a protocol for a building automation gateway card if desired.

Number of Units Controlled by Links Card: *1*. Allows multiple units to share a single building automation gateway card. Since there is only 1 unit in this zone, the only available value will be 1.

Choose Controls
✕

Please select the controls you require based on the signal type and channel.

Signal Type:	Demand
Channels:	Single

Other Single Channel Demand

Signal Type:	0-10 VDC
Include Air Proving Switch:	<input checked="" type="checkbox"/>
Include On/Off High Limit Switch:	<input type="checkbox"/>
Building Automation System Gateway: More Info...	Modbus
Number of units controlled by Links card:	1

Save
Cancel

Figure 9: Controls Configuration

Click **Save** to complete the selection. The bill of materials will update to reflect the selected controls package.

Summary Tab

Click the **Summary** tab at the top of the page to proceed to the project summary. Here you have the option to add any common accessories such as water filters and condensate pumps, as well as view the bill of materials for the zone. The summary tab is shown in Figure 10: Summary Tab.

Load Sizing Humidifiers Distributors Controls Summary

Zones : Projects > [MHTC ReFlow Tutorial](#) > [Zone\(1\)](#) > Summary  

Below is the list of materials for this zone. You can add another zone or go back to the project home page to view your bill of materials and generate documents.



Accessories

Drain water coolers, sump pumps, water filters and more.
Add accessories to your humidification system here.

The currently selected control and monitoring part numbers are listed below. Click the Controls button above to reconfigured your selections.

Zone	Part Number	Description	Humidifier	Quantity	
Zone(1)	2559476	MHTC ReFlow Control Box		1	
Zone(1)	2559486	MHTC ReFlow Hydraulic	2559476	1	

Figure 10: Summary Tab

Project Submittals and Requesting a Quotation

On the project at the project home page, you can **Export** a submittal package as well as other useful information. You can also **Request Pricing** from your local Nortec agent.

Submittal packages, project drawings, and various other information can be exported from the Export Manager by clicking on the Export Button (). This will bring up a popup window as shown in Figure 11: Export Center.

Help can generate the following documents:

Bill of Material: A listing of the entire product selected, broken down by zone.

Humidifier Schedule: An engineering schedule for the humidifiers included on the project. Can be incorporated into a larger mechanical schedules.

Specification: An engineering specification for incorporation into a larger mechanical specification. Help dynamically builds the specification based on selected product to save time and reduce editing.

Submittal Package: A detailed package containing relevant information, drawing, wiring diagrams, and a bill of materials for your project.

Zone Table: A summary of each zone along with its key design conditions.

Zone Exports: Allows you to export the schematic diagram, psychrometric chart, or zone parameters that appear on the Load Sizing tab of each zone.

Custom Exports: Allow you to create Submittals, Specifications, and Distributor Drawings containing only zones you specify for multi-zone projects.

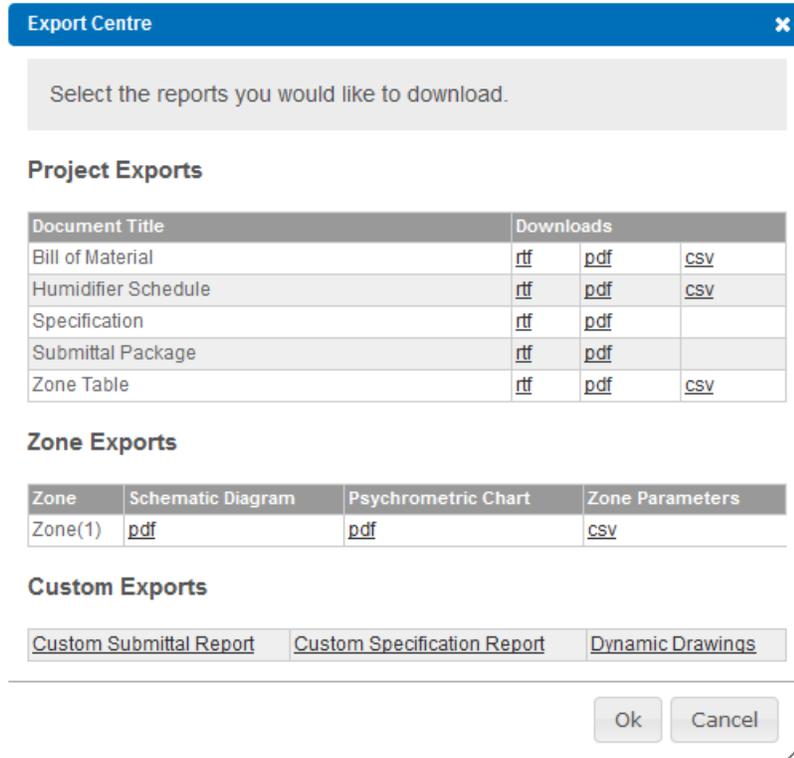


Figure 11: Export Center

Help also allows you to request pricing from your local Nortec representative.

To do this, click the Request Pricing () button. A popup will appear allowing you enter any comments or notes and allowing you to confirm your contact information. A pricing request will be sent to the agent along with a copy of your project. Your local representative will contact you shortly with pricing and further information.

Sharing the Project

In this example we will also share the project with a colleague for review. Return to the Project List by hovering your mouse over the **Projects** button at the top of the page. In the drop menu select **Load Sizing Projects**.

Check the box next to the project you just created as shown in Figure 12: Sharing.

Next click on the Envelope Icon ()

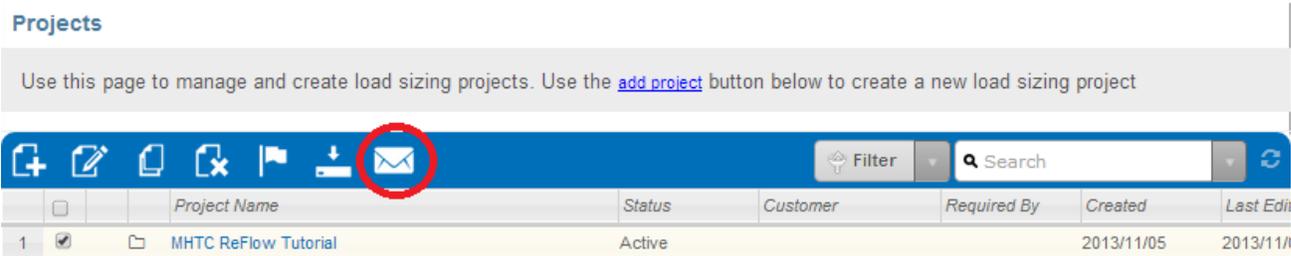


Figure 12: Sharing

This icon will activate a popup, where you can enter your colleague’s email and any comments you may want to include. After the fields have been entered, click the “Share” button. Your colleague will receive an email notifying them that a project has been shared with them and a link for them to log in. At the load sizing projects home screen, the project will appear in their list. Your colleague will receive a unique copy of the project and any changes made to their copy will not affect your copy.

Congratulations, you have successfully completed this tutorial!

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