



Help

Help Software Tutorial

Building a load sizing project with an
ME Series 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 ME Series Evaporative Media 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 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.

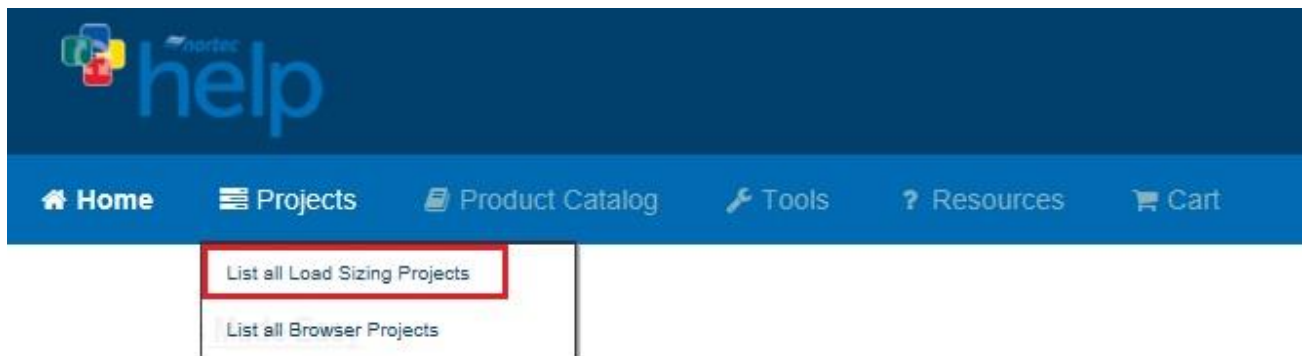


Figure 1: Projects List

Create a New Project

To create a new project, select the **Add** icon shown in Figure 2: Create Project to create a new Load Sizing Project.

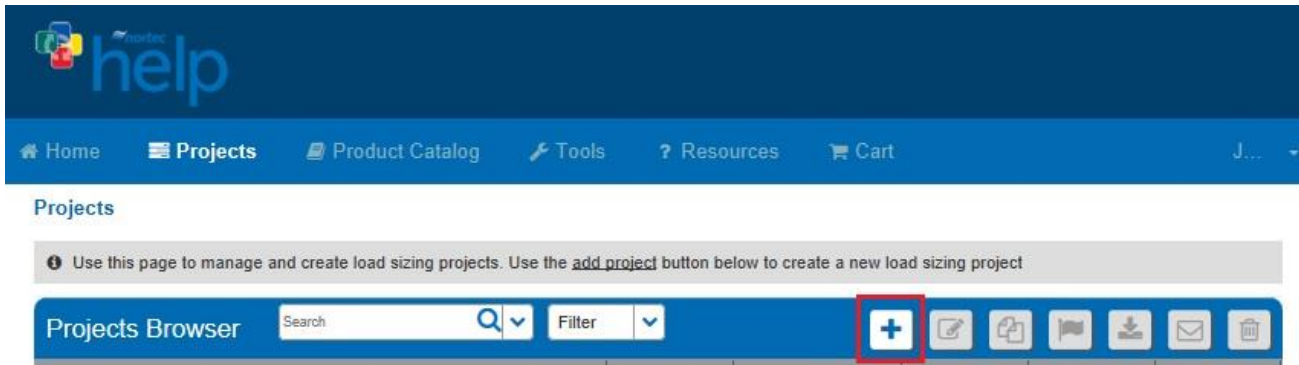


Figure 2: Create Project

A popup will appear, asking for project information. Give the project a name such as “ME Control”, 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.

The image shows a 'Add Project' dialog box with a blue header and a close button (X) in the top right corner. The dialog contains several form fields: 'Name' (text input with 'ME Control'), 'Project Number' (text input), 'Customer' (text input), 'Created' (date dropdown with '2015/08/04'), 'Required Date' (date dropdown), 'Units Of Measure' (dropdown with 'Imperial'), 'Chart Type' (dropdown with 'Psychrometric'), 'Use Weather Data' (checkbox checked), 'Country' (dropdown with 'Canada'), 'State/Province' (dropdown with 'Ontario'), and 'City' (dropdown with 'Ottawa Macdonald-Cartier Int'). At the bottom right, there are two buttons: 'SAVE' and 'CANCEL'.

Figure 3: Add Project Dialogue

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**.

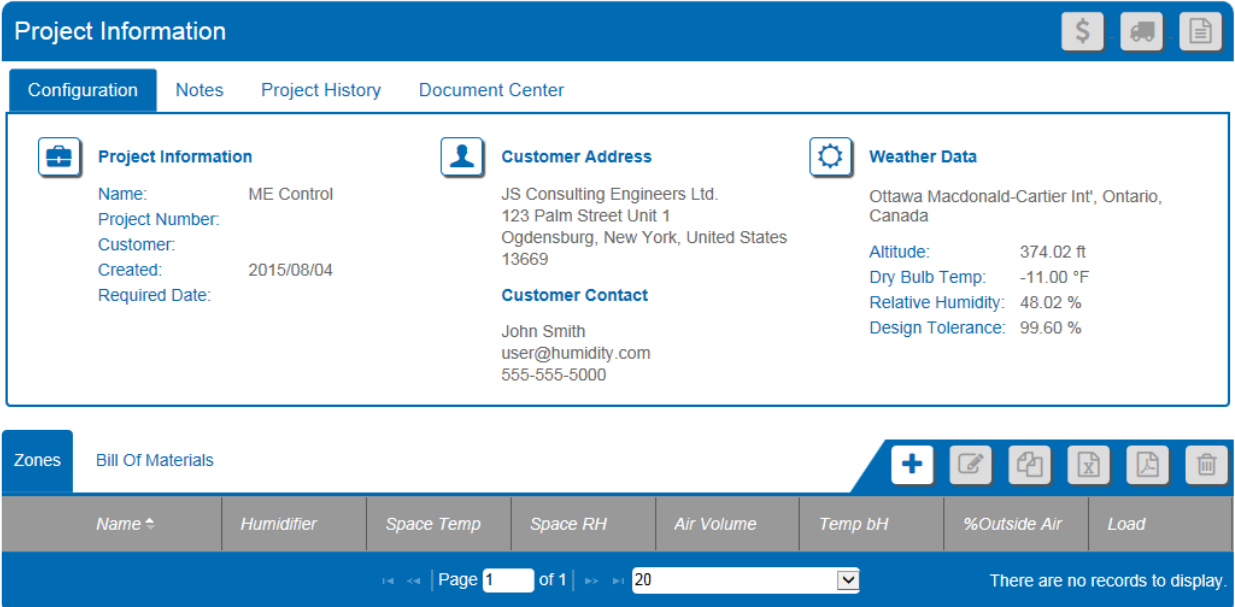


Figure 4: Project Home Page

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 5: Creating a Zone

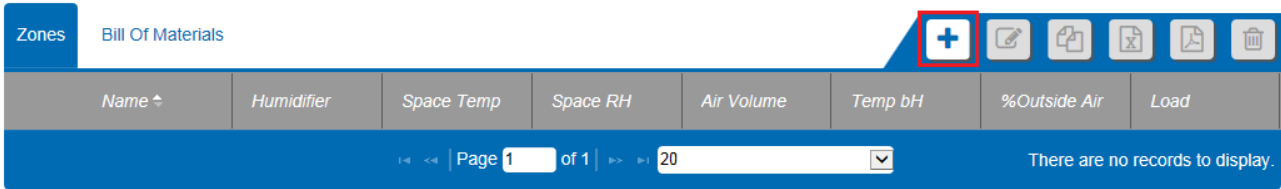


Figure 5: Creating a Zone

Load Sizing Tab

Once you click to add a zone, you will be redirected to the **Load Sizing** tab as shown in Figure 6: Load Sizing. The Load Sizing tab is where you will enter the specific parameters for your zone.

Load Sizing Zones: **Zone(1)**

Load Sizing
 Humidifiers
 Distributors
 Controls
 Accessories
 Summary

Load Size Method: **Calculated**

Name: **ME-1** System Type: Calculation Method:

Duct Details

Duct Type: Duct Orientation: Duct Width (in.): **72** Duct Height (in.): **48**

Air Flow

Outside Air (%): **25** Air Volume (CFM): **10000**

Moisture Gains and Losses

Moisture Gains (lb/hr): **0** Vapour Losses (lb/hr): **0**

Outside

Altitude (ft): **374** Outside Temp (°F): **-11** Outside Humidity (%): **48.02**

Humidifier Conditions

Leaving Temp. (°F): **55** Leaving Humidity (%): **63.56**
 Entering Temp. (°F): **61.37** Entering Humidity (%): **38.46**

Inside

Space Design Temp (°F): **72** Space Design Humidity (%): **35**

Use Natural Exchange:

Use Economizer:

Load Calculations

Humidification Load (H): **62.1 lbs/hr**
 Total Humidification Load (Htot): **62.1 lbs/hr**
 Absorption Distance: **0 ft**
 Duct Velocity: **417 ft./min**

Figure 6: 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. **Name:** ME-1
3. **System Type:** Ensure that In Duct Humidification is selected
By default Help will select components to distribute steam in duct unless you specify that it will be in-space.
4. **Calculation Method:** *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* calculation requires the user to either enter the air temperature entering or leaving the humidifier. Inputting an *Entering Temp* indicates *Adiabatic Cooling* where Help will calculate the cooling achieved and discharge temperature from the humidifier. *Adiabatic Humidification* is indicated by inputting a *Leaving Temp* value. Help will then calculate the required upstream temperature to offset the cooling effect through the humidifier.
5. **Duct Details:**
Duct Type: *Rectangular*
Duct Orientation: *Horizontal*
Duct Width: 72 inches
Duct Height: 48 inches
6. **Air Flow:**
Outside air: 25 %
Air Volume: 10000 CFM
7. **Moisture Gains and Losses:**
Moisture gains: 0 lb/hr
Moisture Losses: 0 lb/hr
8. **Outside:** Select the *Use Weather Data* icon
9. **Inside:**
Leaving Temp: 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: 35% RH. *This is the humidity setpoint of the space you are humidifying.*
10. **Natural Exchange:** Leave unselected
11. **Use Economizer:** Leave unselected

Scroll down and review the schematic drawing shown in Figure 7: 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.

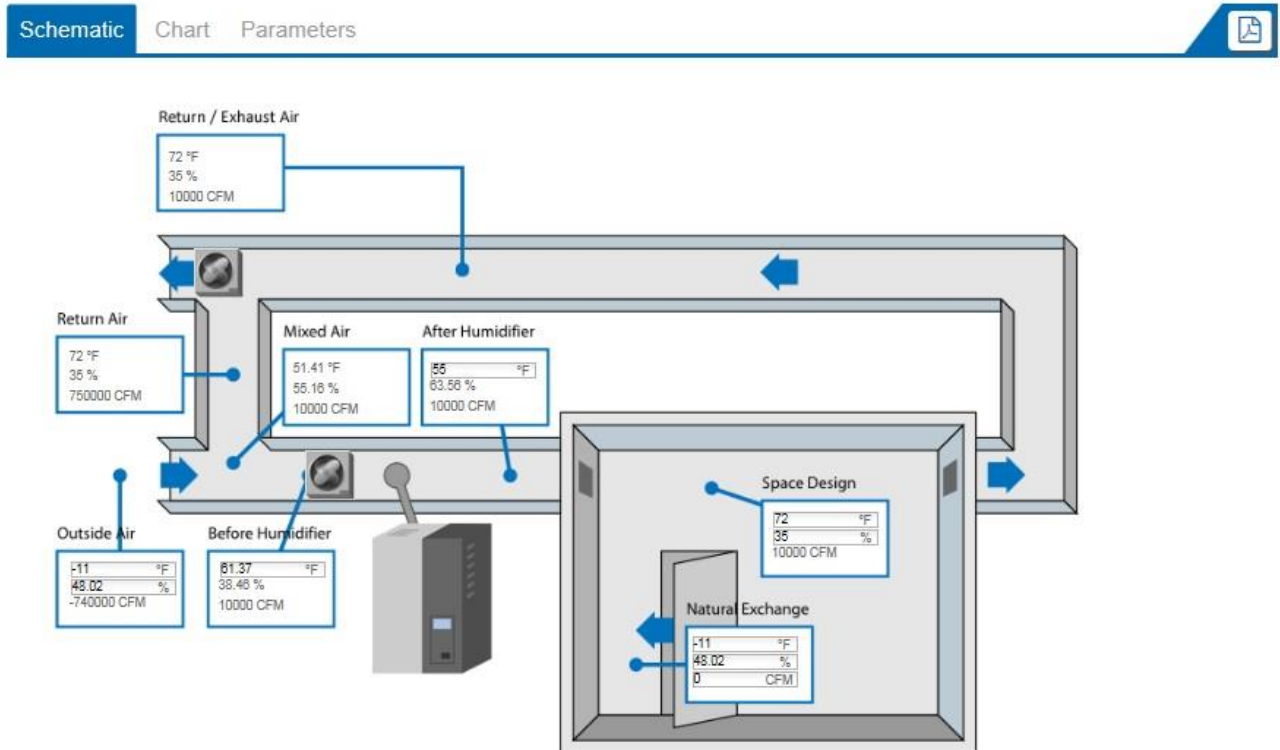


Figure 7: Schematic Drawing

Back at the top of the Load Sizing page, the blue **Load Calculations** box will have a calculated humidification load of 62.14 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.

The schematic drawing now shows an upstream temperature of 61.37 °F, which has been calculated by Help 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 8: Humidifiers Tab or by selecting the **Next** button below Load Sizing.

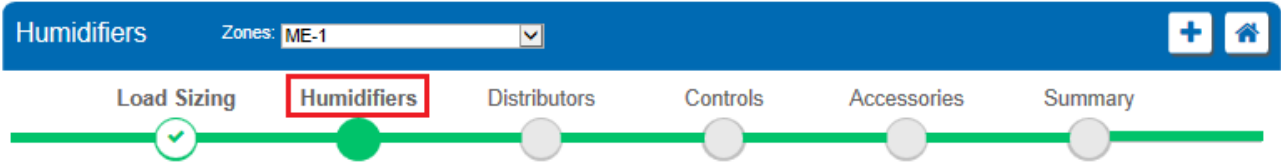
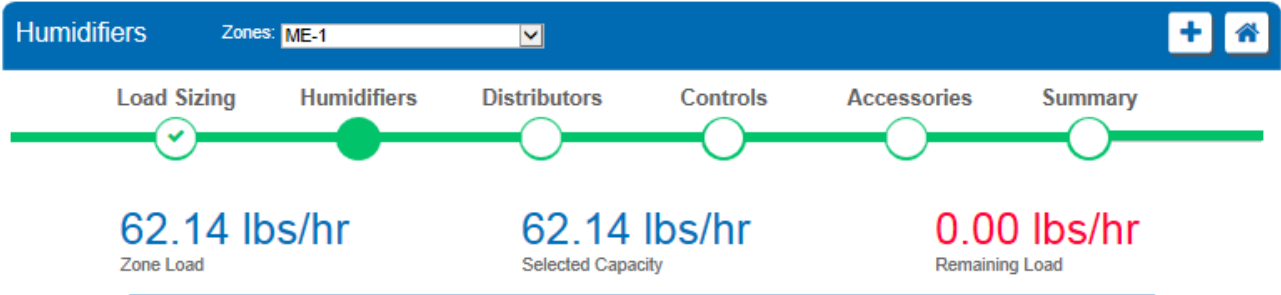


Figure 8: Humidifiers Tab

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

For this tutorial, select the **Adiabatic ME Series**.



2.1 Choose A Humidifier



Figure 9: Humidifier Selection

ME Series 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 ME Series button will expand the window and allow you to select and customize your model.

There are 2 models available:

1. **ME Control** models are top-range, in-duct 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.
2. **ME Direct Feed** models manage humidity output with On/Off controls. The standard ME Direct Feed hydraulic unit consists of a hydraulic manifold block without valves. However, there are two control options available. Stage control requires that the manifold be equipped with stage valves which can be controlled by a customer supplied controller or the ME Direct Feed Stage Control unit. On/Off control is the second option and it consists of inlet, drain and purge valves being controlled by either a supplied control system or the ME Direct Feed On/Off control unit. 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.

For this tutorial select **ME Control** which is the default. The selection can be seen in the figure below:

The screenshot displays the 'ME Series 1' configuration tool. On the left, there is a product image of the humidifier unit. To its right, a list of configuration options is provided, each with a dropdown menu:

- Model: ME Control
- Media: Fiberglass Pad
- Hydraulic Unit Handling (looking in direction of airflow): Left
- Hydraulic Unit Position: External
- Select Width Code: W1800
- Select Height Code: H1125
- Chosen Media Depth: 4 inch
- Voltage: 110-120/1/60
- Separator: Automatic

On the right side, a 'Solution' panel lists the following technical specifications:

- 1 x Condaire ME Control Fiber 110 V External
- ME-C-1800-1125-F75
- Control Panel: ME-CONTROL2-3STAGE
- Hydraulic Unit Code: ME_HYDRAULIC3ST
- Media Module: MEDIA-1800-1125-F75
- Efficiency Required: 42.9 %
- Actual Media Efficiency: 71 %
- Air Velocity: 417 ft./min
- Media Face Velocity: 729 ft./min
- Control Steps: 3
- Pressure Drop: 0.26 in. H2O
- Separator: MESEP-1800-1125-F
- Separator Face Velocity: 748 ft./min
- Separator Pressure Drop: 0.11 in. H2O
- Total Pressure Drop: 0.37 in. H2O

Figure 10: ME Control Selection




Then select the following options for the humidifier:

1. **Media:** Fiberglass Pad
You may select the humidifying/cooling material type used. Another option is polyester fleece.
2. **Hydraulic Unit Handling:** Left
3. **Hydraulic Unit Position:** External
The unit can be mounted either inside or outside the duct. Exterior mounting allows the majority of service work to be carried out without having to shut down and enter the air handling unit.
4. **Select Width Code:** W1800
Select the width code for the unit based on duct specifications. W1800 is the recommended selection.

Select Height Code: H1125S
Select the height code for the unit based on duct specifications. H1125s is the recommended selection.
5. **Choose Media Depth:** 4 inch
Select the thickness of the media. The recommended setting is 4 inches.
6. **Voltage:** 110-120/1/60
Select the power circuit requirement for the unit
7. **Separator:** Automatic

Once you have completed the selection, the final solution will be displayed in the **Solution** window on the right hand side of the page shown in Figure 10: ME Control Selection.

Below the configuration window you have access to the product description as well as to other specifications and 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.

Below the additional product information tabs is a list of humidifier specific accessories. They can be added to the humidifier selection by inputting a quantity and selecting the green plus sign to the left of the desired accessory. Clicking the **More Info** button will give you additional information on each accessory.

In this tutorial, a Conductivity Controlled Drain and a Leak Detection Sensor will be added to the humidifier shown in Figure 11: Humidifier Options

Note: For most items Help has calculated the correct quantity of the option required. The cylinder quantity, however, can be user defined

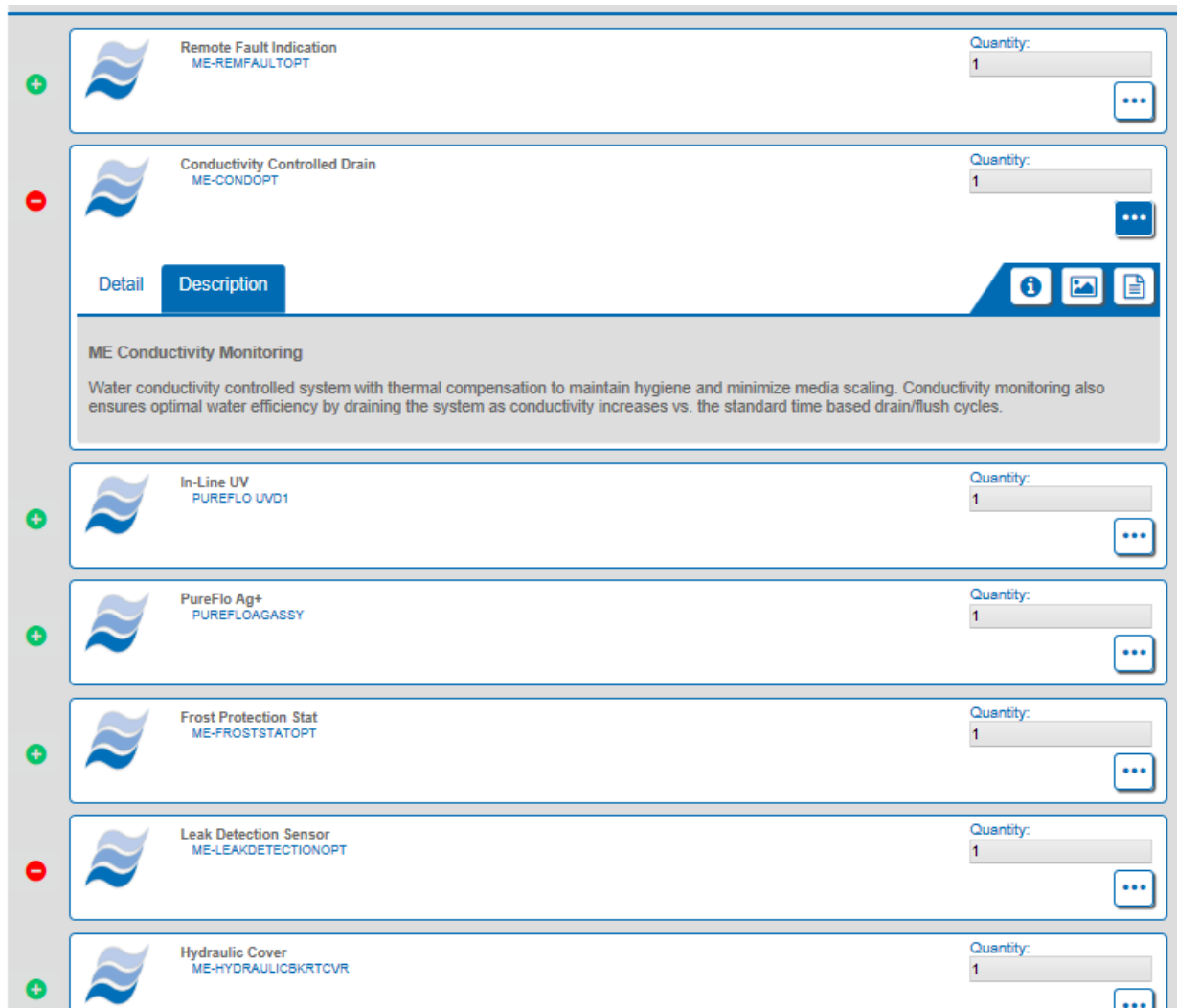


Figure 11: Humidifier Options

Below the accessories list will be a bill of materials for the humidifier, which will update as you change or add items to your humidifier selection.

Distributors Tab

Once you select the Next button, you will be taken to the distributors page where Help will usually present distributor options that are compatible with your project. However, the ME series does not require a distributor and Help will prompt you to proceed to the next step.

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, the humidifier will be configured to accept a **0 – 10 VDC** demand control signal provided by a BACnet IP building automation system. The unit will also be configured for 2 way communication with the automation system so that various control points can be monitored and changed from a central terminal. The humidifier will include an air proving switch and high limit humidistat to protect against excessive moisture in the duct.

Begin configuration by selecting **Controls by Others**, indicating that the primary control signal will come from a third party automation system.

Next select the following options as shown in Figure 12: Control Dialogue:

1. **Signal Type: On/Off**
Demand signals instruct the humidifier to operate at certain percentages of its capacity. Alternatively, 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. On/Off signal simply turn the humidifier on to a set point or off.
2. **Channels: Single**
Select whether you will have one or two modulating control signals controlling the humidifier. If two signals are selected the humidifier will operate until the first signal has been satisfied before becoming idle.
3. **Channel 1 Location: Duct with Integrated Keypad**
Select the primary control signal type to control the humidifier.
4. **Include Air Proving Switch: Check Box.**
This on/off safety device prevents humidifier operation unless air is flowing in the duct.
5. **Include On/Off High Limit Switch: Check Box.**
This on/off safety device prevents condensation in the duct by stopping humidification if the duct humidity levels exceed a certain level.

6. Building Automation System Gateway: *None*

The NH-EL includes built-in BACnet IP, BACnet MS/TP, and Modbus as a standard feature. If a BTL certified BACnet protocols or LonWorks is required, select one of these options to include an optional gateway card configured for the respective protocol.

Controls Zones: ME-1

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: Single

Nortec Single Channel Demand

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

GENERATE

Figure 12: Control Dialogue

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

Parts and Controls List

Part #	Description	Quantity
1329203	SP Switch Air Proving, Duct, mtd.	1
2548732	Humidistat, On/Off, High Limit, Dig. Duct	1
2548732	Humidistat, On/Off, High Limit, Dig. Duct	1

Figure 13: Controls Selection Results

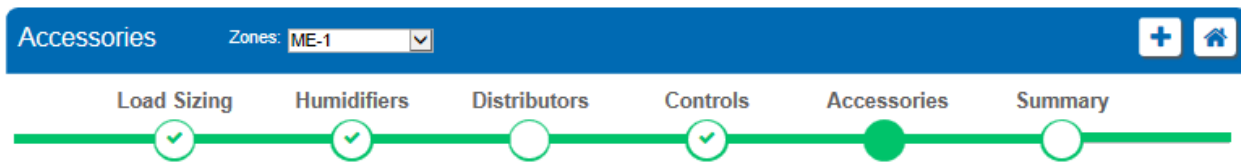
Click **Next** to complete the selection.

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, an electric drain water cooler will be added to reduce the drain water temperature before it is returned to the building plumbing system. To include this item, click on the Accessories button, select one “Drain Water Cooler, Electric” and click Save as shown in Figure 14: Accessories.



5. Choose Accessories

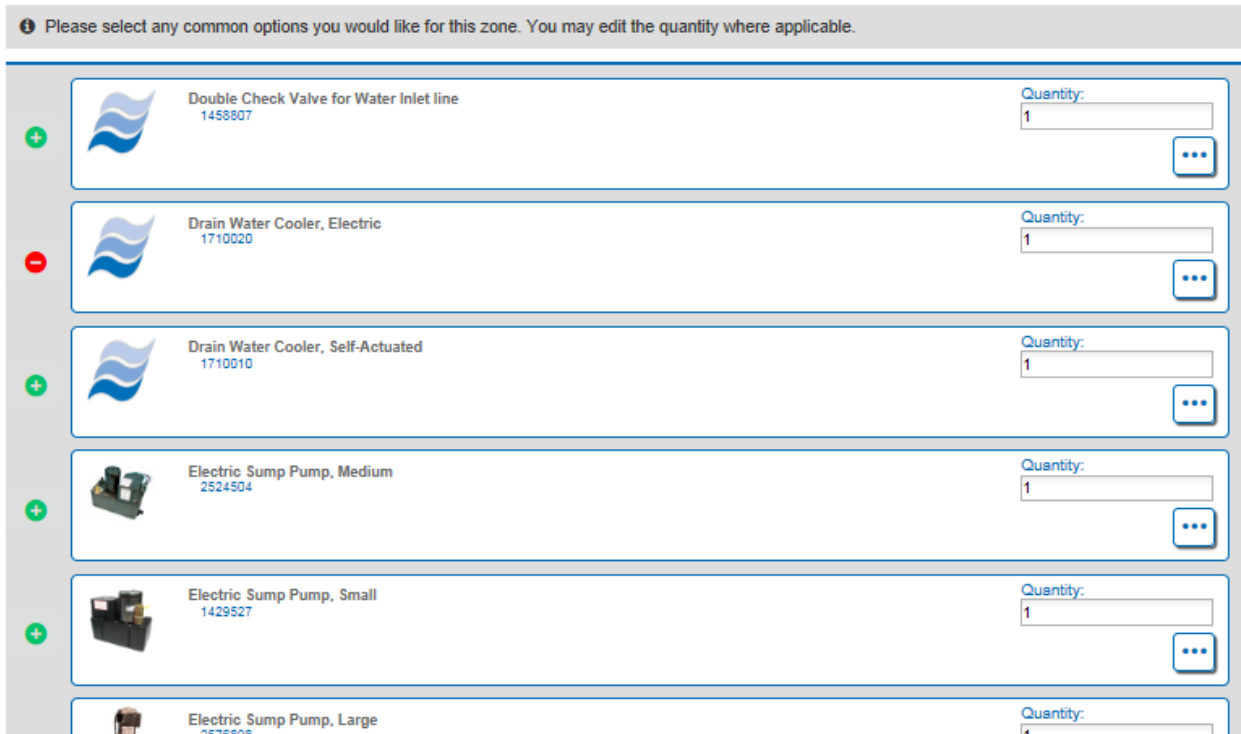


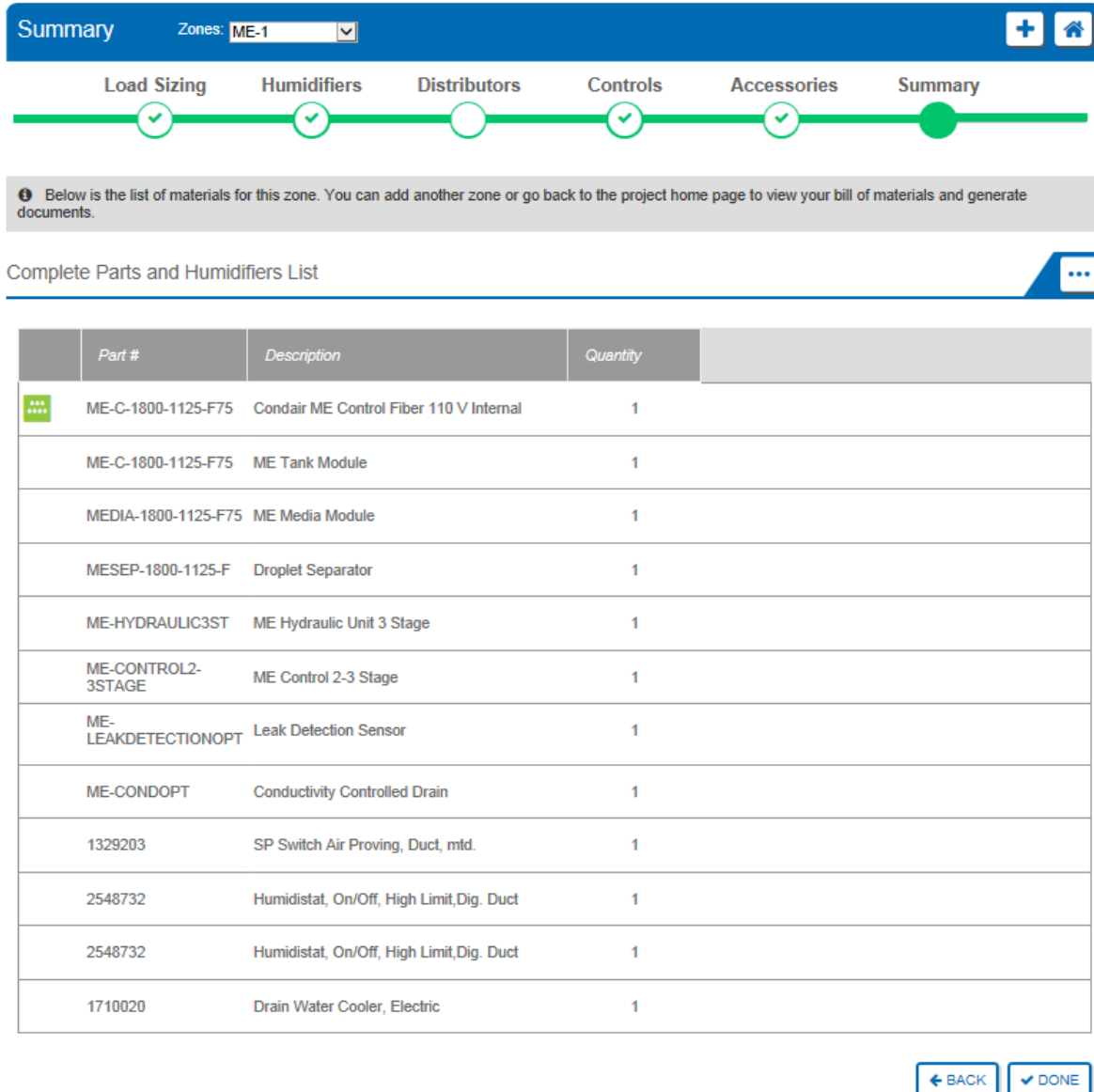
Figure 14: Accessories

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 15: Zone Summary



The screenshot shows the 'Summary' tab for Zone ME-1. A progress bar at the top indicates the completion status of various components: Load Sizing (checked), Humidifiers (checked), Distributors (unchecked), Controls (checked), Accessories (checked), and Summary (checked). Below the progress bar, a message states: '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.'

The main content area is titled 'Complete Parts and Humidifiers List' and contains the following table:

	Part #	Description	Quantity
***	ME-C-1800-1125-F75	Condair ME Control Fiber 110 V Internal	1
	ME-C-1800-1125-F75	ME Tank Module	1
	MEDIA-1800-1125-F75	ME Media Module	1
	MESEP-1800-1125-F	Droplet Separator	1
	ME-HYDRAULIC3ST	ME Hydraulic Unit 3 Stage	1
	ME-CONTROL2-3STAGE	ME Control 2-3 Stage	1
	ME-LEAKDETECTIONOPT	Leak Detection Sensor	1
	ME-CONDOPT	Conductivity Controlled Drain	1
	1329203	SP Switch Air Proving, Duct, mtd.	1
	2548732	Humidistat, On/Off, High Limit, Dig. Duct	1
	2548732	Humidistat, On/Off, High Limit, Dig. Duct	1
	1710020	Drain Water Cooler, Electric	1

At the bottom right of the interface, there are two buttons: '← BACK' and '✓ DONE'.

Figure 15: 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.

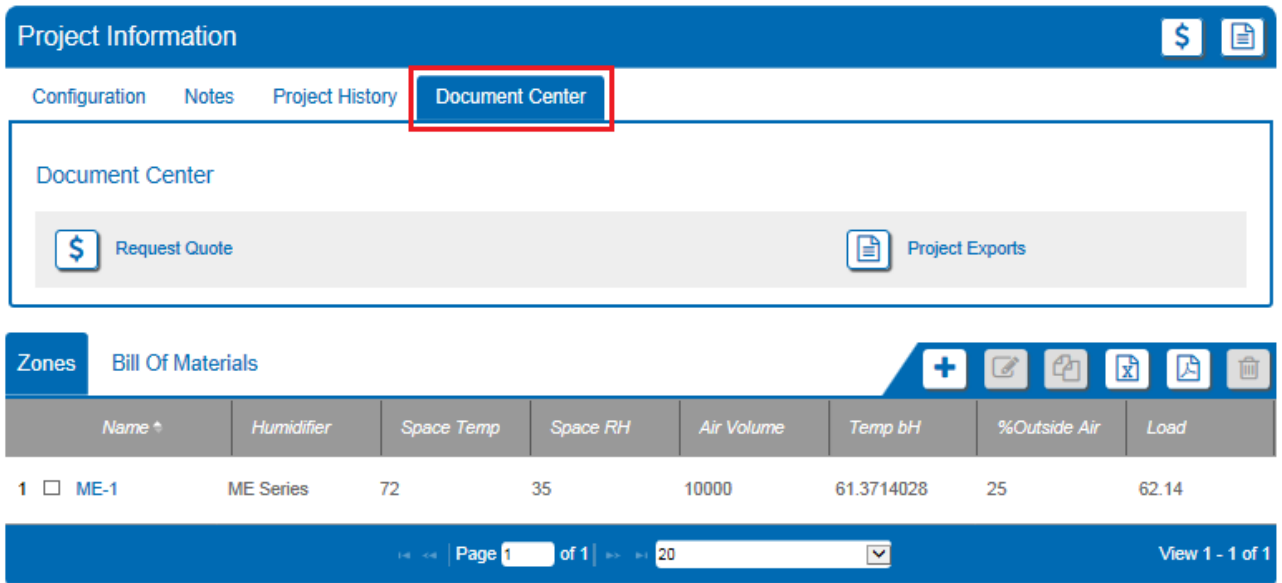


Figure 16: Document Center

Selecting **Project Exports** will bring up a dialogue box as shown in Figure 17: Export Center.

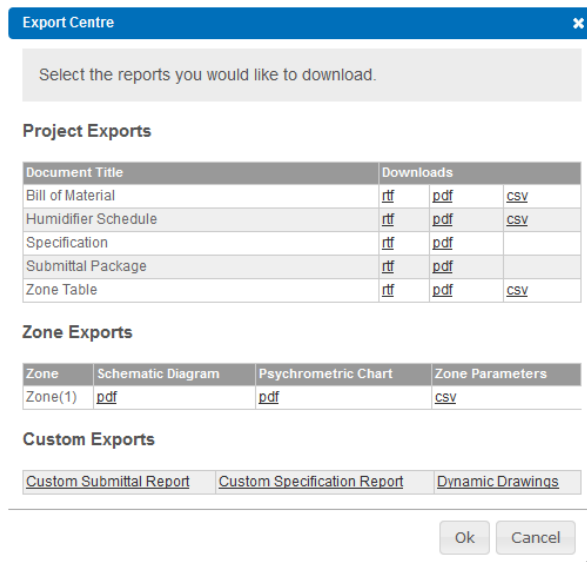


Figure 17: Export Center

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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