



help



LS  
SERIES

# Help

## Help Software Tutorial

Building a Load Sizing Project with a  
LiveSteam Humidifier and 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 LS Humidifier and SAM-e Distributor**

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# Contents

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- 2 Log In and Projects List**
- 3 Create a New Project**
- 4 Project Home Page**
- 5 Load Sizing Tab**
- 8 Humidifiers Tab**
- 10 Distributors Tab**
- 11 Controls Tab**
- 13 Summary Tab**
- 15 Project Submittals and Requesting a Quotations**



## Log In and Projects List

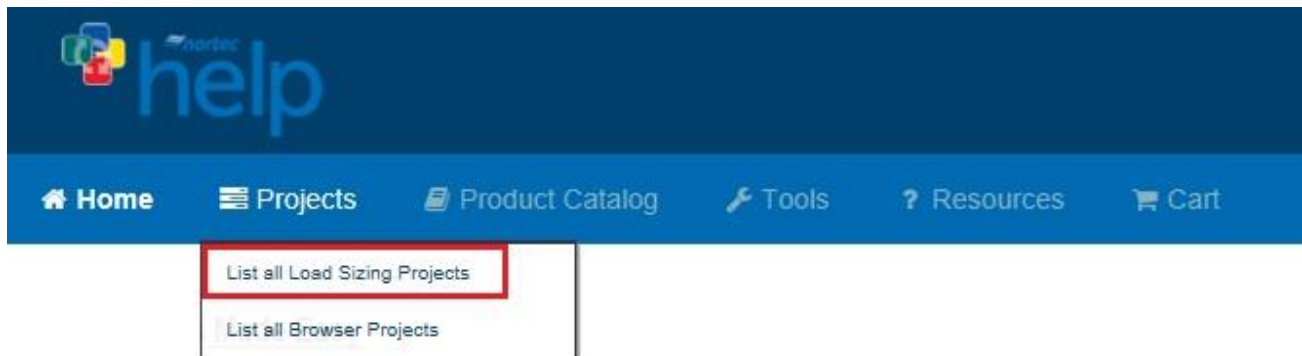
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To begin, start by logging into your Help account. Once completed, hover your mouse over the **Projects** tab and then select **List all Load Sizing Projects** as shown in Figure 1: Projects List. The Projects list is where all of your projects are stored. Projects are stored in the cloud and are available from whichever device you 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 the **Add** icon shown in Figure 2: Create a New Project to add a load sizing project.

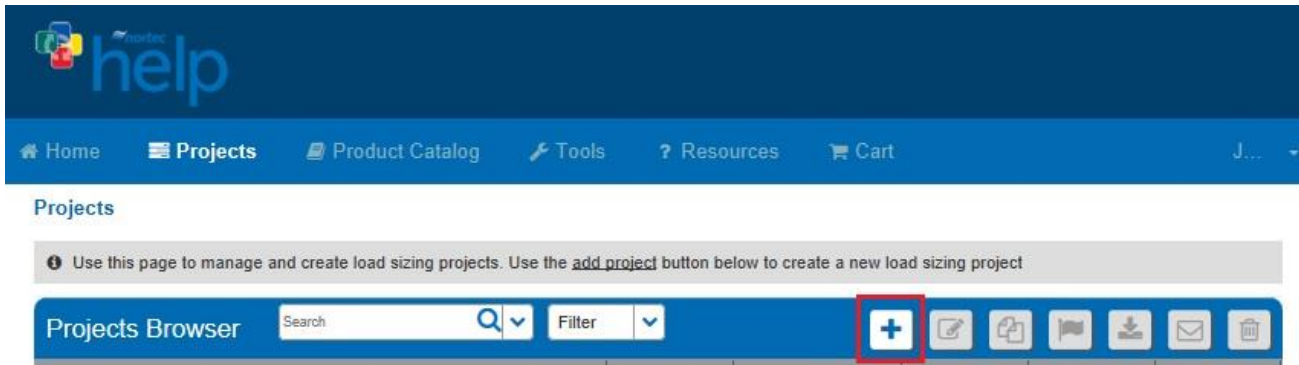


Figure 2: Create a New Project

A dialogue box, as shown below, will appear and request project information. Give the project a name such as “LS and 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.

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 / LS and SAM-e Tutorial

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

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

Zones | Bill Of Materials

Name ↑	Humidifier	Space Temp	Space RH	Air Volume	Temp bH	%Outside Air	Load
Page 1 of 1   20   There are no records to display.							

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.

The screenshot displays the 'Load Sizing' interface for 'Zone(1)'. It features a navigation bar with tabs for 'Load Sizing', 'Humidifiers', 'Distributors', 'Controls', 'Accessories', and 'Summary'. The 'Load Sizing' tab is active, showing a progress indicator. The main content area is divided into several sections:

- Load Size Method:** Calculated
- Name:** Zone(1)
- System Type:** (Icons for different system types)
- Calculation Method:** (Icons for calculation methods)
- Duct Details:**
  - Duct Type: (Icons for duct types)
  - Duct Orientation: (Icons for duct orientations)
  - Duct Width (in.): 72
  - Duct Height (in.): 72
- Air Flow:**
  - Outside Air (%): 25
  - Air Volume (CFM): 20000
- Moisture Gains and Losses:**
  - Moisture Gains (lb/hr): 0
  - Vapour Losses (lb/hr): 0
- Outside:**
  - Altitude (f): 374.02
  - Outside Temp (°F): -11
  - Outside Humidity (%): 48.02
- Inside:**
  - Temp. Entering Humidifier (°F): 55
  - Space Design Temp (°F): 75
  - Space Design Humidity (%): 40
- Use Natural Exchange:**
- Use Economizer:**

On the right side, a 'Load Calculations' panel provides a summary of results:

- Humidification Load (H): 157.45 lbs/hr
- Total Humidification Load (Htot): 157.45 lbs/hr
- Absorption Distance: 0.37 - 2.29 ft
- Duct Velocity: 555.56 ft./min

Figure 5: Load Sizing

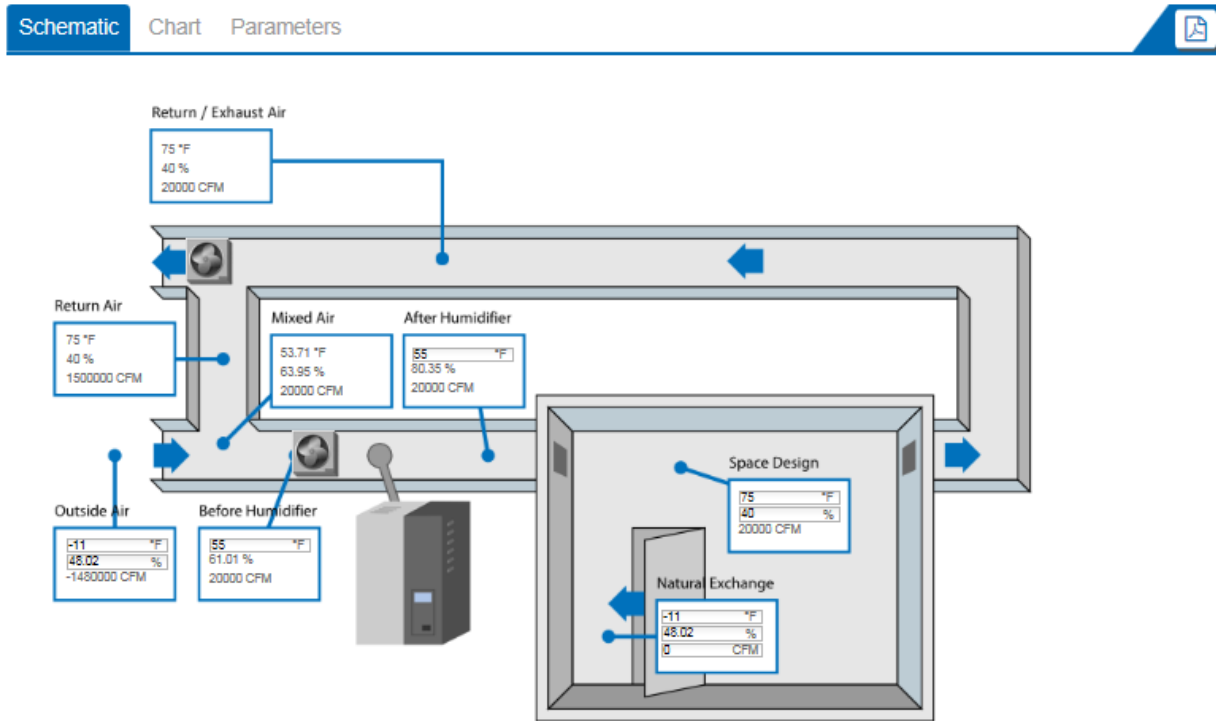


For this exercise, the following settings will be used:

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: 72 inches  
Duct Height: 72 inches
5. **Air Flow:**  
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.*  
Air Volume: 20000 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: 75 °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 157.45 lbs/hr and a duct velocity of 555.56 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 0.37 and 2.29 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.

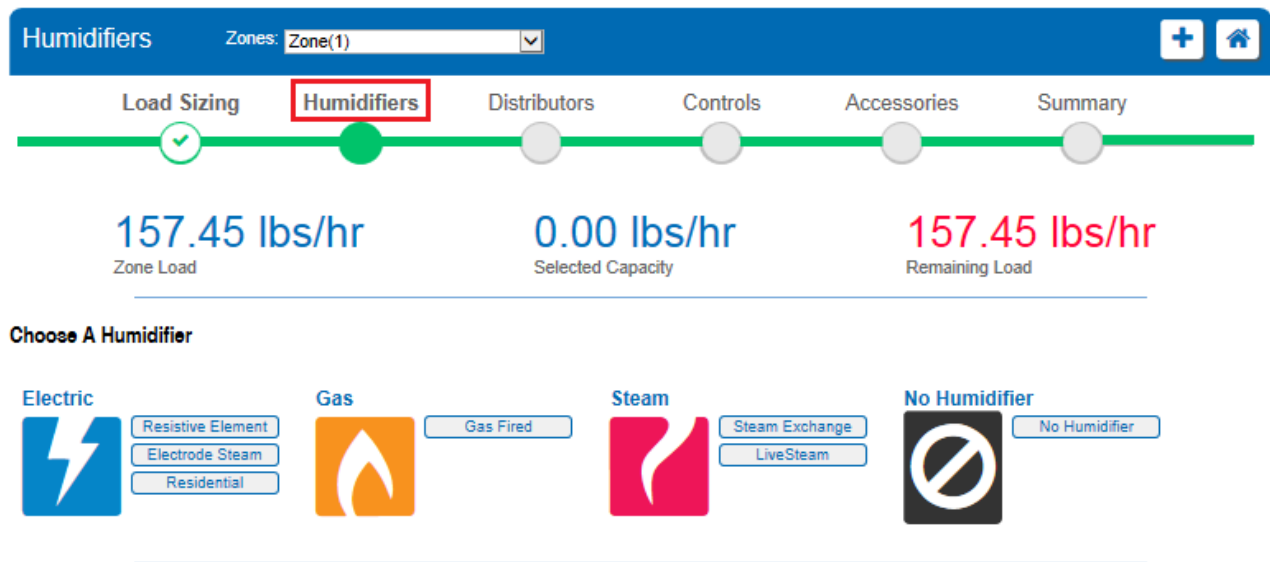


Figure 7: Humidifiers Tab

For this tutorial, select **LiveSteam** as the humidifier. LiveSteam humidifiers distribute steam from a central facility boiler into your building ventilation system.

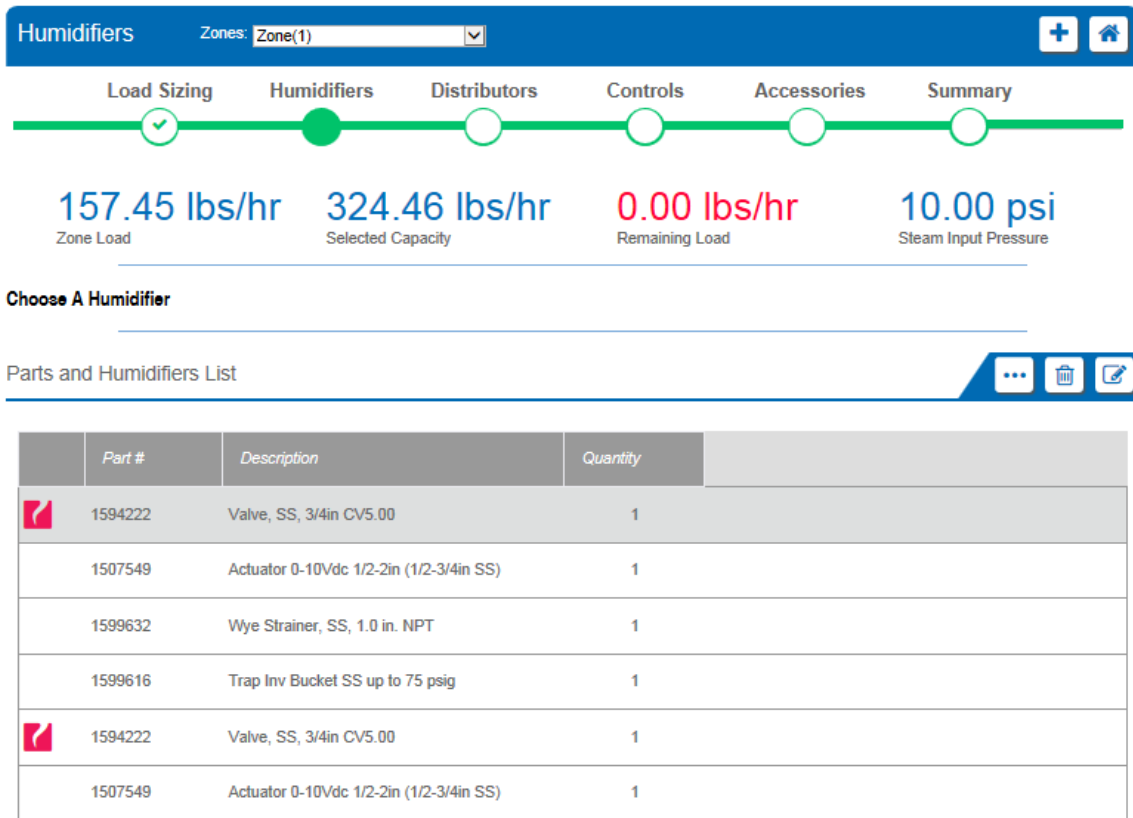
A **Choose Humidifier** dialogue box will appear asking for you to enter the **Steam Pressure** in psi. Values between 5 and 50 psi are acceptable, however for this project enter *10 psi*.

Next, change the **Type** to *Stainless Steel* and select **Get Valve Recommendations**. Help will then calculate the capacities of the available steam control valves and highlight a recommended valve. The recommended valve is the first one that exceeds the load calculated in the previous step. In this case, the CV = 5.00 valve should be highlighted with a capacity of 162.23 lbs/hr. Check the select bubble next to this valve selection.

The Choose Humidifier dialogue box will extend, allowing you to configure options for your valve selection. The following options will be used:

1. **Quantity: 1.**  
The quantity field allows you to use multiple smaller valves or redundant valves.
2. **Actuator: *Electric, 0 -10 VDC.***  
You can specify various types of actuators to meet the needs of different projects.
3. **Wye Strainer: *Stainless Steel.***  
A wye strainer filters debris and corrosion from the steam prior to the steam valve. All strainers have stainless steel filter screens, however, you can specify a stainless body, bronze body, or to provide a strainer from your own source.
4. **Primary Trap: *Stainless Steel, Bucket.***  
The primary trap removes condensate from humidifier. You can specify various types of traps or to provide your own. For stainless steel based project such as this one; the bucket trap is the most economical.

Click **Save** when you are done and Help will begin building a Bill of Materials as shown in Figure 8: Humidifier Bill of Materials.



**Figure 8: Humidifier Bill of Materials**

## Distributors Tab

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The next step is to add a distributor. Do this by clicking on the **Distributors** tab at the top of the page or the **Next** button below the humidifiers Bill of Materials. Help will present distributor options compatible with your project. Available options will vary with duct geometry, load, and humidifier type specified.

For this tutorial, select a **SAM-e Short Absorption Manifold**. The SAM-e short absorption manifolds are designed to fit a variety of duct sizes and offer the shortest absorption distances.

Selecting a SAM-e will cause a page extension that will allow you to configure your SAM-e. 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. In this case, the humidifier is a valve.
- 2. Tube Material: 304 Stainless Steel.**  
Either 304 or 409 stainless can be selected for tubes. 409 is a more economical material, but may discolor with time. 304 stainless is a higher grade stainless that will maintain its appearance for the life of the product.
- 3. Support Frame: Galvanized Steel.**  
Support frames allow the manifold assembly to be easily secured to the duct ceiling. Frames are available in Galvanized or Stainless Steel and are optional for horizontal flow ducts, but are required for vertical flow ducts.
- 4. Support Stand: None**  
In some applications, the SAM-e needs to be raised above the duct floor in order to accommodate trapping or to cross an obstacle. Support stands, available in 12 inch or 20 inch heights, allow for installation in this case. Selecting a support stand will reduce the tube height to fit the distributor in the duct.
- 5. Separator: SAM-e Header.**  
The SAM-e header can be used as a condensate separator to remove any condensate traveling with the boiler steam prior to it entering the distributor tubes. Alternatively an external separator can be used.
- 6. Distributor Trap: Cast Iron, F&T.**  
Select the steam trap that will remove condensate from the distributor. You can select various materials or to provide one from your own source.

7. **Insulation:** *Check box*

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

8. **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.


9. **Inlet Adapter Length:** *5 inches*

The SAM-e's inlet adaptor is available in 3 possible lengths (5, 10, 12ft.)

10. **Tube Spacing:** *12 inches.*

It is best practice to select the widest spacing that meets your available absorption distances. Wider tube spacing will result in fewer tubes minimizing both costs and heat losses.

**Configure Product**



Select distributor based on:

Zone Load: [v]  
Tube Material: 304 Stainless Steel [v]  
Support Frame: Galvanized Steel [v]  
Support Stand: None [v]  
Separator: SAM-e Header [v]  
Distributor Trap: Cast Iron, F&T [v]  
Insulation:   
Inlet Adapter: Automatically Select [v]  
Inlet Adapter Length: 5 [v]

	Tube Spacing	Tube Quantity	Absorption
<input type="radio"/>	3 in.	21	0.37 ft
<input type="radio"/>	6 in.	11	0.54 ft
<input type="radio"/>	9 in.	7	0.71 ft
<input checked="" type="radio"/>	12 in.	6	0.78 ft

**Solution**

Duct Width: 72 in  
Duct Height: 72 in  
Duct Orientation: Horizontal  
Absorption: 0.78 ft  
Distance to Bend: 0.78 ft  
Distance to Submicron: 2.34 ft  
Distance to Humidity Sensor: 3.9 ft  
Total weight: 100.67 lbs

**Figure 9: SAM-e Configuration**

After configuring the SAM-e you will be able to configure additional options for the distributor as well. Here you may add steam line reducers as well as steam and condensate hoses to your distributor.

Help will create a dynamic Bill of Materials for the distributor selection at the bottom of the page. This list will update as you configure your product. You may review this list as well as edit and make changes using the icons at the top right hand corner of the list.

Select **Next** when you are finished.

## Controls Tab

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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 modulating demand control signal, modulating high limit, and air proving switch.

Make the following selections as illustrated in Figure 10: Controls Configuration:

1. **Signal Type:** *Demand*.  
Demand signals send the humidifier a signal telling it the percentage at which it should operate as opposed to reporting a setpoint (transducer signal). LiveSteam humidifiers are only compatible with Demand signals and it is the only option available.
2. **Channels:** *Dual*.  
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. Dual modulation is commonly used in cases where the humidifier will be used with a modulating high limit control.
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. **Channel 2 Location:** *Duct*.  
The second channel will be the duct mounted modulating high limit stat.

6. **Include Air Proving Switch:** *Check box*

This on/off safety device prevents humidifier operation unless air is flowing in the duct.

7. **Include On/Off High Limit Switch:** *Leave unchecked*

This on/off safety device prevents condensation in the duct by stopping humidification if the duct humidity levels exceed a certain level. In this example, this is redundant as a modulating high limit is being used instead.

Controls Zones: Zone(1) + Home

Load Sizing Humidifiers Distributors **Controls** Accessories Summary

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: Demand Channels: Dual

Nortec Dual Channel Demand

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

GENERATE

**Figure 10: Controls Configuration**

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

Click **Next** to complete the selection.



## Accessories Tab

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 11: Accessories Tab. 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.

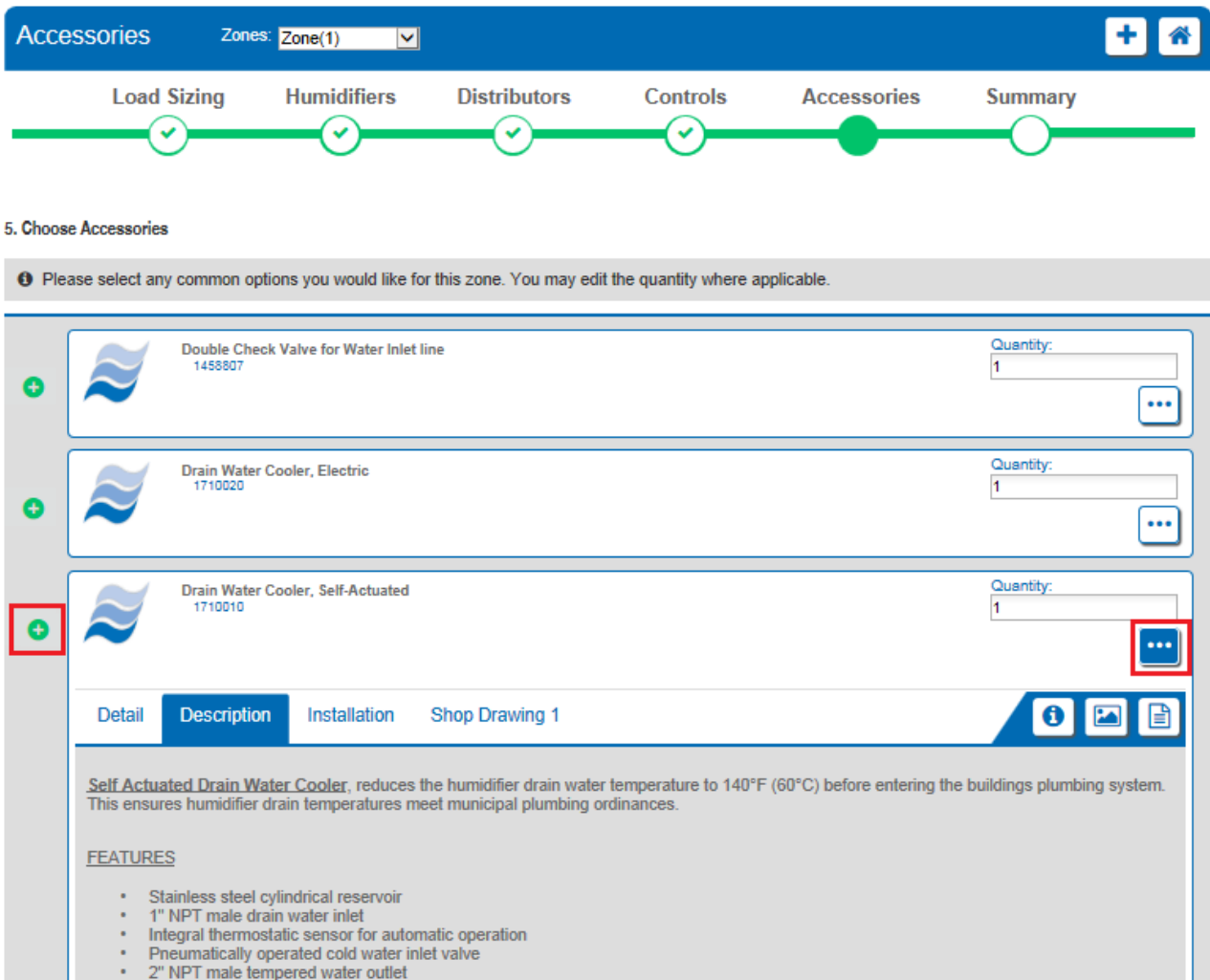





Figure 11: Accessories Tab

Selecting the **Show Details** icon, shown in Figure 11: Accessories Tab, 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.

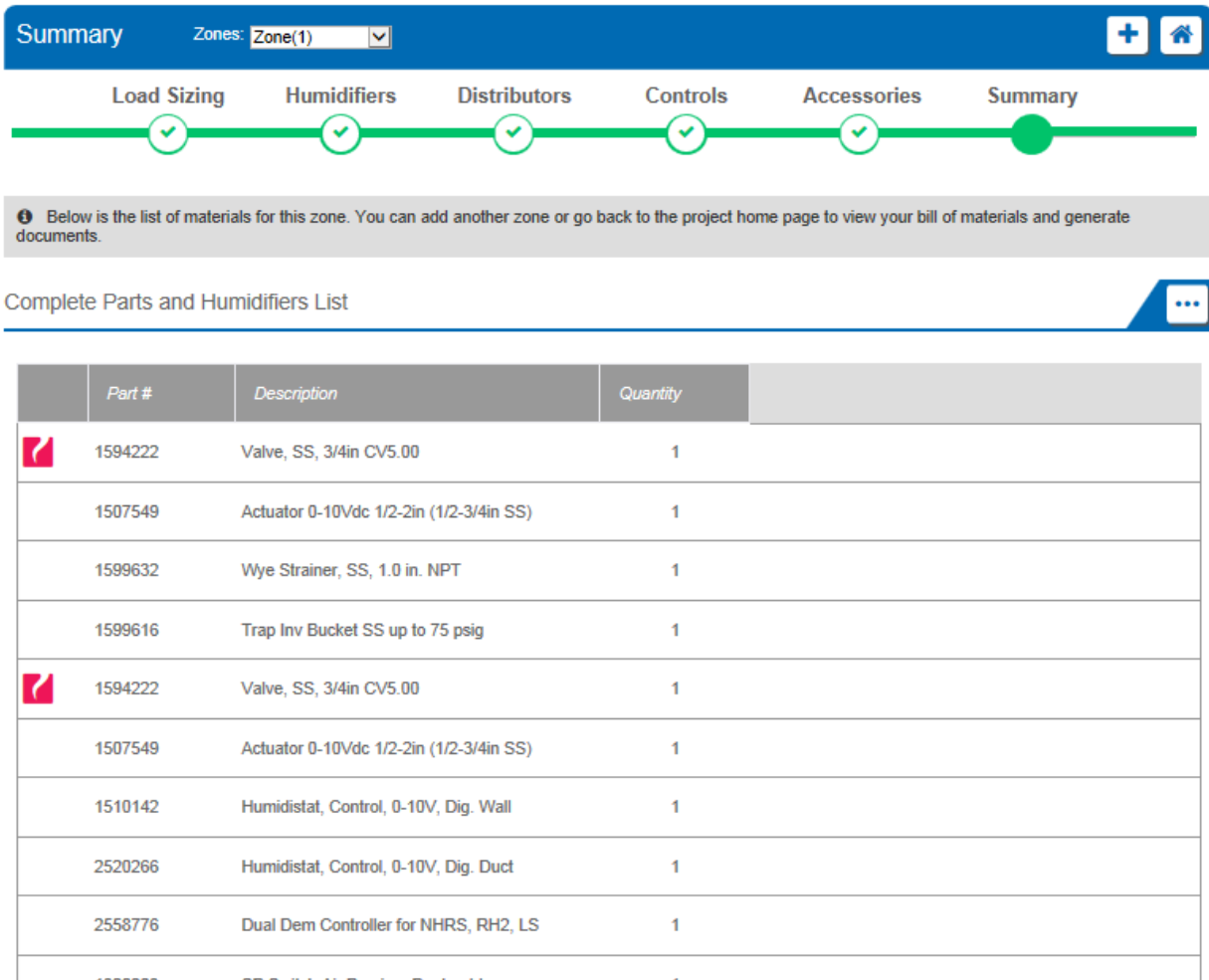
Select **Next** once you have finished adding any desired accessories.

## 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 12: Zone Summary.



The screenshot shows the 'Summary' tab interface. At the top, there is a blue header with the word 'Summary' and a dropdown menu for 'Zones' set to 'Zone(1)'. Below the header is a progress bar with six steps: 'Load Sizing', 'Humidifiers', 'Distributors', 'Controls', 'Accessories', and 'Summary'. The first five steps are marked with green checkmarks, and the 'Summary' step is highlighted with a larger green circle. Below the progress bar is a grey informational box with an information icon and text: '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.' Below this is a blue bar with the text 'Complete Parts and Humidifiers List' and a menu icon. The main content is a table with the following data:

	Part #	Description	Quantity
	1594222	Valve, SS, 3/4in CV5.00	1
	1507549	Actuator 0-10Vdc 1/2-2in (1/2-3/4in SS)	1
	1599632	Wye Strainer, SS, 1.0 in. NPT	1
	1599616	Trap Inv Bucket SS up to 75 psig	1
	1594222	Valve, SS, 3/4in CV5.00	1
	1507549	Actuator 0-10Vdc 1/2-2in (1/2-3/4in SS)	1
	1510142	Humidistat, Control, 0-10V, Dig. Wall	1
	2520266	Humidistat, Control, 0-10V, Dig. Duct	1
	2558776	Dual Dem Controller for NHRS, RH2, LS	1
	4330000	SS Duct 1/2-2in Duct 1/2-2in	1

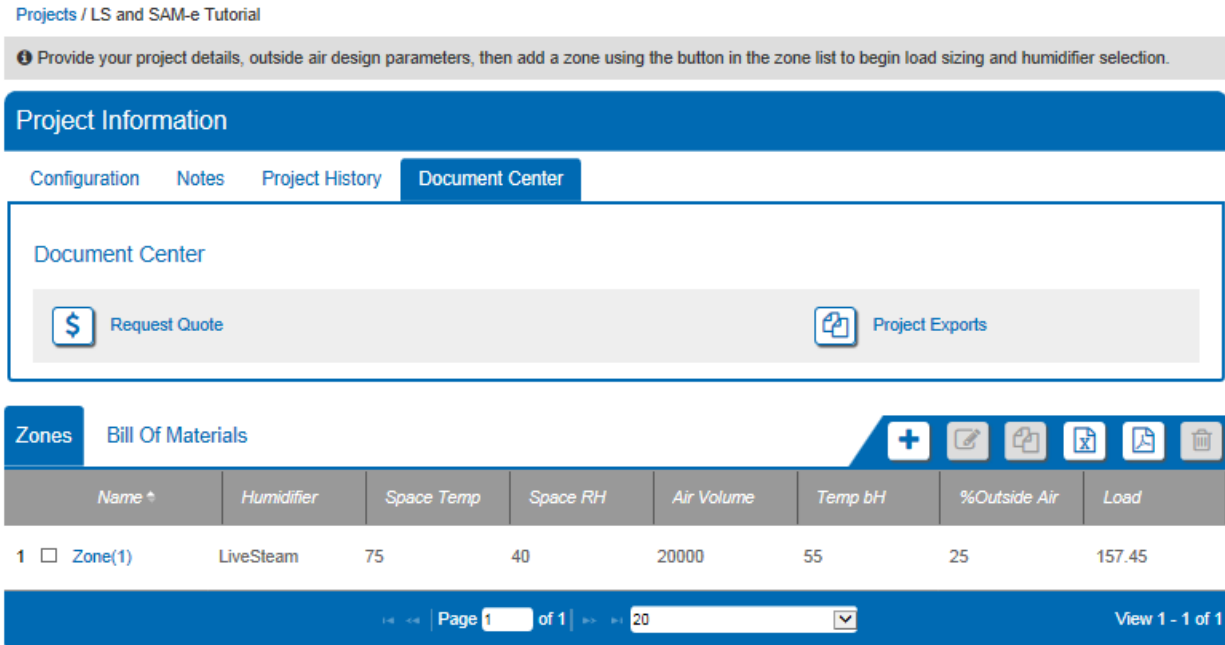
**Figure 12: Zone Summary**

The product selection for this zone has now been completed.

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

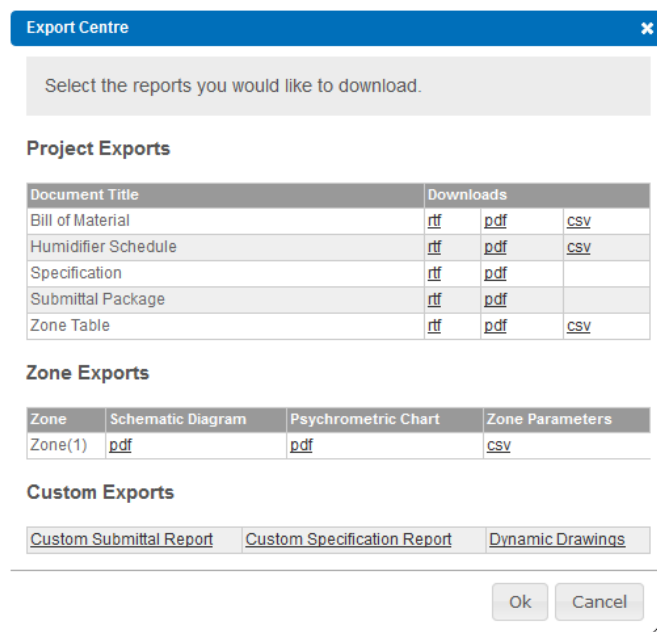
# Project Submittals and Requesting a Quotation

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 13: Document Center**

Selecting **Project Exports** will bring up a dialogue box as shown in Figure 14: Export Center.



**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 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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