



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 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.

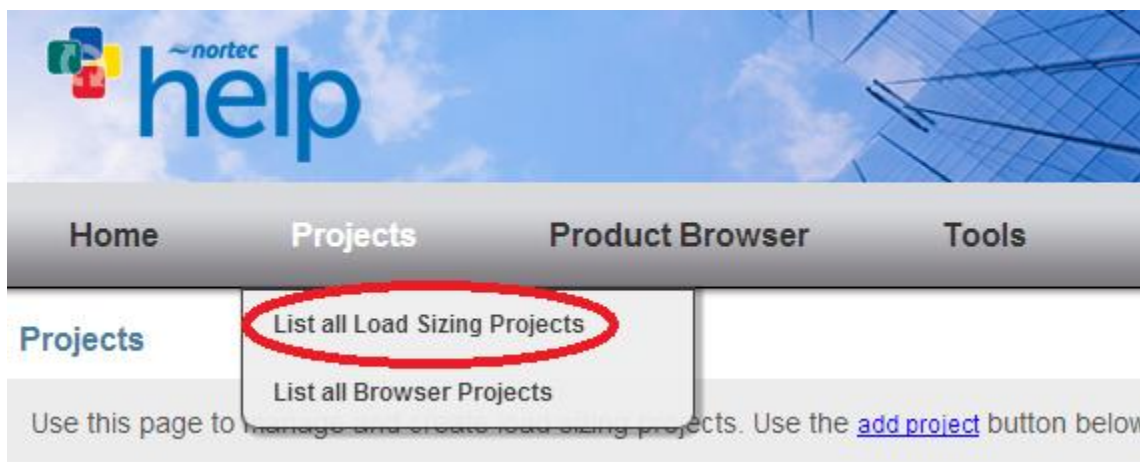


Figure 1: Projects List

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 a New Project.

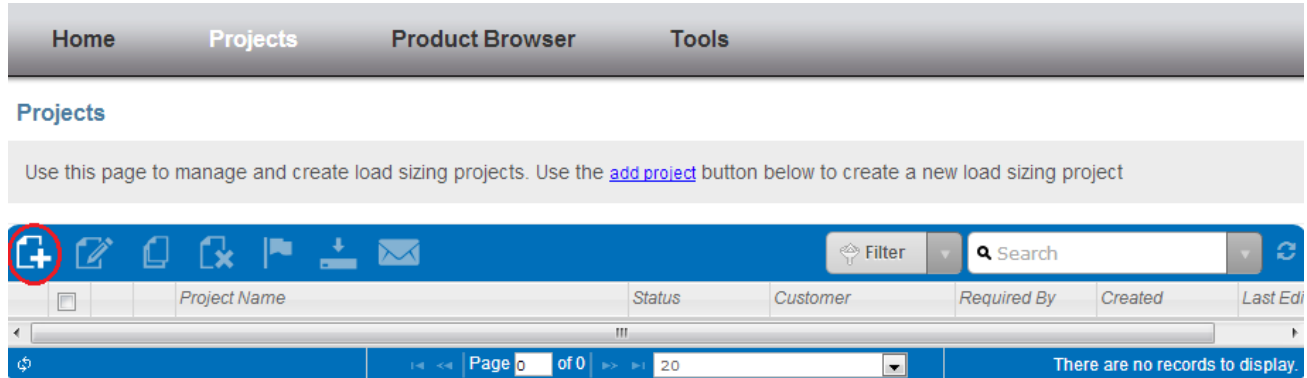


Figure 2: Create a New Project

A popup will appear, asking for project information. Give the project a name such as “SETC-050 and mini SAM-e 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.

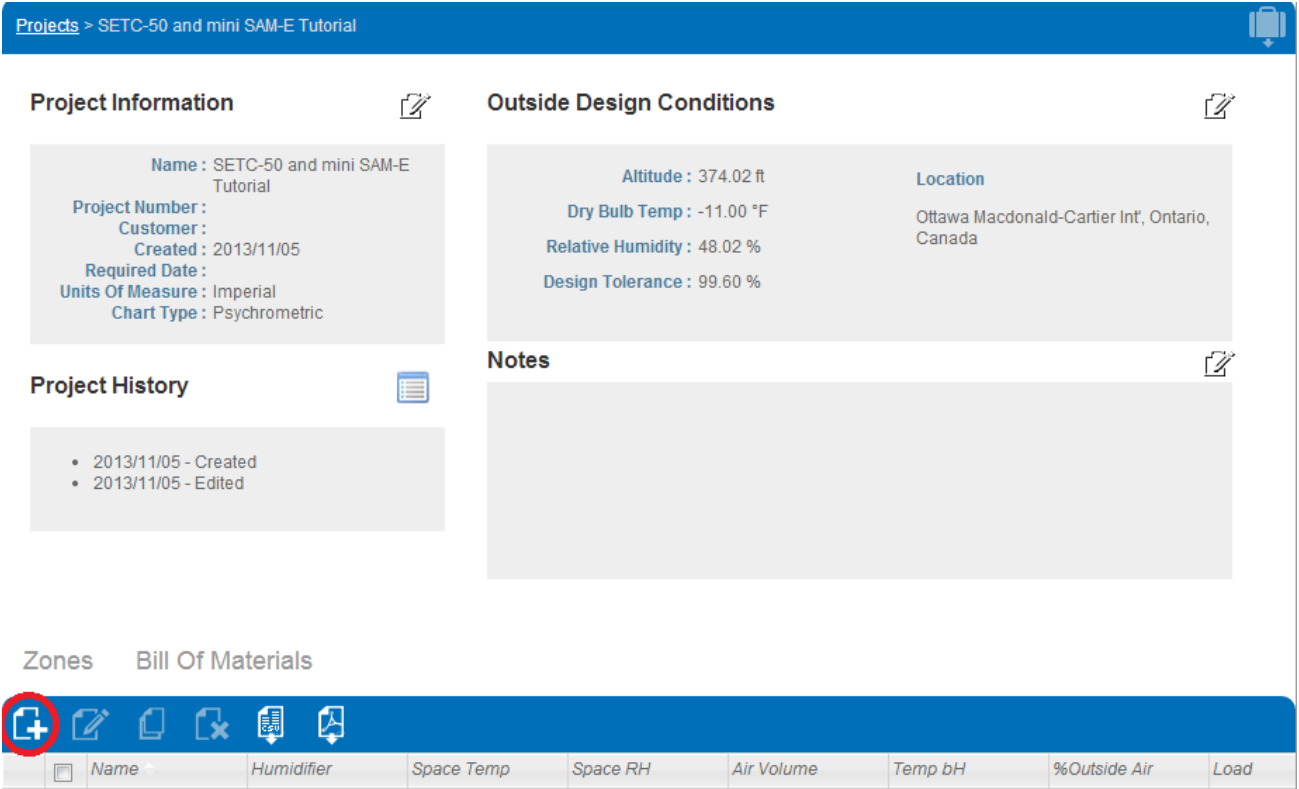
Click **Save** at the bottom-right when you have finished editing values.

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.



The screenshot shows the Project Home Page for a project named "SETC-50 and mini SAM-E Tutorial". The interface includes several sections:

- Project Information:**
 - Name: SETC-50 and mini SAM-E Tutorial
 - Project Number:
 - Customer:
 - Created: 2013/11/05
 - Required Date:
 - Units Of Measure: Imperial
 - Chart Type: Psychrometric
- Outside Design Conditions:**
 - Altitude: 374.02 ft
 - Dry Bulb Temp: -11.00 °F
 - Relative Humidity: 48.02 %
 - Design Tolerance: 99.60 %
 - Location: Ottawa Macdonald-Cartier Int', Ontario, Canada
- Project History:**
 - 2013/11/05 - Created
 - 2013/11/05 - Edited
- Notes:** (Empty text area)

At the bottom, there are tabs for "Zones" and "Bill Of Materials". A blue toolbar contains icons for "Add" (highlighted with a red circle), "Edit", "Copy", "Paste", "Print", and "Share". Below the toolbar is a table with the following columns:

<input type="checkbox"/>	Name	Humidifier	Space Temp	Space RH	Air Volume	Temp bH	%Outside Air	Load
--------------------------	------	------------	------------	----------	------------	---------	--------------	------

Figure 3: Project Home Page

Load Sizing Tab

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

Zones : Zone(1) ▼
Projects > SETC-050 and mini SAM-e Tutorial > Zone(1)
☀

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

<p>Name : <input style="width: 100%;" type="text" value="Zone(1)"/></p> <p>Load Size Method : Calculated ▼</p> <p>Calculation Method : Isothermal ▼</p> <p>In Space Humidification: <input type="checkbox"/></p>	<p>Air Volume (CFM) : <input style="width: 100%;" type="text" value="4000"/></p> <p>Duct Width (in.) : <input style="width: 100%;" type="text" value="24"/></p> <p>Duct Height (in.) : <input style="width: 100%;" type="text" value="24"/></p> <p>Duct Orientation : Horizontal ▼</p>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="2">Load Calculations</th> </tr> </thead> <tbody> <tr> <td>Humidification Load (H):</td> <td>35.21 lbs/hr</td> </tr> <tr> <td>Natural Exchange Load (H):</td> <td>0.00 lbs/hr</td> </tr> <tr> <td>Water Vapour Absorption Losses (L):</td> <td>0.00 lbs/hr</td> </tr> <tr> <td>Internal Moisture Gains (S):</td> <td>0.00 lbs/hr</td> </tr> <tr> <td>Total Humidification Load (Htot):</td> <td>35.21 lbs/hr</td> </tr> <tr> <td>Low Absorption Distance:</td> <td>0.50 ft</td> </tr> <tr> <td>High Absorption Distance:</td> <td>2.54 ft</td> </tr> <tr> <td>Duct Velocity</td> <td>1000.00 ft/min</td> </tr> </tbody> </table>	Load Calculations		Humidification Load (H):	35.21 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):	35.21 lbs/hr	Low Absorption Distance:	0.50 ft	High Absorption Distance:	2.54 ft	Duct Velocity	1000.00 ft/min
Load Calculations																				
Humidification Load (H):	35.21 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):	35.21 lbs/hr																			
Low Absorption Distance:	0.50 ft																			
High Absorption Distance:	2.54 ft																			
Duct Velocity	1000.00 ft/min																			

Calculation Values


Outside Temp (°F) : <input style="width: 100%;" type="text"/>	Outside Humidity (%) : <input style="width: 100%;" type="text"/>	Outside Air (%) : <input style="width: 100%;" type="text" value="30"/>	Override Outside Design Conditions: <input type="checkbox"/>
Space Design Temp (°F) : <input style="width: 100%;" type="text" value="72"/>	Space Design Humidity (%) : <input style="width: 100%;" type="text" value="40"/>	Temp Before Humidity (°F) : <input style="width: 100%;" type="text" value="55"/>	Naturally Vented: <input type="checkbox"/>
Natural Exchange Temp (°F) : <input style="width: 100%;" type="text"/>	Natural Exchange Humidity (%) : <input style="width: 100%;" type="text"/>	Natural Exchange Volume (CFM) : <input style="width: 100%;" type="text" value="0"/>	Use Natural Exchange: <input type="checkbox"/>
Moisture Gains (lb/hr) : <input style="width: 100%;" type="text" value="0"/>	Vapour Losses (lb/hr) : <input style="width: 100%;" type="text" value="0"/>		Use Economizer: <input type="checkbox"/>

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:** *Isothermal*. *Isothermal* is used for steam systems, while the two *adiabatic* options are used for nozzles and evaporative media systems.
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: 4000 CFM
Duct Width: 24 inches
Duct Height: 24 inches
Duct Orientation: *Horizontal*
5. Under the Calculation values heading, set the following conditions:
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.
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.
Temp Before Humidity: 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.

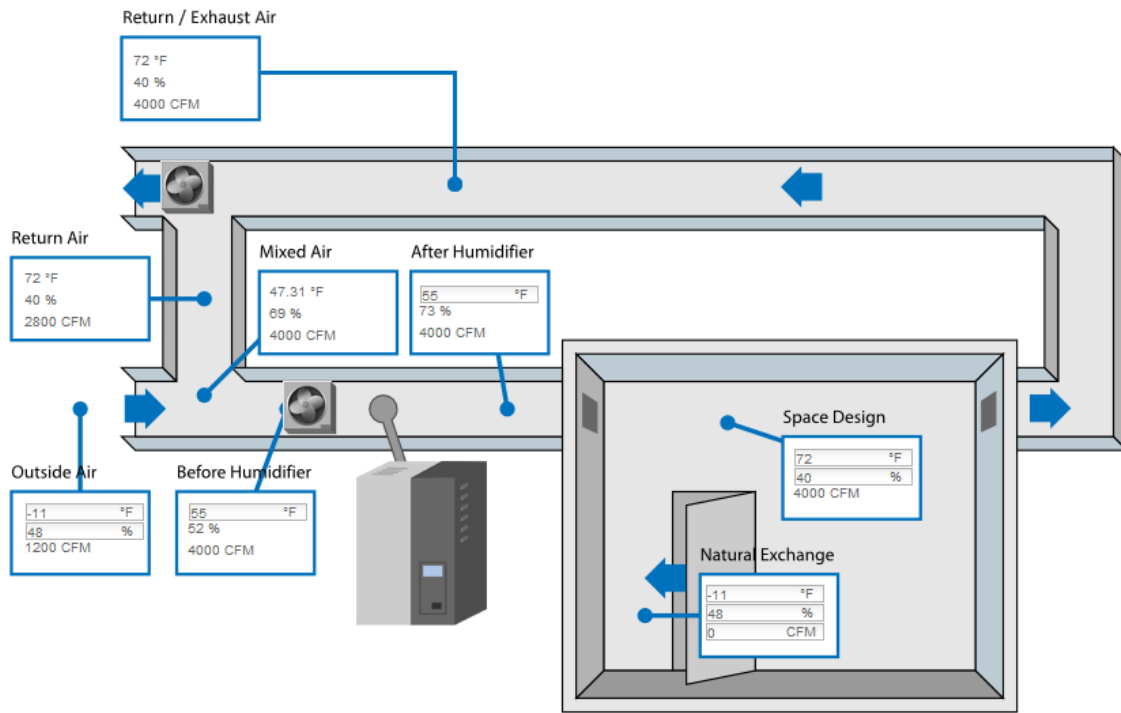


Figure 5: Schematic Drawing

Back at the top of the Load Sizing page, the grey **Load Calculations** box will have calculated a Humidification load of 35.06 lbs/hr and a duct velocity of 1000.00 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 2.53 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 6: Humidifiers Tab.

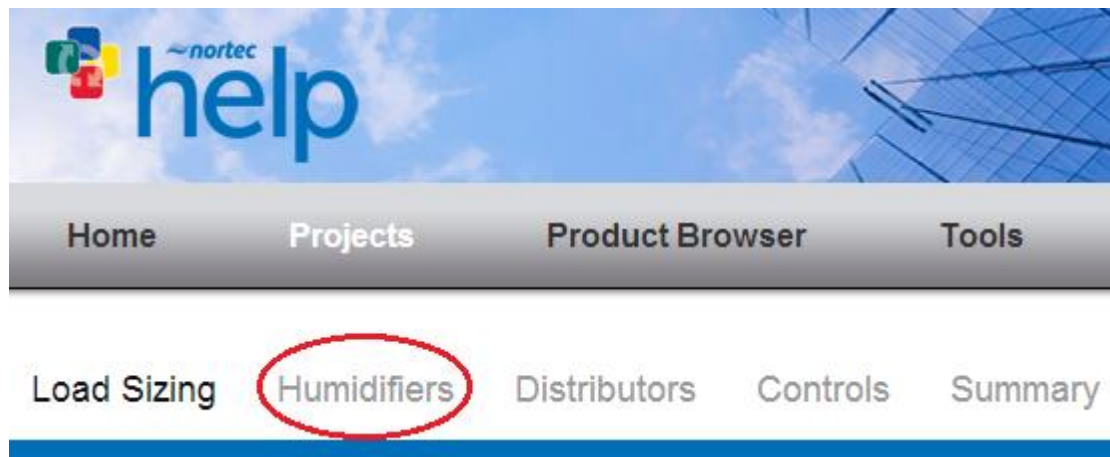


Figure 6: Humidifiers Tab

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

For this tutorial, select **Steam Exchange**. 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.

Clicking on Steam Exchange will activate a popup asking you to enter **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 then click **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 popup will expand, enabling you to increase the quantity (commonly used for redundant unit applications) or select the model. For this capacity of humidifier, there are two models available:

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.

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 Options button (✎) shown in Figure 7: Humidifier Bill of Materials and Options.

Zones : SETC Projects > LS and SAM-e Tutorial > SETC > Humidifiers

Please select a humidifier for this zone. If you are unsure of what type to use, click "More Info" to view detailed product information. Note: Link opens in a new browser window. [cost analysis tool](#).

Your load size is:	35.21 lbs/hr
Your total selected humidifier capacity:	50.00 lbs/hr
Remaining load:	0.00 lbs/hr

Add Another Humidifier
Use multiple units to serve a load or add redundant units by clicking here.

The currently selected humidifier and option part numbers are listed below.

Zone	Part Number	Description	Humidifier	Quantity	
SETC	2552765	SETC 050, 110-120V		1	✎ ✕

Figure 7: Humidifier Bill of Materials and Options

Clicking this button will activate a popup 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. On this popup select **Seismic Kit for SETC 050** by checking the box and clicking **Save** as shown in Figure 8: Humidifier Options.

Choose Humidifier ✕

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

<i>Option</i>	<i>Quantity</i>	<i>Part Number</i>	<i>Description</i>
<input type="checkbox"/>	1	2520345	Ceiling Mount Kit c/w Drip Pan, SE 050
<input type="checkbox"/>	1	2520361	Floor Stand Kit, SE 050
<input checked="" type="checkbox"/>	1	2563570	Seismic kit for SETC 050

Figure 8: 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 9: Distributors Tab. Help will present distributor options compatible with your project. Available options will vary with duct geometry, load, and humidifier type selected.



Figure 9: 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 popup window will appear allowing you to configure your mini SAM-e. Select the following options as shown in Figure 10: Mini SAM-e Configuration.

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.

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.

Insulation: *CHECK*. Insulation covers both the header and steam tubes minimizing heat transfer and improving system efficiency.

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.

Choose Distributor
✕

mini-SAMe Distributor

Minimum Number of Tubes:	4
Maximum Number of Tubes:	7
Absorption Distance:	0.50 - 0.71 ft.

Tube Spacing:	3	Absorption Distance:	0.50 ft.
Tube Spacing:	6	Absorption Distance:	0.71 ft.

Select distributor based on : Zone Load ▾

Tube Spacing : 6 ▾


Insulation:

Inlet Adapter : Automatically Select ▾

Save
Cancel

Figure 10: Mini SAM-e Configuration

Click **Save** when you are done and Help will generate a Bill of Materials. 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 Project Home Page.

Controls Tab

Next click the **Controls** tab at the top of the page. The controls tab allows you 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.

For this tutorial, select **Controls by Nortec**. In this example, a controls package will be configured with a single wall mounted sensor located in the space providing sensed relative humidity level 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 Figure 11: Control Selections.

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.

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.

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.

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

Building Automation System Gateway: *None*. Select a protocol for a building automation gateway card if desired.

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).

Choose Controls
✕

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

Signal Type:	Transducer
Channels:	Single

Nortec Single Channel Transducer

Channel 1 Location:	Wall
Include Air Proving Switch:	<input checked="" type="checkbox"/>
Include On/Off High Limit Switch:	<input checked="" type="checkbox"/>
Building Automation System Gateway: More Info...	None
Nortec Online Monitoring:	None

Save
Cancel

Figure 11: Control Selections

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.

In this example, a drain water cooler will be selected to comply with local plumbing regulations. To do this, click on the **Accessories** button, select one “Drain Water Cooler, Self-Actuated” and click **Save** as shown in Figure 12: Accessories


Choose Accessories ✕

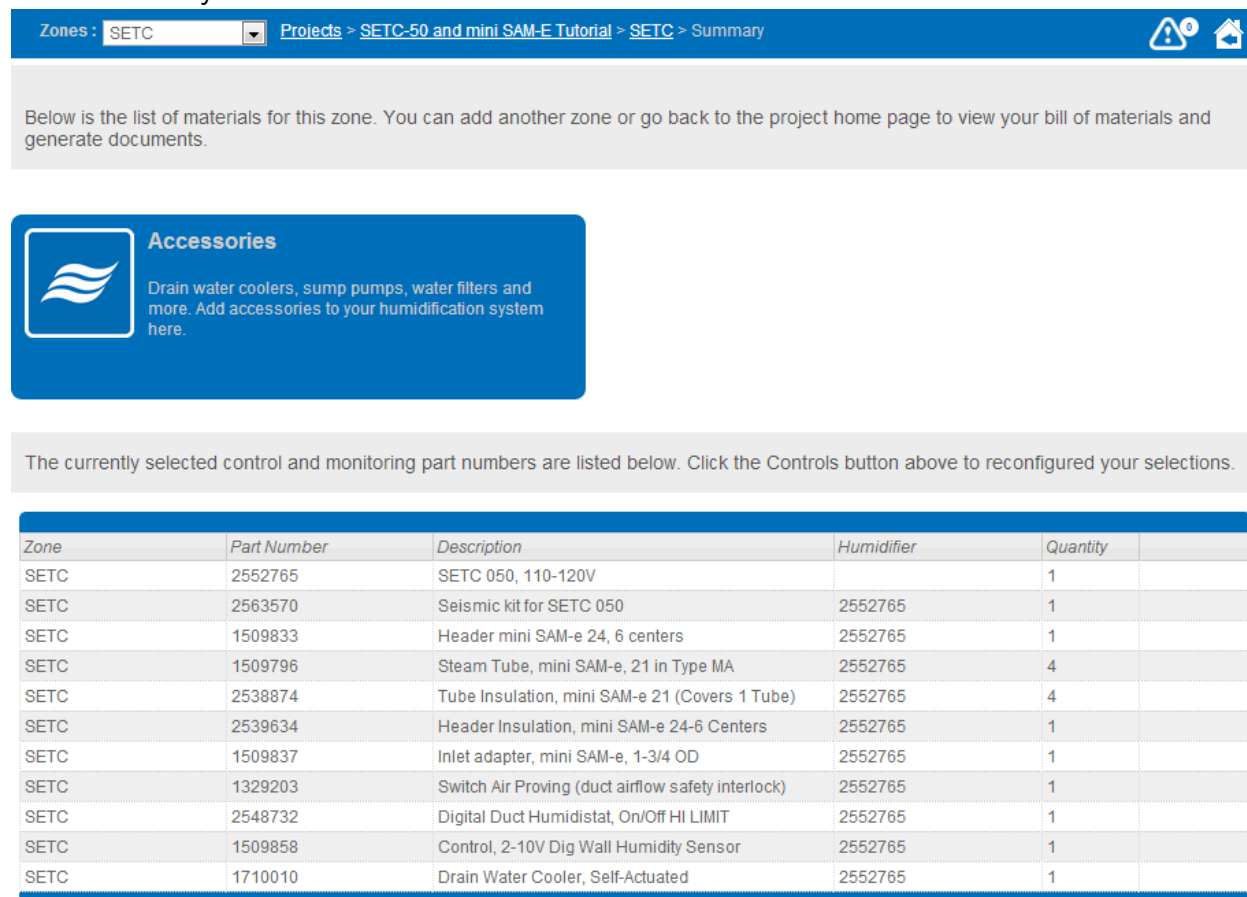
Please select any common options you would like for this zone. You may edit the quantity where applicable.

Option	Quantity	Part Number	Description
<input type="checkbox"/>	1	1458807	Backflow Preventer, 3/8 in NPT
<input type="checkbox"/>	1	1710020	Drain Water Cooler, Electric
<input checked="" type="checkbox"/>	1	1710010	Drain Water Cooler, Self-Actuated
<input type="checkbox"/>	1	2524504	Drain Water Sump Pump, high flow
<input type="checkbox"/>	1	1429527	Drain Water Sump Pump, medium flow
<input type="checkbox"/>	1	2533363	Humidity Alarm Package, Duct High limit
<input type="checkbox"/>	1	2533365	Humidity Alarm Package, Duct Low limit
<input type="checkbox"/>	1	2533364	Humidity Alarm Package, Wall High limit
<input type="checkbox"/>	1	2533366	Humidity Alarm Package, Wall Low limit
<input type="checkbox"/>	1	1329505	In-Line Water filter c/w 5 micron filter
<input type="checkbox"/>	1	1469595	Pocket Hygro-Thermometer digital display
<input type="checkbox"/>	1	1603032	Transformer, Plug In, 120 VAC to 24 VAC
<input type="checkbox"/>	1	1329561	Water Filter Cartridge 1 micron
<input type="checkbox"/>	1	1329506	Water Filter Cartridge 5 micron (x2)

Figure 12: Accessories

The product selection for this zone has now been completed.

Select the Project Home button () to return to the Project Home Page as shown in Figure 13: Zone Summary.




The screenshot shows the 'Zone Summary' page for a project named 'SETC-50 and mini SAM-E Tutorial'. The breadcrumb trail is 'Projects > SETC-50 and mini SAM-E Tutorial > SETC > Summary'. Below the breadcrumb, there is a message: '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.' There is a blue button labeled 'Accessories' with a sub-header 'Accessories' and text: 'Drain water coolers, sump pumps, water filters and more. Add accessories to your humidification system here.' Below this is another message: 'The currently selected control and monitoring part numbers are listed below. Click the Controls button above to reconfigured your selections.' At the bottom is a table with 6 columns: Zone, Part Number, Description, Humidifier, Quantity, and an empty column.

Zone	Part Number	Description	Humidifier	Quantity	
SETC	2552765	SETC 050, 110-120V		1	
SETC	2563570	Seismic kit for SETC 050	2552765	1	
SETC	1509833	Header mini SAM-e 24, 6 centers	2552765	1	
SETC	1509796	Steam Tube, mini SAM-e, 21 in Type MA	2552765	4	
SETC	2538874	Tube Insulation, mini SAM-e 21 (Covers 1 Tube)	2552765	4	
SETC	2539634	Header Insulation, mini SAM-e 24-6 Centers	2552765	1	
SETC	1509837	Inlet adapter, mini SAM-e, 1-3/4 OD	2552765	1	
SETC	1329203	Switch Air Proving (duct airflow safety interlock)	2552765	1	
SETC	2548732	Digital Duct Humidistat, On/Off HI LIMIT	2552765	1	
SETC	1509858	Control, 2-10V Dig Wall Humidity Sensor	2552765	1	
SETC	1710010	Drain Water Cooler, Self-Actuated	2552765	1	

Figure 13: Zone Summary

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 14: 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 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 create Submittals, Specifications, and Distributor Drawings containing only zones you specify for multi-zone projects.

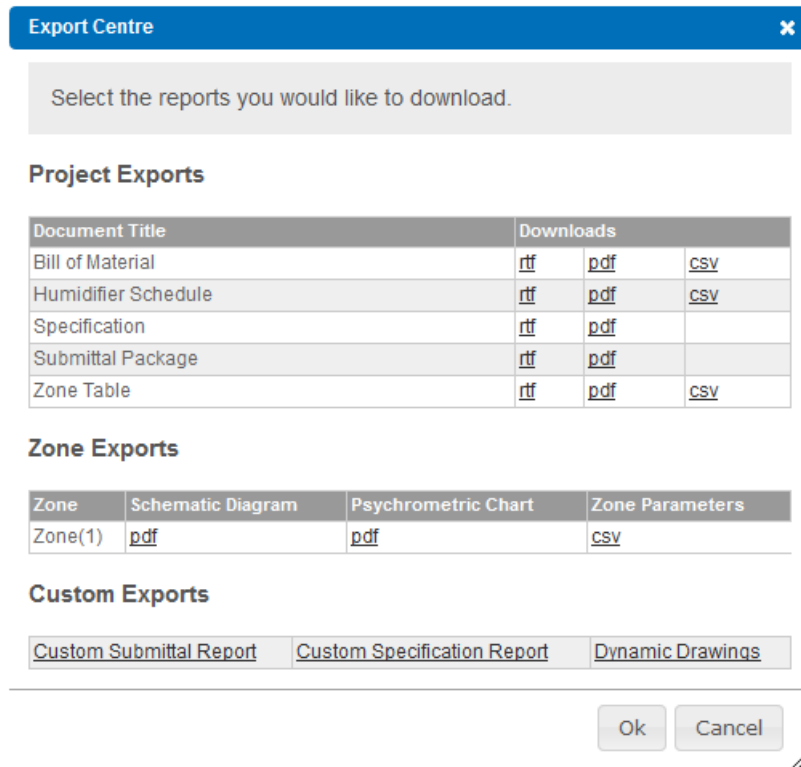





Figure 14: Export Center

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 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.

Projects > SETC-50 and mini SAM-E Tutorial  

Project Information

Name : SETC-50 and mini SAM-E Tutorial
 Project Number :
 Customer :
 Created : 2013/11/05
 Required Date :
 Units Of Measure : Imperial
 Chart Type : Psychrometric

Outside Design Conditions







Altitude : 374.02 ft Location
 Dry Bulb Temp : -11.00 °F Ottawa Macdonald-Cartier Int', Ontario, Canada
 Relative Humidity : 48.02 %
 Design Tolerance : 99.60 %

Project History

- 2013/11/05 - Created
- 2013/11/05 - Edited

Notes

Zones Bill Of Materials

#	Name	Humidifier	Space Temp	Space RH	Air Volume	Temp bH	%Outside Air	Load
1	SETC	Steam Exchange	72	40	4000	55	30	35.06

Page 1 of 1 20 View 1 - 1 of 1

Figure 15: Project Home Page with Export Buttons

Congratulations, you have successfully completed this tutorial!

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