



Help

Help Software Tutorial

Building a Load Sizing Project with an
SETC Humidifier and a mini SAM-e
Distributor

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 SETC Humidifier and a mini SAM-e Distributor

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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 whichever device you choose to access Help with.

There are two types of Projects:

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

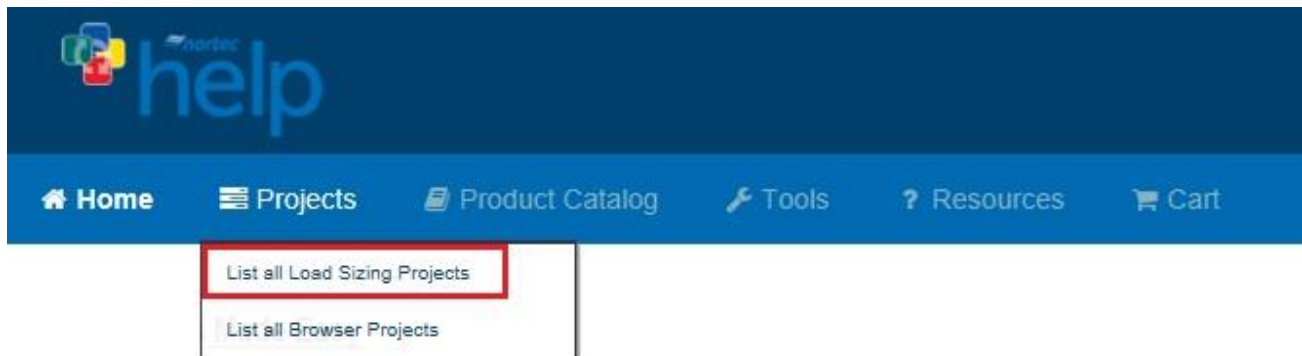


Figure 1: Projects List

Create a New Project

To create a new project, select the **Add** icon shown in Figure 2: Create a New Project to add a load sizing project.

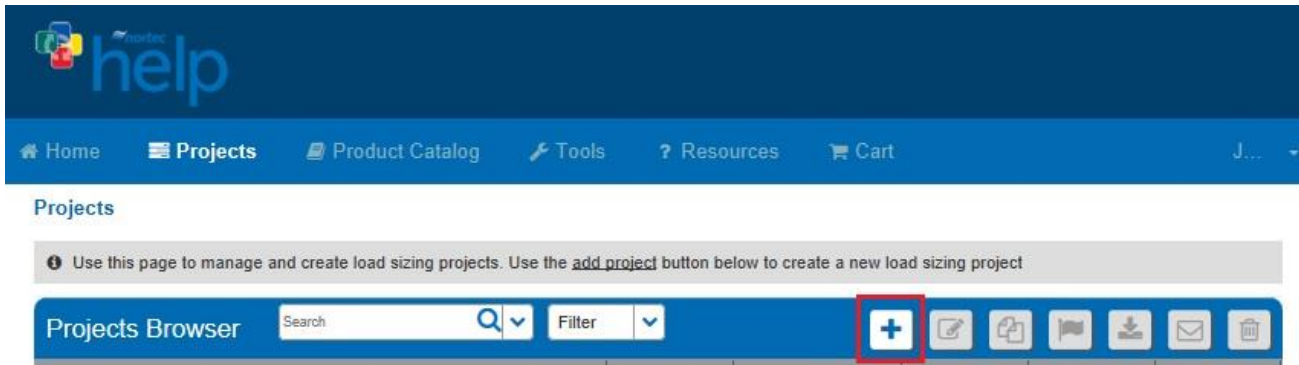


Figure 2: Create a New Project

A dialogue box, as shown below, will appear and request project information. Give the project a name such as “SETC-050 and mini SAM-e”, 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.

Figure 3: Add Project Dialogue Box

Click **Save** at the bottom-right when you have finished editing values.

Project Home Page

You will be redirected to the Project Home Page, shown below. This is the main page from which your project will be built. Here you can modify the project 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 or sub-area in the project 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 Figure 4: Project Home Page

Projects / SETC-050 and mini SAM-e

Provide your project details, outside air design parameters, then add a zone using the button in the zone list to begin load sizing and humidifier selection.

Project Information

Configuration | Notes | Project History | Document Center

Project Information Name: SETC-050 and mini SAM-e Project Number: Customer: Created: 2015/08/05 Required Date:	Customer Address JS Consulting Engineers Ltd. 123 Palm Street Unit 1 Ogdensburg, New York, United States 13669 Customer Contact John Smith user@humidity.com 555-555-5000	Weather Data Ottawa Macdonald-Cartier Int', Ontario, Canada Altitude: 374.02 ft Dry Bulb Temp: -11.00 °F Relative Humidity: 48.02 % Design Tolerance: 99.60 %
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Zones | Bill Of Materials

Name	Humidifier	Space Temp	Space RH	Air Volume	Temp bH	%Outside Air	Load
There are no records to display.							

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Figure 4: Project Home Page

Load Sizing Tab

Once you have added a new Zone, you will be redirected to the **Load Sizing tab** as shown in Figure 5: Load Sizing. The Load Sizing tab is where you will enter the specific parameters for your zone.

Load Sizing Zones:

Load Sizing | Humidifiers | Distributors | Controls | Accessories | Summary

Load Size Method:

Name: System Type: Calculation Method:

Duct Details

Duct Type: Duct Orientation: Duct Width (in.): Duct Height (in.):

Air Flow

Outside Air (%): Air Volume (CFM):

Moisture Gains and Losses

Moisture Gains (lb/hr): Vapour Losses (lb/hr):

Outside

Altitude (ft): 374.02 Outside Temp (°F): -11 Outside Humidity (%): 48.02

Inside

Temp. Entering Humidifier (°F): Space Design Temp (°F): Space Design Humidity (%):

Use Natural Exchange:

Use Economizer:

Load Calculations

Humidification Load (H): 34.25 lbs/hr

Total Humidification Load (Htot): 34.25 lbs/hr

Absorption Distance: 0.50 - 2.49 ft

Duct Velocity: 1000.00 ft./min

Figure 5: 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. **System Type:** Ensure that *Duct Humidification* is selected
By default Help will select components to distribute steam in duct unless you specify that it will be in-space.
3. **Calculation Method:** *Isothermal*.
Isothermal is used for steam systems, while the two *adiabatic* options are used for nozzles and evaporative media systems.
4. **Duct Details:**
Duct Type: *Rectangular*
Duct Orientation: *Horizontal*
Duct Width: 24 inches
Duct Height: 24 inches
5. **Air Flow:**
Outside Air %: 30%. *This is the percentage of the air volume that will be outdoor air. The balance will be return air from the space.*
Air Volume: 4000 CFM
6. **Moisture Gains and Losses**
Moisture gains: 0 lb/hr
Moisture Losses: 0 lb/hr
7. **Outside:** Select the *Use Weather Data* icon
8. **Inside:**
Temp. Leaving Humidifier: 55 °F. *This is the temperature of air entering the steam distributor in duct.*
Space Design Temp: 72 °F. *This is the temperature of the space you are humidifying.*
Space Design Humidity: 40% RH. *This is the humidity setpoint of the space you are humidifying.*
9. **Natural Exchange:** Leave unselected
10. **Use Economizer:** Leave unselected

Scroll down and review the schematic drawing shown in Figure 6: 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 at the top right hand corner of the diagrams will export any of these documents as either a PDF or CSV file. Only the Parameters section has the option to export either PDF or CSV. Alternatively, these graphics can be exported from the Project Home Page under the **Document Center** tab.

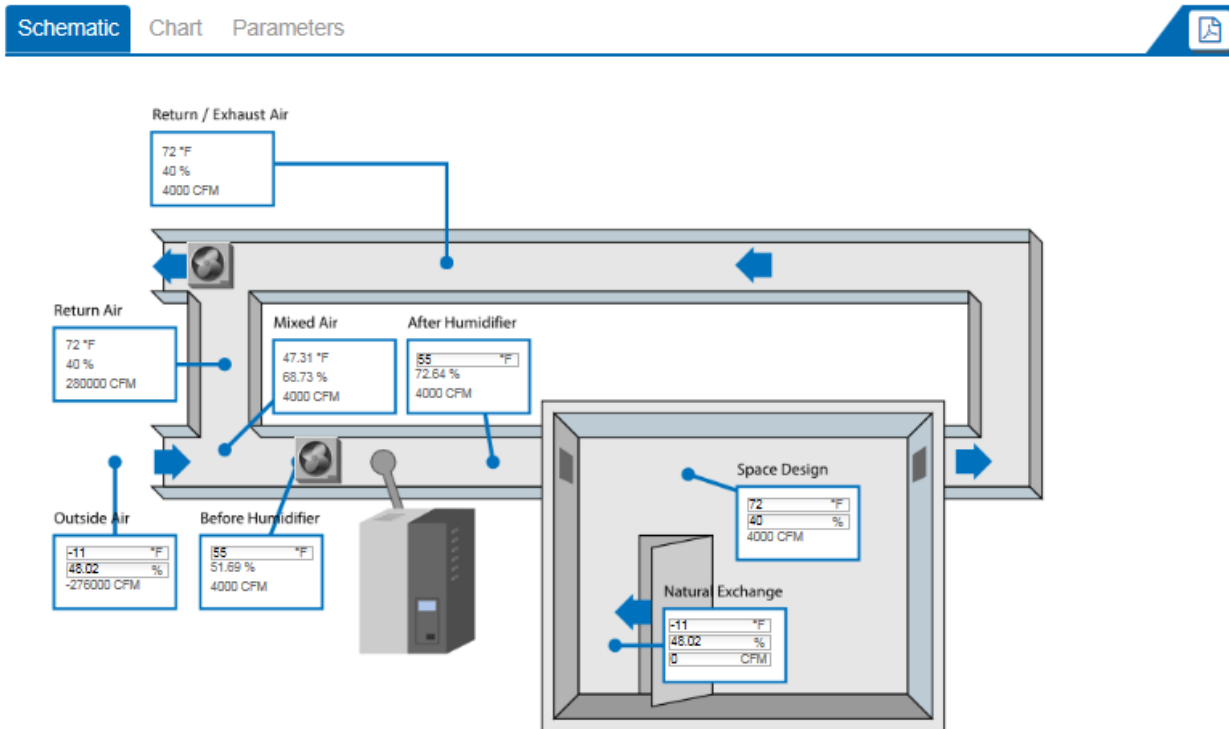


Figure 6: Schematic Drawing

Back at the top of the Load Sizing page, the blue **Load Calculations** box will have a calculated humidification load of 34.25 lbs/hr and a duct velocity of 1000 feet per minute. This box updates automatically as you type values and click other fields on the page.

The **Absorption Distance** will also show values between 0.50 and 2.49 ft. These values are presented as a range since the specific distributor used will be configured in a later step.

Humidifiers Tab

The next step is to select a humidifier. Do this by clicking on the **Humidifiers** tab as shown in Figure 7: Humidifiers Tab or by selecting the **Next** button below Load Sizing. The humidifiers tab contains a listing of humidifier technologies that match your selections and load from the Load Sizing Tab.

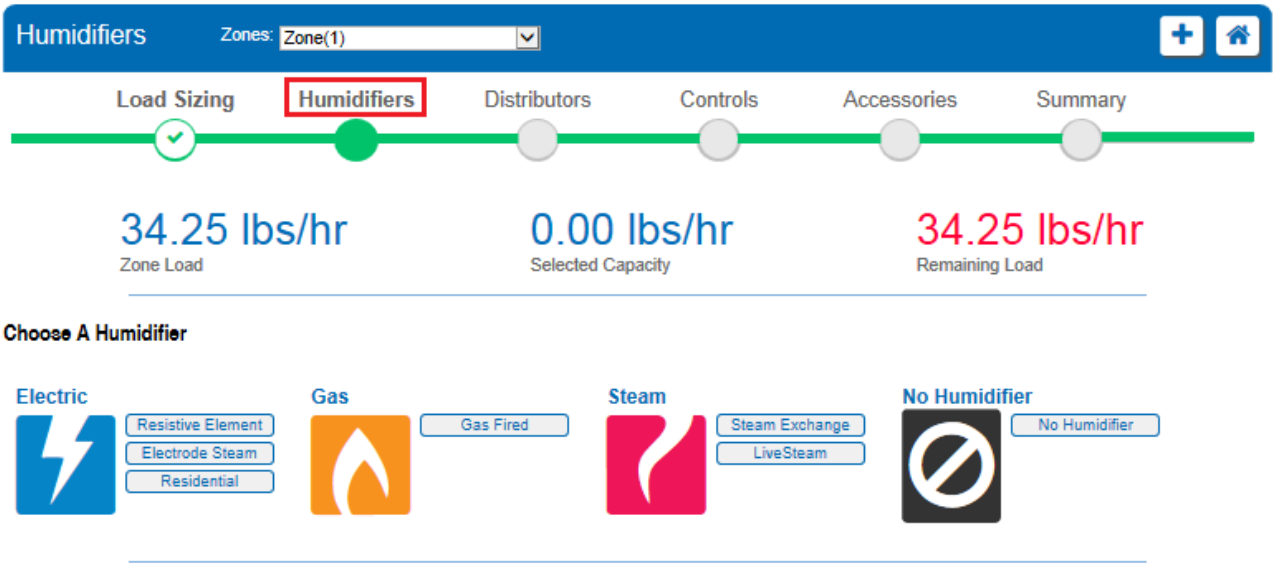


Figure 7: Humidifiers Tab

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

For this tutorial, select **Steam Exchange** as the humidifier. Steam Exchange humidifiers utilize steam from a central facility boiler as primary energy source to boil water from a domestic source. The result is clean, chemical free humidification steam at atmospheric pressure. Steam Exchange humidifiers are commonly used in hospitals, art galleries, and other facilities where humidification steam must be free from boiler chemicals.

A **Choose Humidifier** dialogue box will appear asking for you to enter the **Steam Pressure** in pounds per square inch gauge (psig). Acceptable values range from 5 psig to a maximum of 15 psig. The performance of the Steam Exchange humidifier depends largely on the steam pressure supplied, pressures less than 15 psig will reduce the output below the rated capacity of the model. Help will automatically calculate the output of the humidifier at a given steam pressure and make recommendations accordingly.

For this project enter a steam pressure of *15 psig* and select **Get Humidifier Recommendations**.

Help will highlight the 50 lbs/hr model in green as the recommended choice. You do not always need to follow Help’s recommendation; users are free to select any humidifier model from the list. In this case, follow Help’s recommendation and select the **50 lbs/hr** model.

The dialogue box will expand, enabling you to increase the quantity (commonly used for redundant unit applications) and select the control type. For this capacity of humidifier, there are two models available:

1. **Indoor Total Control** (SETC) models are the premium SE Series humidifier and feature the “Total Controller”, and advanced microprocessor based controller that allows for detailed controls and integration with a building automation system.
2. **Indoor Proportional Control** (SEP) models are economical models that feature a very simplified electronics and controls package. They do not have a display, accept fewer control signals, and do not support 2 way communication with a building automation system.

For this tutorial, select a quantity of **1** humidifier and set the model type to **Indoor Total Control**. Click **Save** to proceed.

The humidifier will be added to the Bill of Materials. In this example, the humidifier will require several options to comply with requirements from the consulting engineer designing the project.

Humidifier specific options are edited by clicking on the **Edit Options** button shown in Figure 8: Humidifier Bill of Materials and Options.

The screenshot displays the 'Humidifiers' configuration screen. At the top, there is a blue header with 'Humidifiers' and a dropdown menu for 'Zones' set to 'Zone(1)'. Below the header is a progress bar with six steps: 'Load Sizing' (checked), 'Humidifiers' (selected), 'Distributors', 'Controls', 'Accessories', and 'Summary'. Below the progress bar, four key values are shown: '34.25 lbs/hr Zone Load', '50.00 lbs/hr Selected Capacity', '0.00 lbs/hr Remaining Load', and '15.00 psi Steam Input Pressure'. A 'Choose A Humidifier' section is visible, with an 'Add Another Humidifier' button that includes a plus sign icon and the text 'Use multiple units to serve a load or add redundant units by clicking here.' At the bottom, a 'Parts and Humidifiers List' table is shown with one entry: Part # 2552765, Description SETC B+ 050, 110-120V, and Quantity 1. The 'Edit Options' button in the top right of the table is highlighted with a red box.

Part #	Description	Quantity
2552765	SETC B+ 050, 110-120V	1

Figure 8: Humidifier Bill of Materials and Options

Selecting this icon will cause another dialogue box to appear containing compatible options with this humidifier as well as the correct quantity. Each humidifier listed on the Humidifiers tab can have its own unique set of options and would need to be configured individually.

For this specific unit, select **Seismic Kit for SETC 050** by checking the box and clicking **Save** as shown in Figure 9: Humidifier Options. The selected option will now be added to the previous humidifier bill of materials.

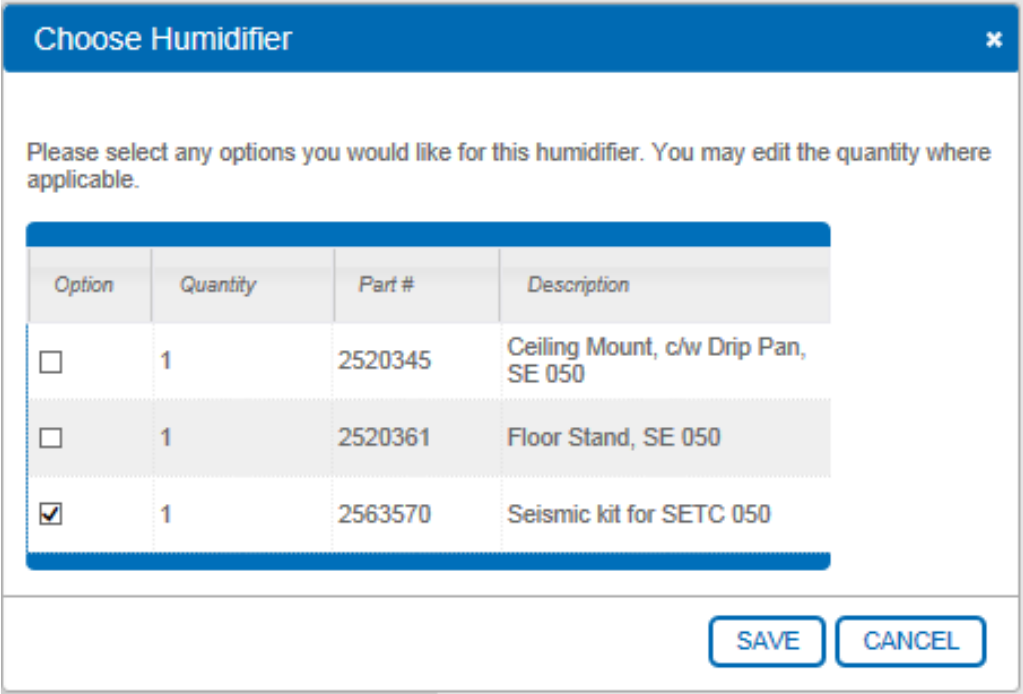


Figure 9: Humidifier Options

Distributors Tab

The next step is to add a distributor. Do this by clicking on the **Distributors** tab at the top of the page as shown in Figure 10: Distributors Tab or by selecting the **Next** button at the end of the previous step. Help will present distributor options compatible with your project. Available options will vary with duct geometry, load, and humidifier type specified.

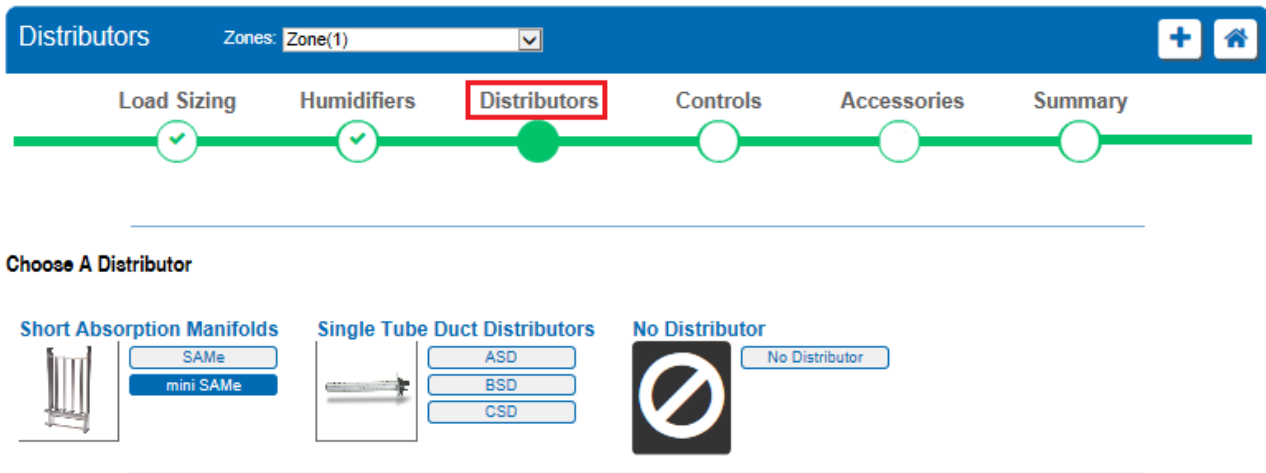


Figure 10: Distributors Tab

For this tutorial, an absorption distance of 12” or less is required. Select a **mini SAM-e Short Absorption Manifold** by clicking on the blue button. Mini SAM-e models are special short absorption manifolds specifically designed to enable short absorption in smaller ducts.

A new dialogue box will appear allowing you to configure your mini SAM-e as shown in Figure 11: Mini SAM-e Configuration.

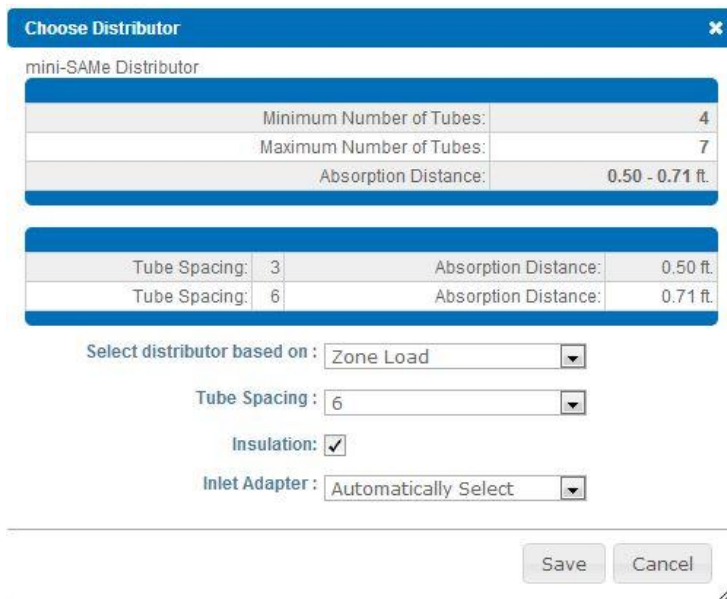


Figure 11: Mini SAM-e Configuration

Select the following options:

1. **Select Distributor Based On:** *Zone Load*.
The capacity will be matched to the humidification load. Alternatively, the distributor capacity can be matched to the humidifier capacity.
2. **Tube Spacing:** *6 inches*.
It is best practice to select the widest spacing that meets your available absorption distances. Wider tube spacing will result in few tubes minimizing both costs and heat losses.
3. **Insulation:** *Check box*.
Insulation covers both the header and steam tubes minimizing heat transfer and improving system efficiency.
4. **Inlet Adapter:** *Automatically Select*.
Help will automatically match an inlet adapter to your selected humidifier. Alternatively, you may prefer to specify your own inlet adapter.

Click **Save** when you are done and Help will generate a Bill of Materials. You may review this list as well as edit and make changes using the icons at the top right hand corner of the list. Scrolling further down the page, the **Distributor Configuration** section provides information about the distributor as well as a drawing of the SAM-e.

Clicking the PDF icon will export this drawing to a PDF file. Alternatively, the distributor drawings can be accessed from the **Document Center** tab on the Project Home Page.

Select **Next** when you are finished.

Controls Tab

You will now be directed to the Controls tab. Clicking on the **Controls** tab at the top of the page will also bring you here. The controls tab allows you configure controls for your project. Controls are optional, so this step can be skipped if controls will not be provided.

There are two options:

1. **Controls by Nortec** configures a complete control package provided by Nortec.
2. **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.

For this tutorial, select **Controls by Nortec** with **Assisted Selection**. A controls package will be configured with a single wall mounted sensor located in the space; providing sensed relative humidity levels to the humidifier. The set point for the space will be controlled directly on the humidifier keypad. A high limit humidistat and air proving switch will be included as safety controls. The high limit stat will prevent duct humidity levels from exceeding levels where condensation could occur, while the air proving switch will ensure that air is flowing in duct.

Make the following selections as illustrated in Figure 12: Controls Configuration:

1. **Signal Type:** *Transducer*.
Transducer signals report the relative humidity in the space to the humidifier. The humidifier uses an internal proportional – integral (PI) loop to determine the output. This is in contrast to demand signals which simply instruct the humidifier to operate at a given percentage.
2. **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.
3. **Channel 1 Location:** *Wall*.
Select whether you would like the humidistat to be a wall mounted or duct mounted model. For this example, the primary humidistat will be located on the wall in the conditioned space.
4. **Outdoor Temperature Sensor:** *None*.
The outdoor temperature sensor connects to a humidistat. It will allow the humidistat to reduce the space humidity level in response to cold outdoor temperatures minimizing the risk of condensation on windows.
5. **Include Air Proving Switch:** *Check box*
This on/off safety device prevents humidifier operation unless air is flowing in the duct.

6. Include On/Off High Limit Switch: CHECK.

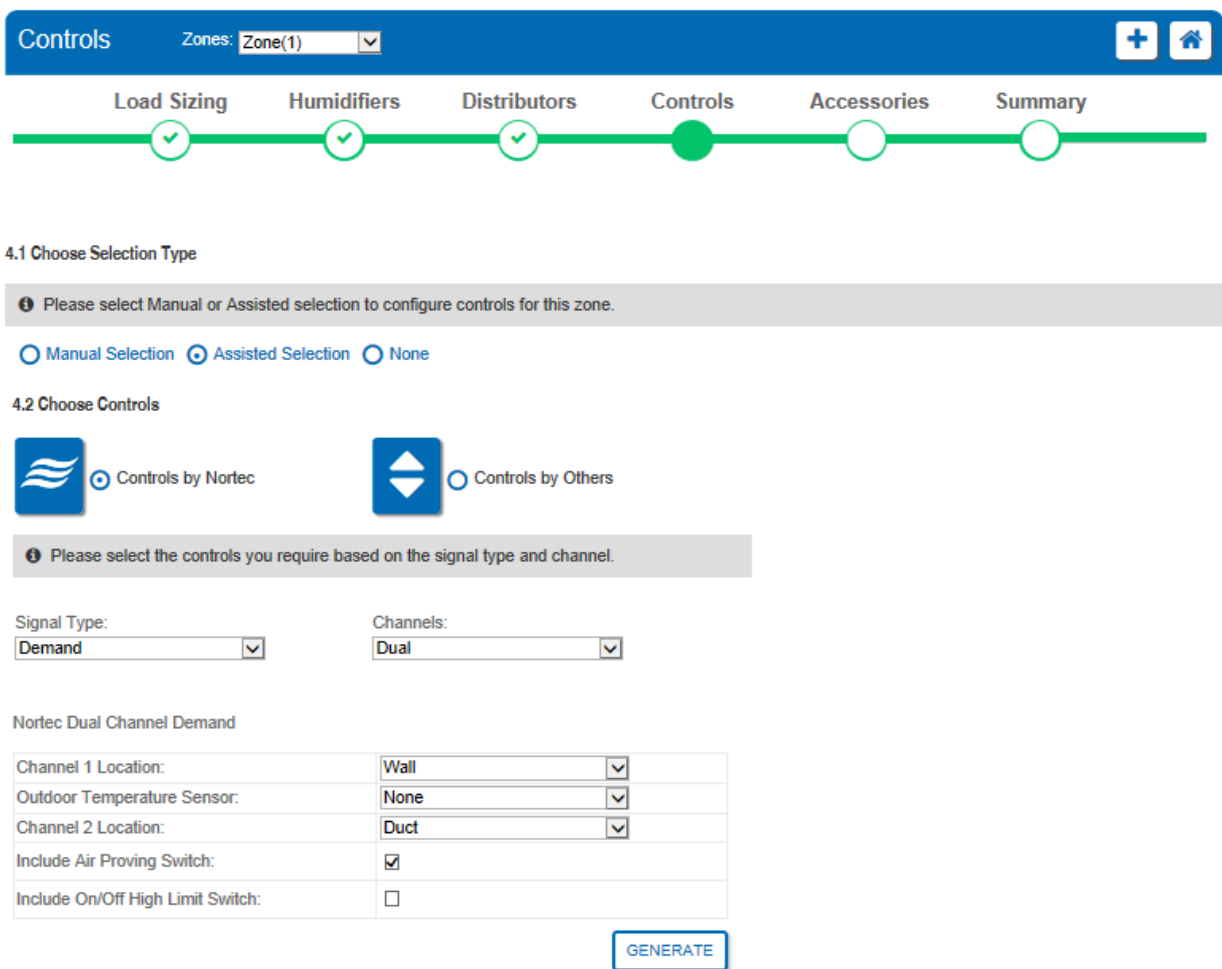
This on/off safety device prevents condensation in the duct by stopping humidification if the duct humidity levels exceed a certain level.

7. Building Automation System Gateway: None.

Select a protocol for a building automation gateway card if desired.

8. Nortec OnLine Monitoring: None.

Humidifiers with a Total Controller (TC) or Integrated Controller (NH-EL models) are capable of being remotely monitored through the internet. Select this option to include a gateway card enabling this feature (TC models only, standard feature on Integrated Controller Models).



4.1 Choose Selection Type

Please select Manual or Assisted selection to configure controls for this zone.

Manual Selection Assisted Selection None

4.2 Choose Controls

Controls by Nortec Controls by Others

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

Signal Type: Channels:

Nortec Dual Channel Demand

Channel 1 Location:	<input type="text" value="Wall"/>
Outdoor Temperature Sensor:	<input type="text" value="None"/>
Channel 2 Location:	<input type="text" value="Duct"/>
Include Air Proving Switch:	<input checked="" type="checkbox"/>
Include On/Off High Limit Switch:	<input type="checkbox"/>

GENERATE

Figure 12: Controls Configuration

Selecting **Generate** will update the Controls Bill of Materials found below.

Click **Next** to complete the selection.

Accessories

The next step allows you to add accessories to the current Zone. Selecting the **Next** button on the previous page will bring you to this step or you can choose the **Accessories** Tab for the navigation Bar at the top of the page.

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.

For this tutorial, a drain water cooler will be selected to comply with local plumbing regulations. Add an accessory to your project by clicking the green plus sign to the left of the chosen accessory, shown below in Figure 13: Accessories. Add one “Drain Water Cooler, Self-Actuated” and you will see it added to the Parts and Accessories Bill of Materials list at the bottom of the page.



5. Choose Accessories

Please select any common options you would like for this zone. You may edit the quantity where applicable.

	Double Check Valve for Water Inlet line 1458807	Quantity: 1	
	Drain Water Cooler, Electric 1710020	Quantity: 1	
	Drain Water Cooler, Self-Actuated 1710010	Quantity: 1	

Detail | Description | Installation | Shop Drawing 1

Self Actuated Drain Water Cooler, reduces the humidifier drain water temperature to 140°F (60°C) before entering the buildings plumbing system. This ensures humidifier drain temperatures meet municipal plumbing ordinances.



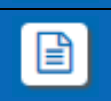
FEATURES

- Stainless steel cylindrical reservoir
- 1" NPT male drain water inlet
- Integral thermostatic sensor for automatic operation
- Pneumatically operated cold water inlet valve
- 2" NPT male tempered water outlet

Figure 13: Accessories

Selecting the **Show Details** icon, shown in Figure 13: Accessories **Error! Reference source not found.**, beside an accessory name will expand its window and allow you to view a description of the part as well as any related schematics.

This will also give you access to three other icons listed below:

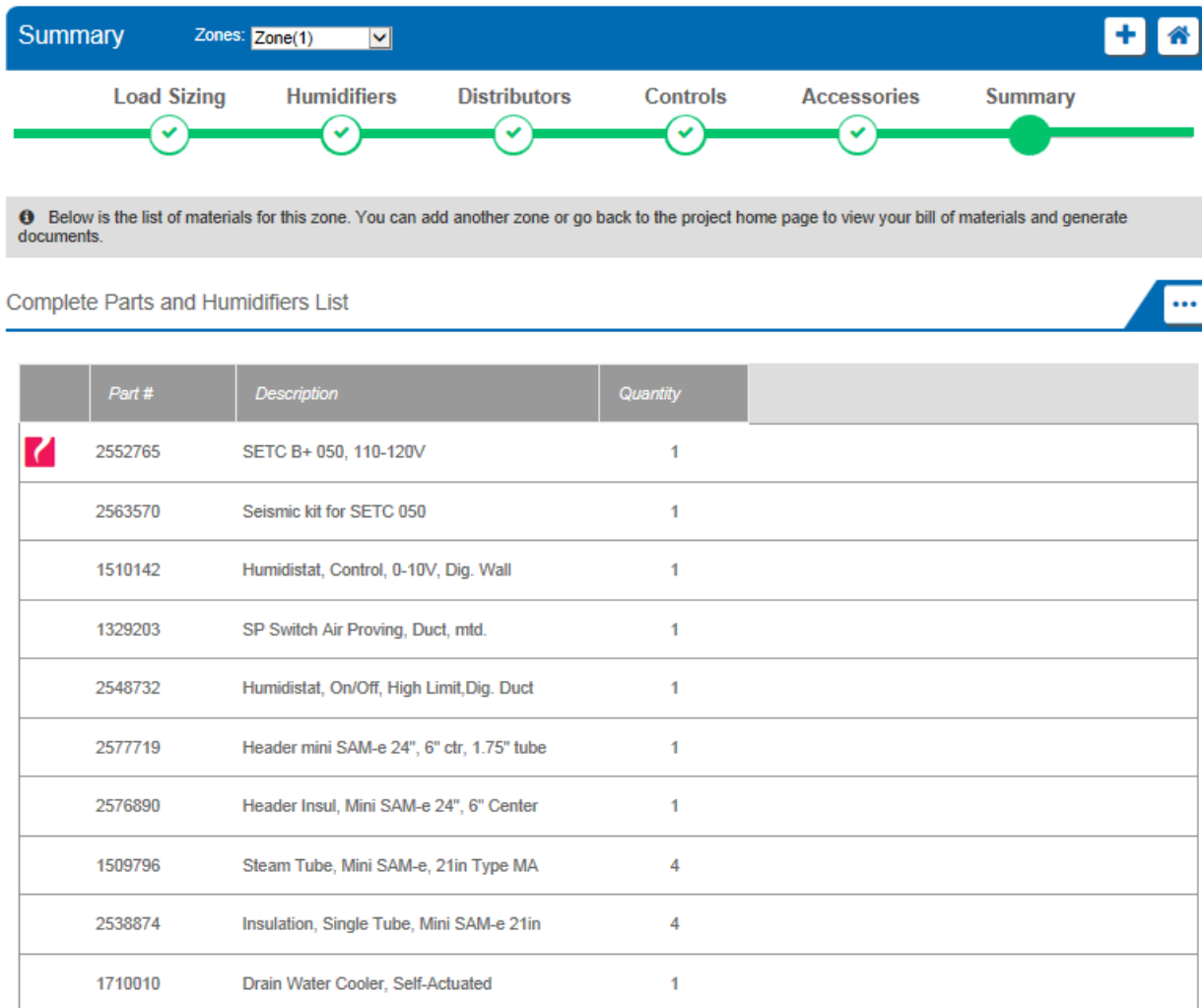
	Information Icon: Redirects to the Nortec product's webpage.
	3D Models: Redirects to Nortec's AutoDesk Seek site, where Revit models, manuals and dwg files can be downloaded.
	Product Document Exporter: Exports a packaging containing this information. Useful for generating product cut sheets and PDFs of relevant info.

Select **Next** once you have finished adding any desired accessories.

Summary Tab

You will now be directed to the **Summary** Tab. Clicking on the Summary tab in the Navigation Bar at the top of the page will also bring you here.

Here you will see a complete bill of materials for the entire Zone shown in Figure 14: Zone Summary.



Summary Zones: Zone(1) [+] [Home]

Load Sizing [✓] Humidifiers [✓] Distributors [✓] Controls [✓] Accessories [✓] 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.

Complete Parts and Humidifiers List [More]

Part #	Description	Quantity
2552765	SETC B+ 050, 110-120V	1
2563570	Seismic kit for SETC 050	1
1510142	Humidistat, Control, 0-10V, Dig. Wall	1
1329203	SP Switch Air Proving, Duct, mtd.	1
2548732	Humidistat, On/Off, High Limit, Dig. Duct	1
2577719	Header mini SAM-e 24", 6" ctr, 1.75" tube	1
2576890	Header Insul, Mini SAM-e 24", 6" Center	1
1509796	Steam Tube, Mini SAM-e, 21in Type MA	4
2538874	Insulation, Single Tube, Mini SAM-e 21in	4
1710010	Drain Water Cooler, Self-Actuated	1

Figure 14: Zone Summary

The product selection for this zone has now been completed.

Select the **Done** button to return to the Project Home Page.

Project Submittals and Requesting a Quotation

On the project home page under the **Document Center** tab shown below, you can export a submittal package as well as other useful information. You can also request a quote from your local Nortec agent.

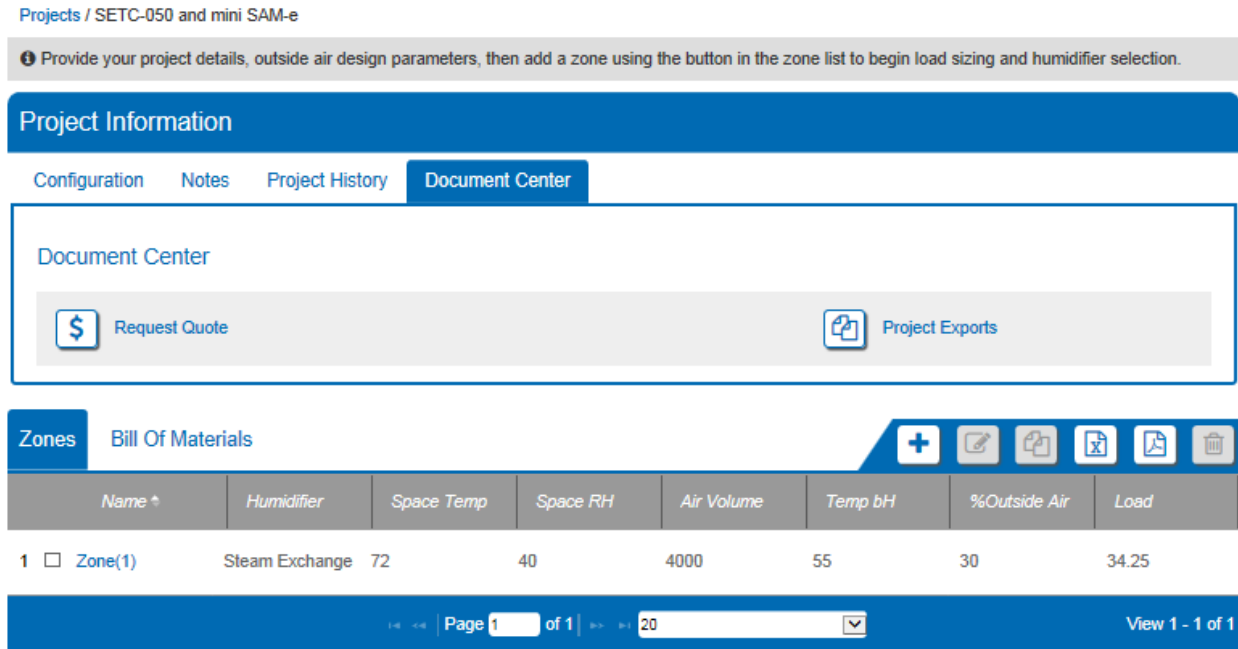


Figure 15: Document Center

Selecting **Project Exports** will bring up a dialogue box as shown in Figure 16: Export Center.

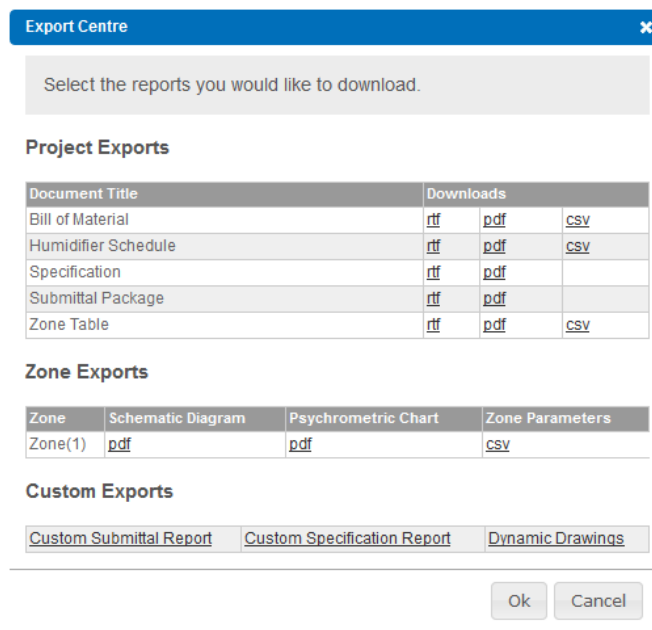


Figure 16: Export Center

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.

Selecting **Request Quote** will bring up a dialogue box allowing you to enter any comments or and notes and to confirm your contact information. Selecting the **Request** button will send a pricing request to the agent along with a copy of the project. Your local representative will contact you shortly regarding pricing and further information.

Congratulations, you have successfully completed this tutorial!

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