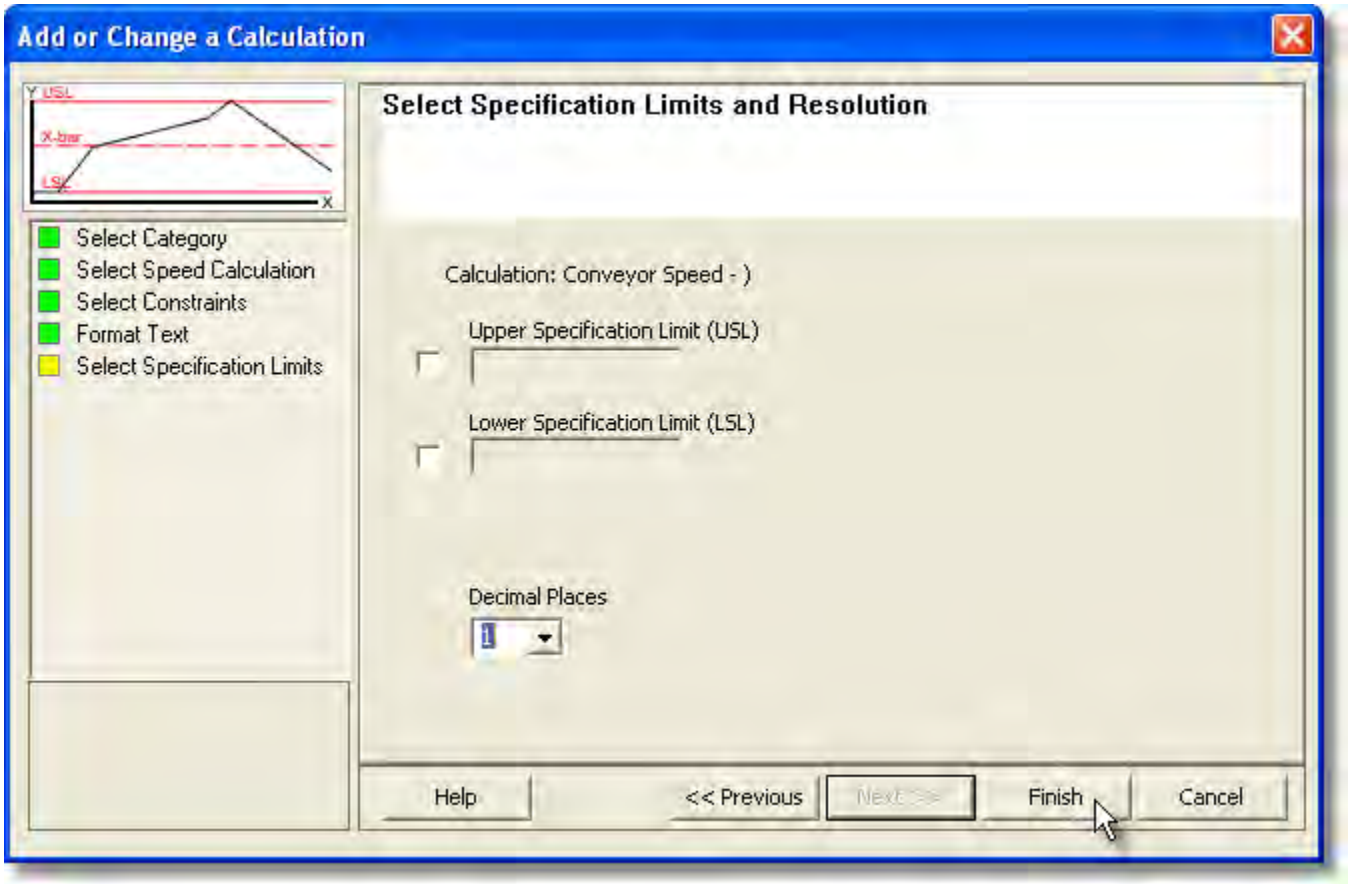


12) Select the ***Finish*** command button to complete the wizard and display the new calculation data in the selected template cell.

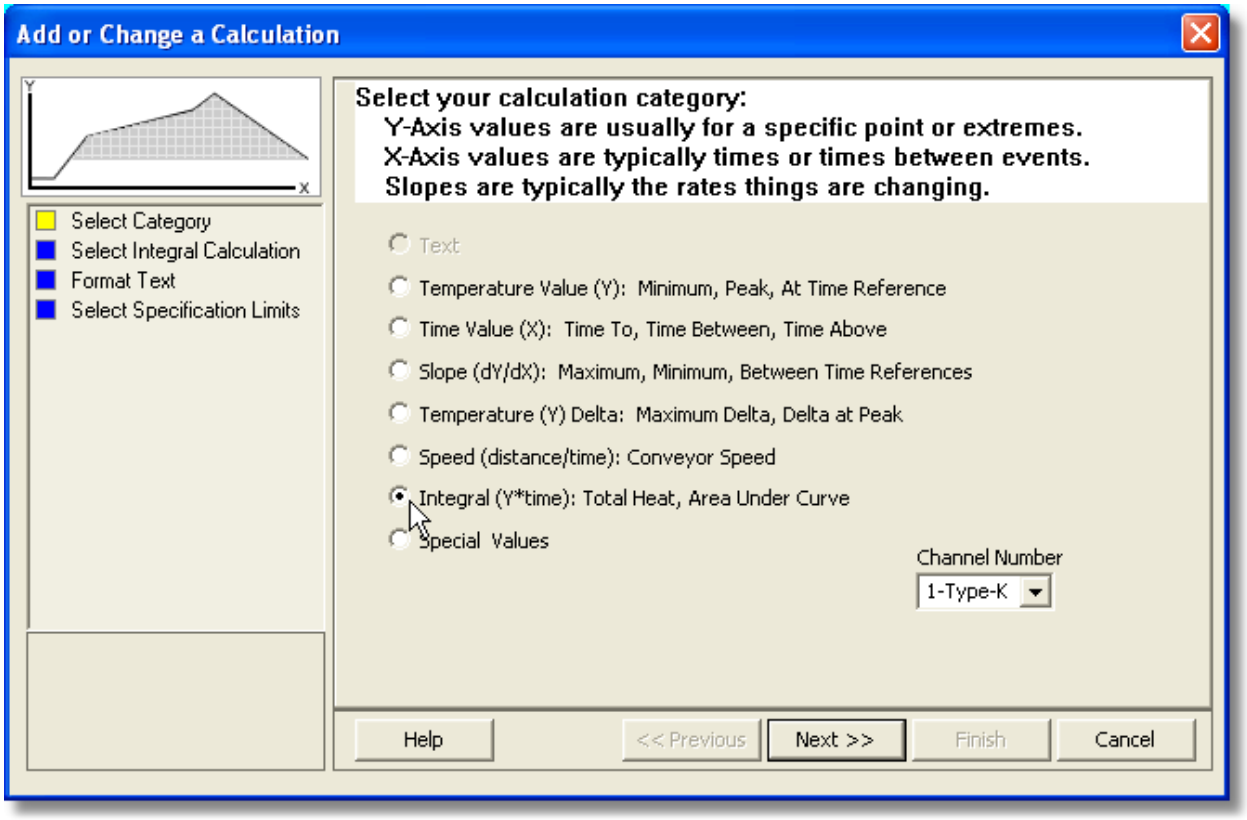
5.4.3.2.1.6. Integral (Y*time)

<u>To add or edit Speed (distance/time) content:</u>

1) Right-click a template cell and a shortcut menu appears.
2) Select ***Add Content*** or ***Edit Content*** from the shortcut menu and the ***Add or Change a Calculation*** wizard appears.

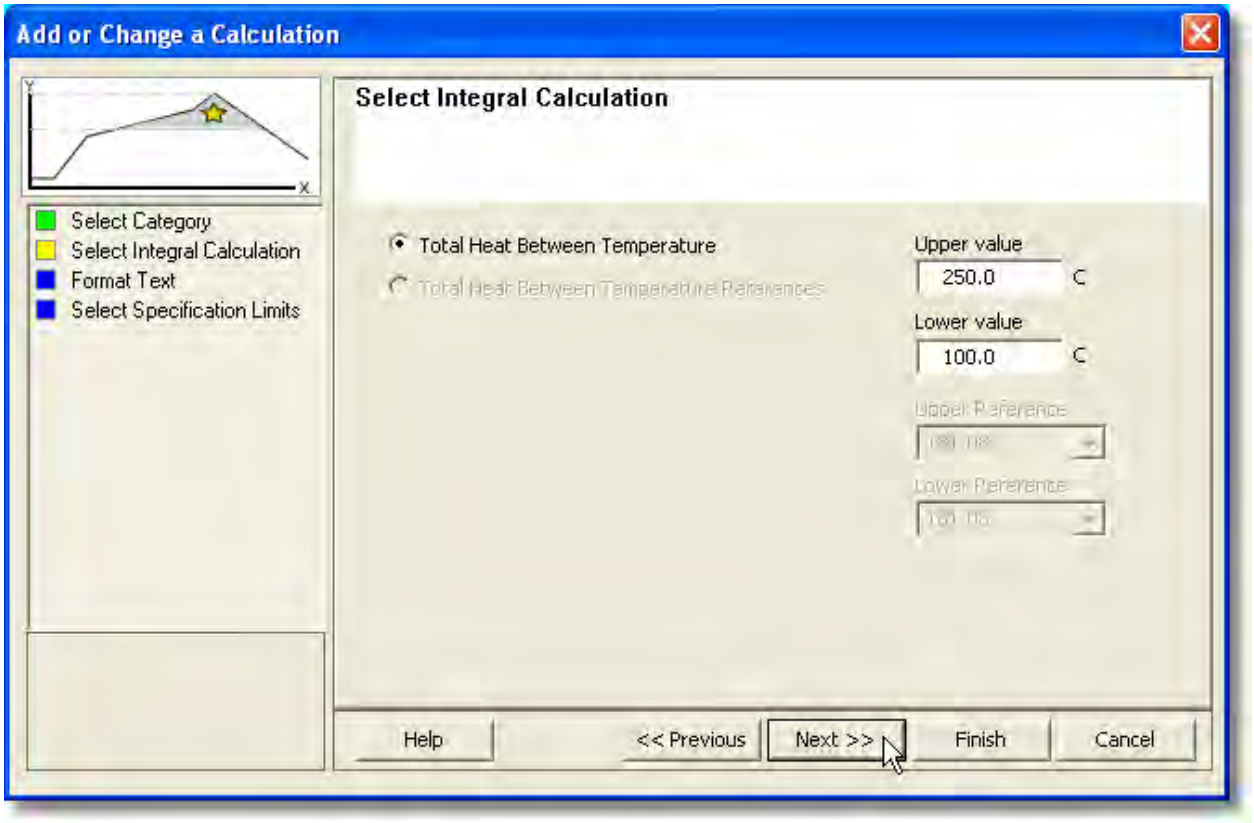
> When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.
>
> Current Completed Remaining

3) Click ***Intergral (Y*time)*** and which channel to derive the data from

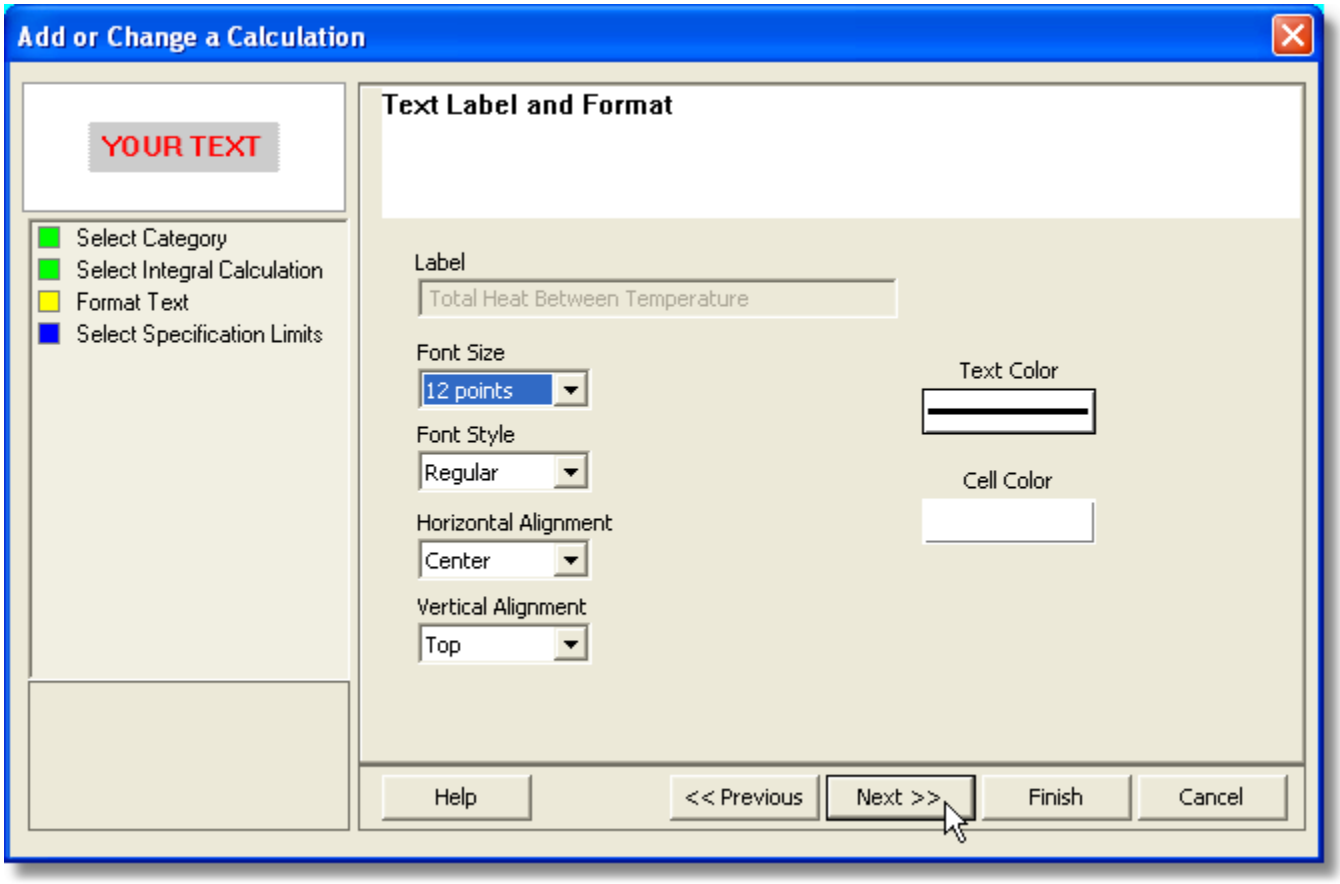


4) Select the ***Next*** command button.
5) Enter the Lower value to define the base of the integral calculation and an Upper value to define maximum value to include in the integral.

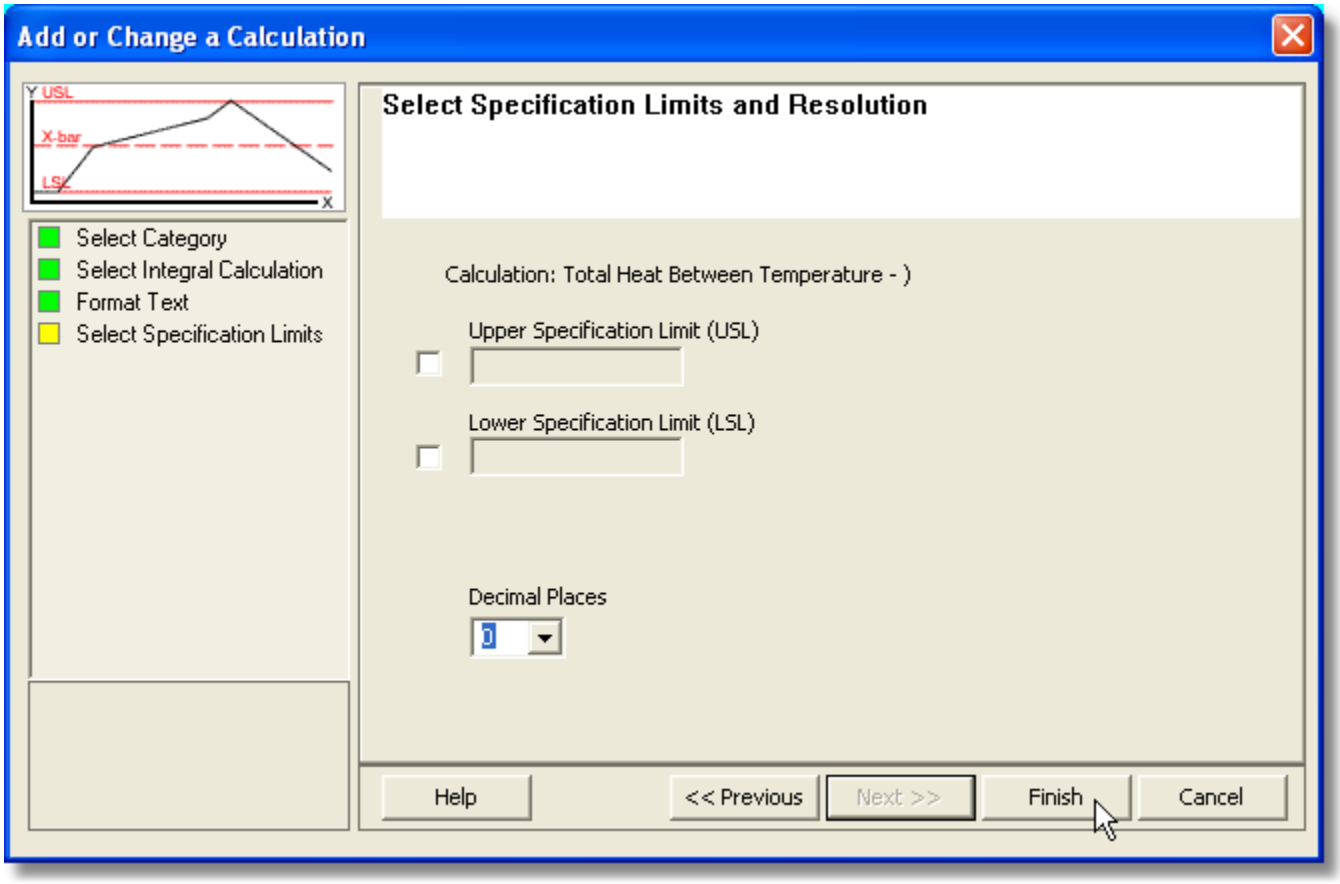
To not restrict the maximum value of the integral, a very large value can be set for the Upper value.



6) Select the ***Next*** command button.
7) Select desired text formatting options.



8) Select the ***Next*** command button.
9) Select Specification Limits and Units. If these values are violated colored bars will appear in the formatted template cell. Refer to topic ***Software>Page Tabs>Spreadsheet>Template>Specification Limit Indicators*** for more information.



10) Select the ***Finish*** command button to complete the wizard and display the new calculation data in the selected template cell.

5.4.3.2.1.7. Special Value

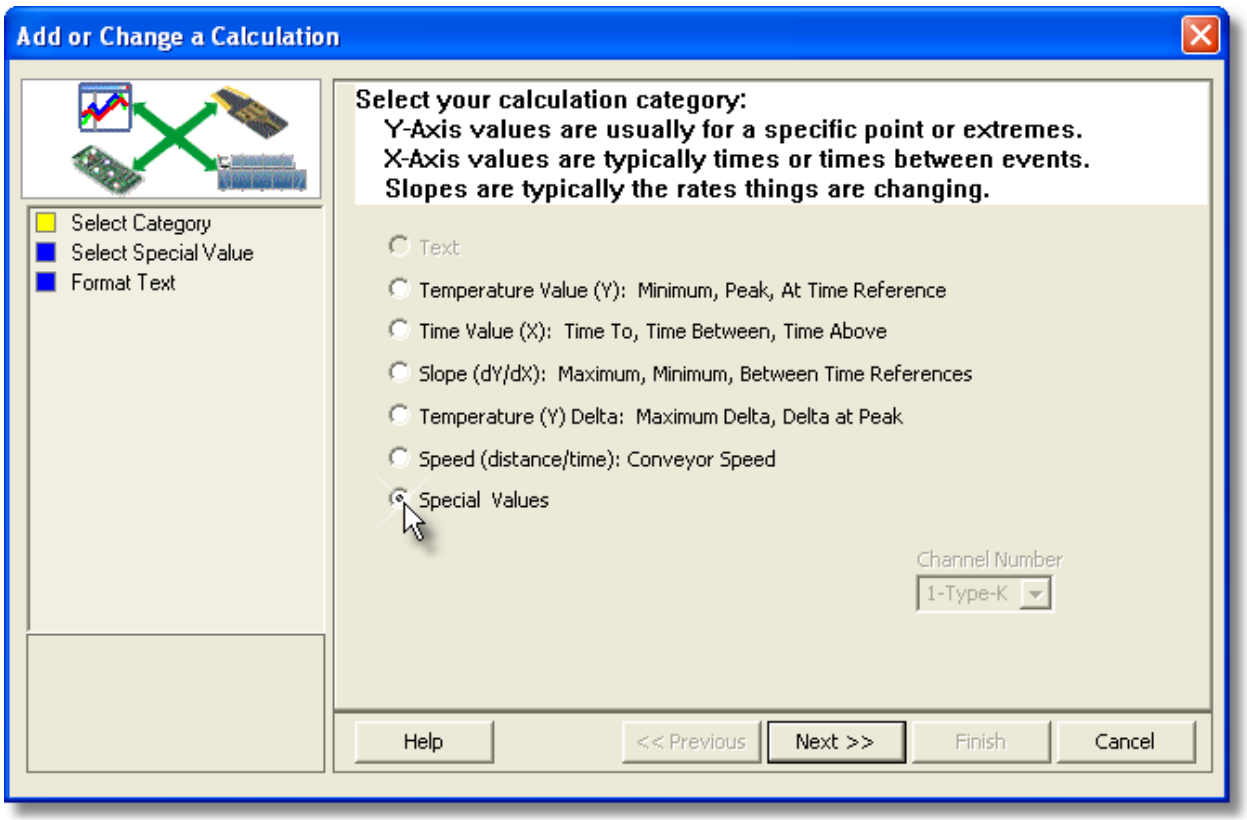
<u>To add or edit Special Value content:</u>

1) Right-click a template cell and a shortcut menu appears.
2) Select ***Add Content*** or ***Edit Content*** from the shortcut menu and the ***Add or Change a Calculation*** wizard appears.

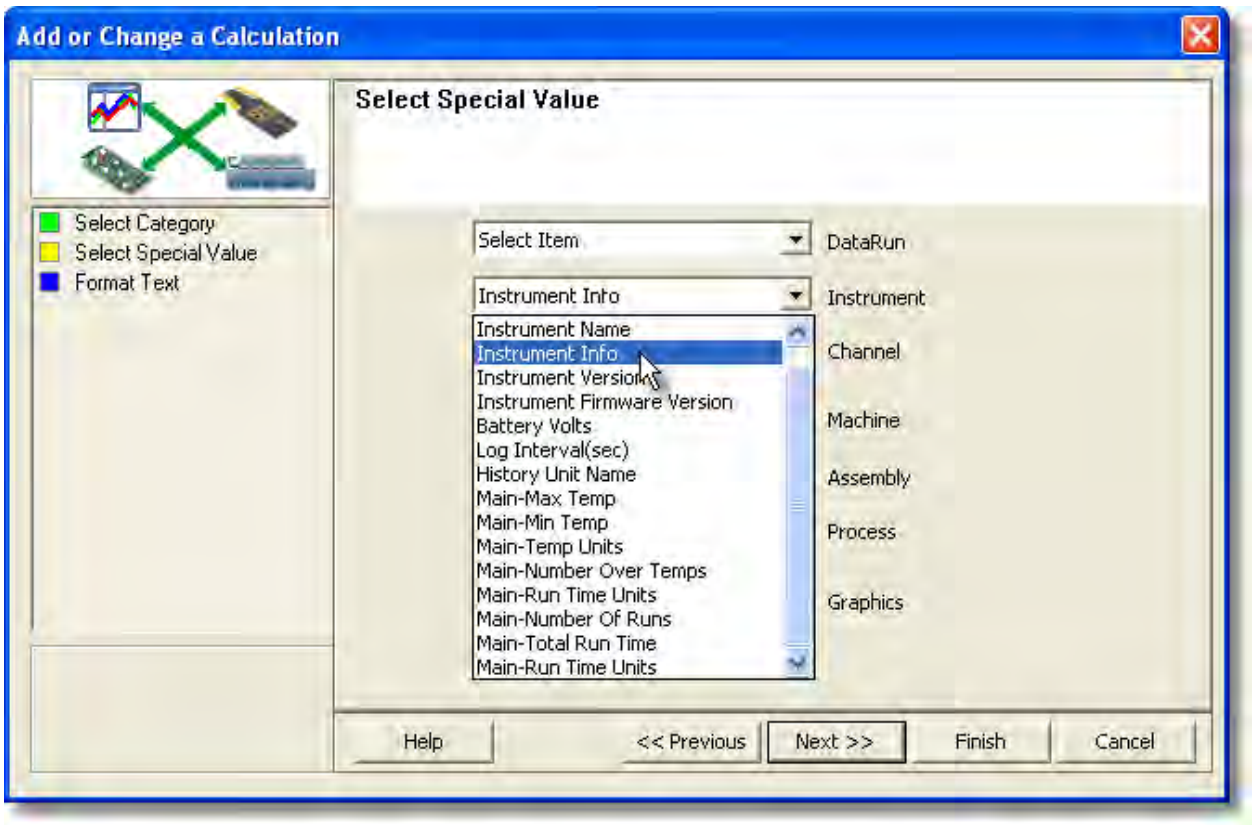
When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

Current Completed Remaining

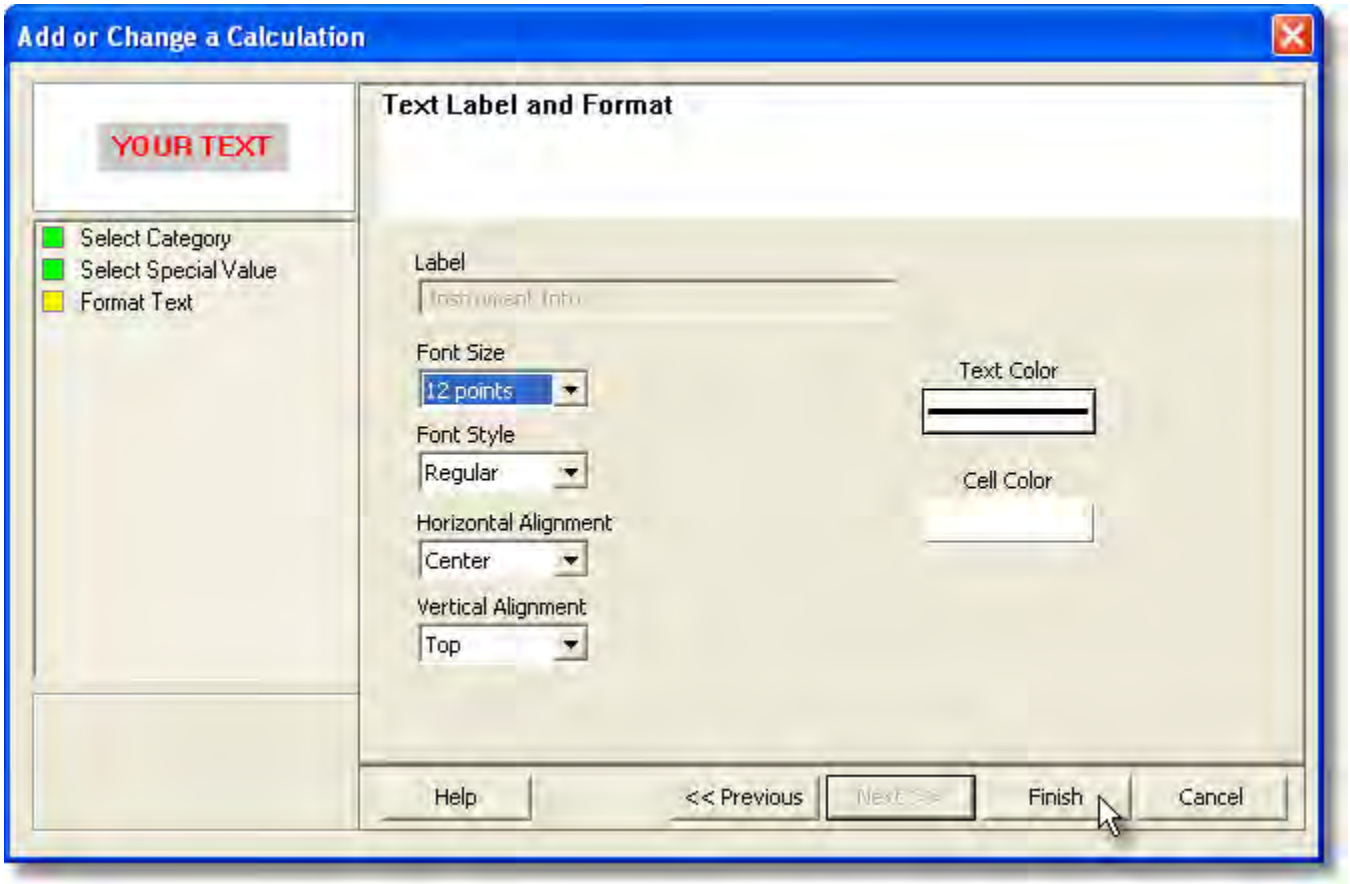
3) Click ***Special Value***.



4) Select the ***Next*** command button.
5) Select a Special Value type.



6) Select the ***Next*** command button.
7) Select desired text formatting options.

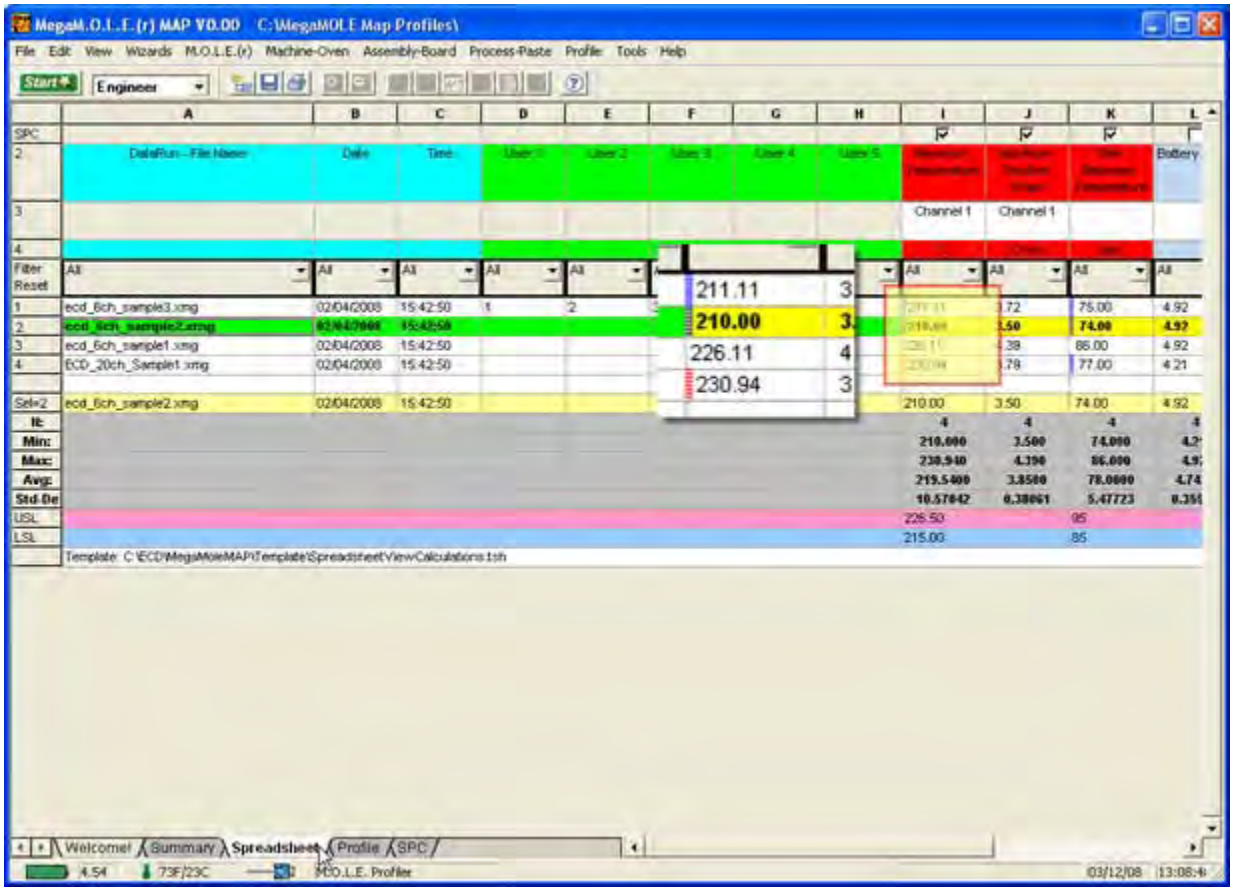


8) Select the ***Finish*** command button to complete the wizard and display the new calculation data in the selected template parameter column.

5.4.3.2.2. Specification Limit Indicators

Each Parameter displayed on the Spreadsheet Page Tab can have both Lower and Upper specifications applied. If a specification limit is violated, the software displays a red or blue indicator on the left edge of the Data Table cell.

If a USL has been exceeded, that parameter indicator will appear in **red** (indicating it is above the specification limit). If a parameter is less than the user specified LSL, that parameter indicator will be appear in **blue** (indicating below the specification limit).



Refer to topic *Software>Page Tabs>Spreadsheet>Template>Add & Edit Content* for information on how to apply LSL and USL values.

5.4.3.3. Parameters

When parameters are displayed on the Spreadsheet template, they include header, labels and unit cells. These parameters can be color coded with the associated Parameter Labels so they can be easily identified together.

The width of each column can be adjusted to be larger or smaller by placing the mouse pointer over a split line dividing the columns and sliding it to the desired width.

Parameter Headers

The software includes two default parameter headers that display data run and user defined information. All headers displayed to the right of those display the description of the parameter.

When editing or adding parameters, the software does not allow the default parameter description to be modified.

Data Run Parameter Group:

This group contains file information associated with the run such as; date and time, (of profile) and the data file tag.

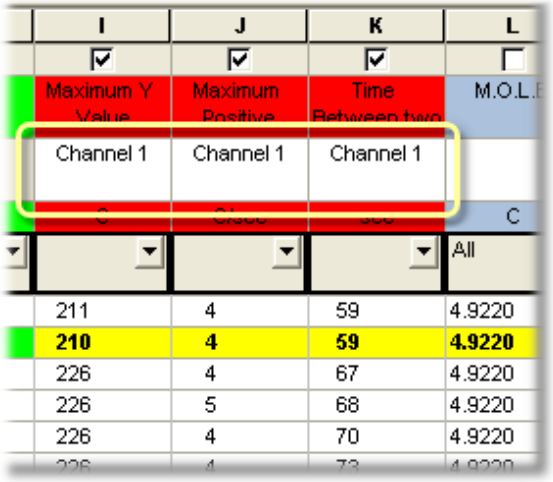
User Defined Parameter Group:

These parameter columns can be used to enter text to help identify the row with unique information about that run (i.e. shift, operator, line number, part number). This information will also appear in the Tool Status box on the Profile worksheet.

A	B	C	D	E	F	G	H	I	J	K	L
DataRun - File Name	Date	Time	User 1	User 2	User 3	User 4	User 5	Maximum Y Value	Maximum Positive	Time Between two	M.O.L.
								Channel 1	Channel 1	Channel 1	
All	All	All	All	All	All	All	All				All
SM_CMPTRNAME_000109.xmg	04/25/2007	08:42:00						211	4	59	4.9220
SM_CMPTRNAME_000108.xmg	05/29/2007	10:16:13						210	4	59	4.9220
SM_CMPTRNAME_000107.xmg	05/29/2007	10:16:08						226	4	67	4.9220
SM_CMPTRNAME_000106.xmg	05/29/2007	10:16:00						226	5	68	4.9220
SM_CMPTRNAME_000105.xmg	05/29/2007	10:15:54						226	4	70	4.9220

Parameter Labels

The Parameter Labels display details associated with the displayed parameters.

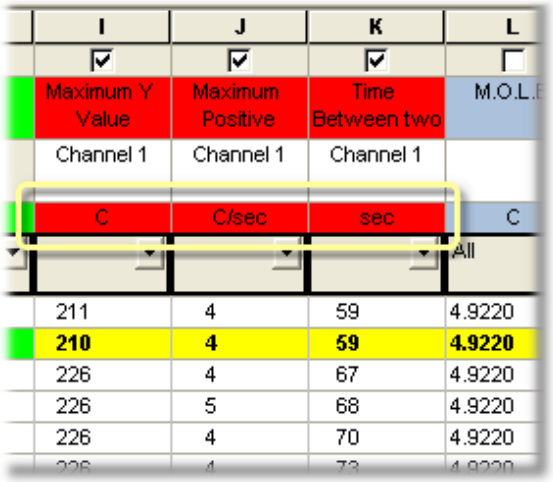


I	J	K	L
Maximum Y Value	Maximum Positive	Time Between two	M.O.L.
Channel 1	Channel 1	Channel 1	
			C
			All
211	4	59	4.9220
210	**4**	**59**	**4.9220**
226	4	67	4.9220
226	5	68	4.9220
226	4	70	4.9220

For example, in the ***Maximum Y Value*** parameter, the label is ***Channel 1***.

Parameter Units

The Parameter Units are the units of measurement for the displayed parameter.



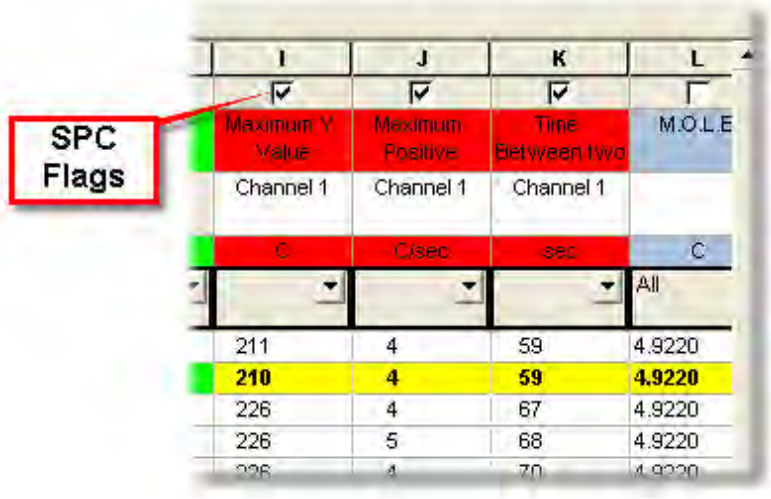
	I	J	K	L
	☑	☑	☑	☐
	Maximum Y Value	Maximum Positive	Time Between two	M.O.L.E
	Channel 1	Channel 1	Channel 1	
	C	C/sec	sec	C
				All
	211	4	59	4.9220
	210	**4**	**59**	**4.9220**
	226	4	67	4.9220
	226	5	68	4.9220
	226	4	70	4.9220

For example, in the ***Maximum Positive Slope*** parameter, the parameter unit is ***°C/sec***.

5.4.3.4. SPC Flags

SPC Flags allow the user to flag parameters so they are displayed on the SPC Page Tab. For each Parameter listed after the User defined Parameters, there is an SPC Flag. To display the parameter data in an X-Bar and R-Chart format, select the desired SPC Flag. Refer to topic ***Software>Page Tabs>SPC Page Tab*** for more information.

This is available when in Engineer Mode.



5.4.3.5. Data Run Rows

All of the data runs in the open working directory are listed on the Spreadsheet Page Tab as individual rows. The first data run uploaded or imported into the directory is on the bottom and the most recent data run is on the top.

When any data run row is selected, all of the cells in the entire row are highlighted in purple and blue. The purple cells indicate that the cells can be modified and the blue cells indicate the data cannot be modified.

When any individual data cell in a data run row is selected, all of the cells in the entire row are highlighted in green and yellow. The green cells indicate that the cells can be modified and the yellow cells indicate the data cannot be modified.

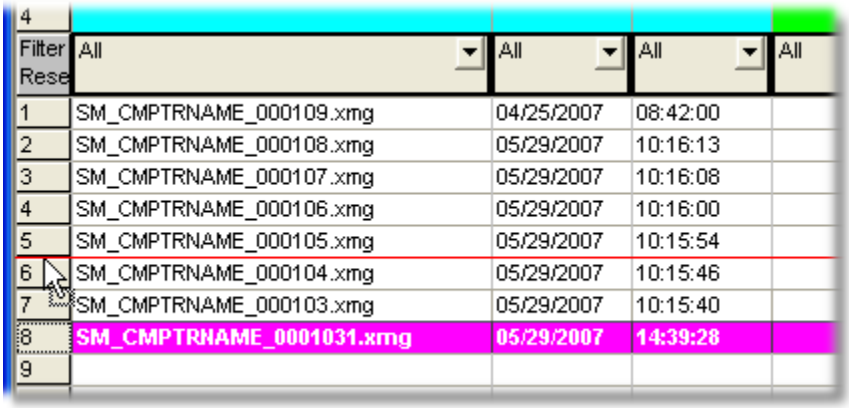
When a data run row is selected, the data for that row will also be displayed in the ***Sel=*** row located at the bottom of the data run rows. This row allows the user to easily compare the selected data row to the statistics calculations located below the selected run row.

Selected rows and columns can be "copied" by pressing keys [CTRL + C] and then "pasted" [Ctrl + V] into other applications.

The data run rows can also be moved into any order desired. This is useful when the user wants to place similar data runs together.

To change the order of the data run:

1) Select the number cell of a data run row with the mouse pointer. The row will then become highlighted in purple and blue.
2) Drag the row and drop it to a desired location.



4				
Filter Rese	All	All	All	All
1	SM_CMPTRNAME_000109.xmg	04/25/2007	08:42:00	
2	SM_CMPTRNAME_000108.xmg	05/29/2007	10:16:13	
3	SM_CMPTRNAME_000107.xmg	05/29/2007	10:16:08	
4	SM_CMPTRNAME_000106.xmg	05/29/2007	10:16:00	
5	SM_CMPTRNAME_000105.xmg	05/29/2007	10:15:54	
6	SM_CMPTRNAME_000104.xmg	05/29/2007	10:15:46	
7	SM_CMPTRNAME_000103.xmg	05/29/2007	10:15:40	
8	SM_CMPTRNAME_0001031.xmg	05/29/2007	14:39:28	
9				

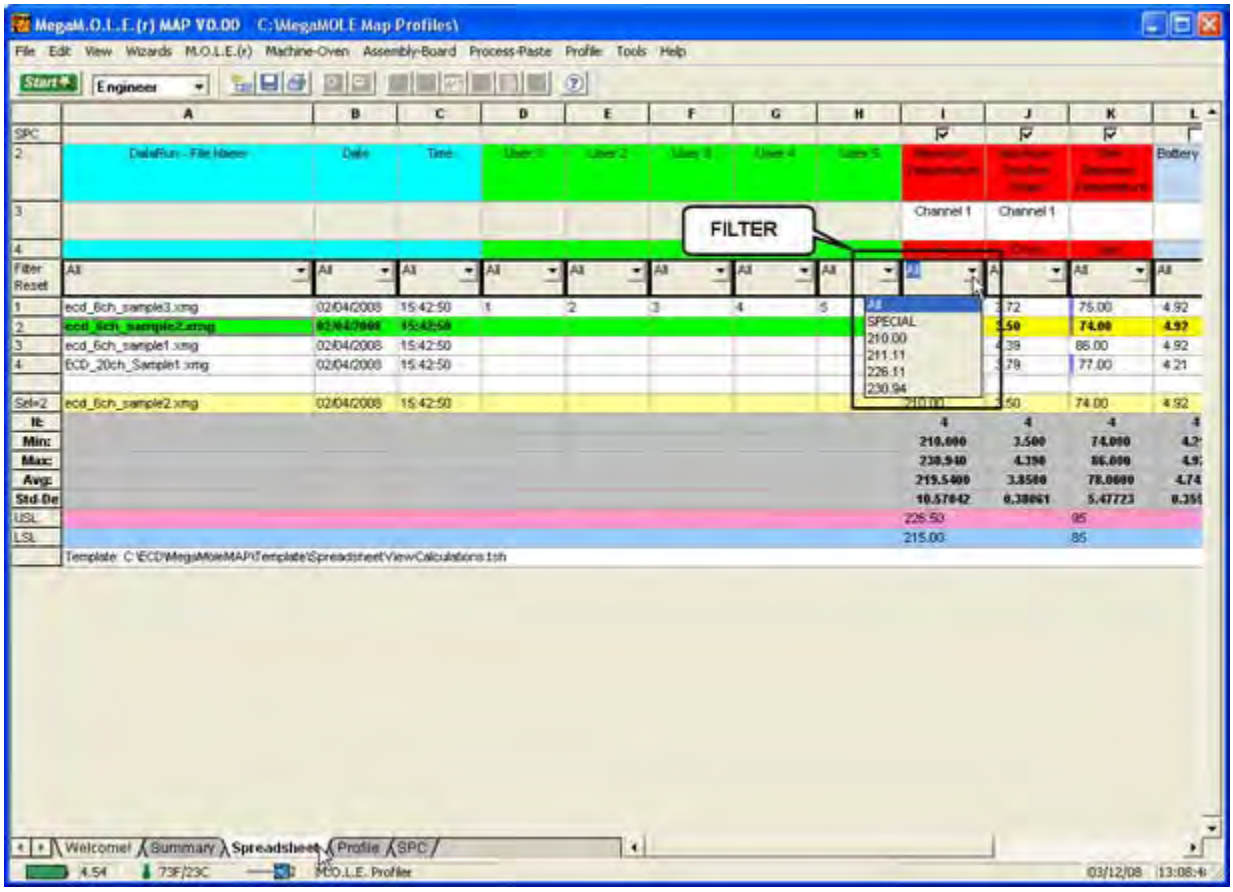
5.4.3.6. Filters

There are Filters for each parameter label that user can filter specific data out.

Filtering more than one column at a time acts as a Logical AND Function. All conditions of all set filters must be met for data row(s) to remain visible.

How to use the Filter function:

1) Click the ***Filter*** button to reveal the unique data as populated in that column under that particular parameter label.
2) Select a desired data value to filter, or the two standard filters ***All*** and ***Special***.



To use the All option:

1) Select ***All*** to reset the filter for that column and view all of the data run rows that meet the other column filters.

To use the Special option:

1) Select ***Special*** to select data run rows within a range of values. There are multiple options to select information to filter by clicking the appropriate relational operators option button. The user can either select data from a populated list or type it in the text box on the top of the column.

=	**equal to**	**>=**	**greater than or equal to**
>	**greater than**	**<=**	**less than or equal to**

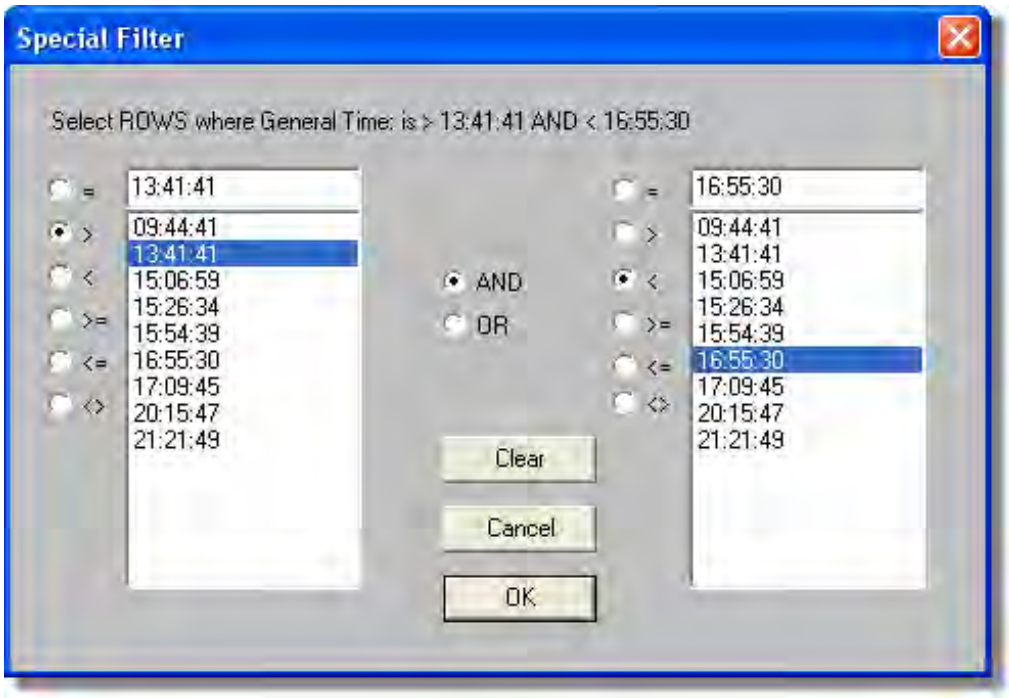
<	**less than**	**<>**	**Not equal to**

2) Select a data filter by:

- Clicking the greater than relational operator option button beside the left data column.
- Click a parameter value from the list or type it in the text box.
- Click the ***AND*** logical operator option button.
- Click the less than relational operator option button beside the right data column.
- Click a parameter value from the list or type it in the text box.

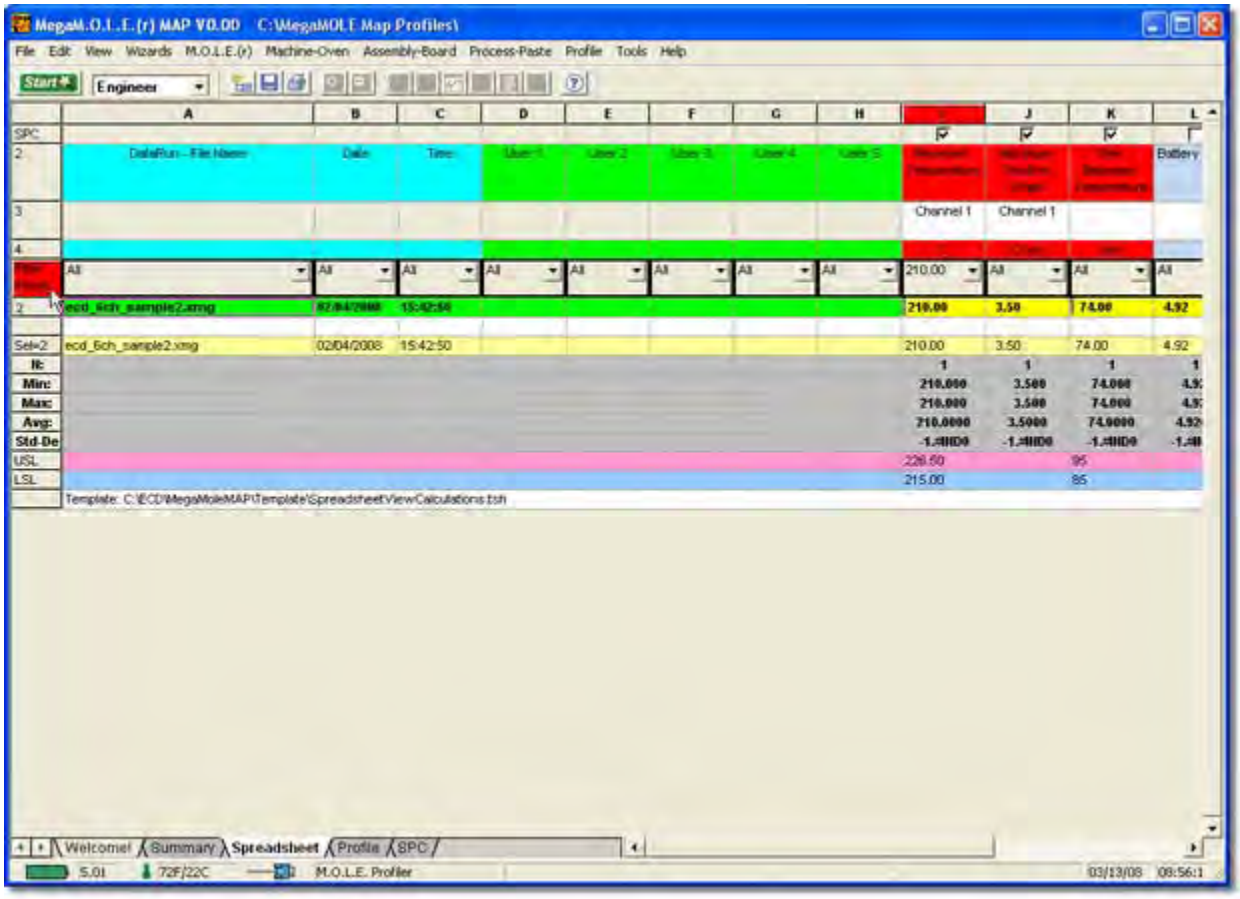
The Clear command button can be selected at any time to clear the selections and the new values can be selected.

3) Click the ***OK*** command button to accept the selected data filters or ***Cancel*** to return to the Spreadsheet Page Tab without executing the filter request.



In this example, the data filtered would be all times between, but not including ***13:41:41*** and ***16:55:30***.

When the data is filtered, the column header and the Filter Reset button are highlighted in RED. To reset the data run rows to display the entire set of collected data, click the red Filter Reset button.

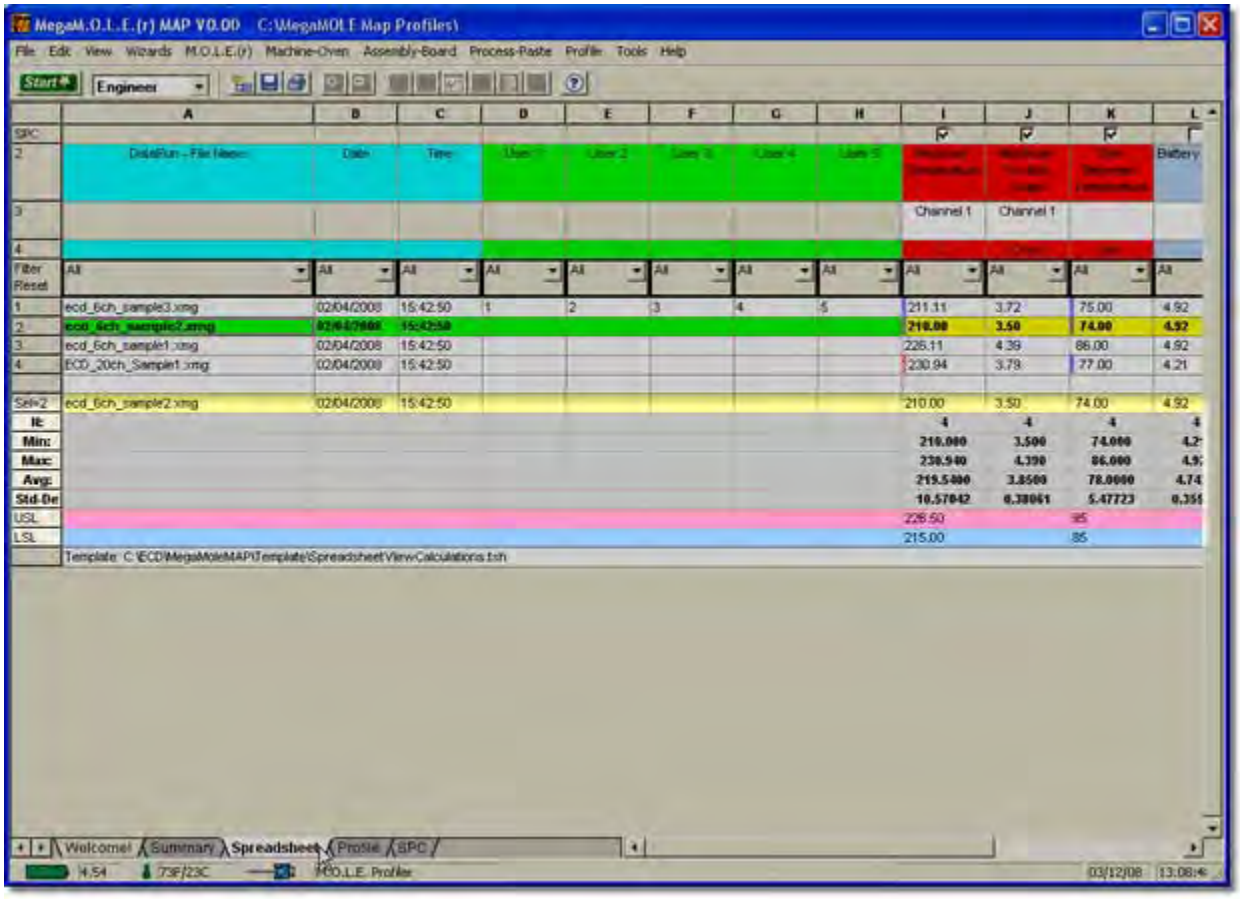


5.4.3.7. Statistics

There are shaded rows located on the bottom of the Spreadsheet worksheet, which are the combined calculations for all the data runs that are currently being viewed in the Spreadsheet worksheet display. The following information is the definitions for each Statistics row:

- N = Number of samples included in the calculations
- Min. = The lowest value in the parameter column.
- Max. = The highest value the parameter column.
- Avg = The average of all values in the parameter column.
- Std. Dev. = The standard deviation of the values in that column.
- USL = Upper Specification limit set for that parameter using the Calculation wizard.
- LSL = Lower Specification limit set for that parameter using the Calculation wizard.

The USL and LSL statistics will only be displayed if there is values set for that parameter



5.4.4. Profile Page Tab

The Profile worksheet is where a selected data run is represented graphically. The software allows the user to analyze the data and to compute statistics based on the data.

This is available in both Engineer & Verify Modes.

Profile worksheet features:

1. Menus and Toolbar
2. Data Graph
3. Data Table

The Profile Page Tab is divided into two panes, the Data Graph and Data Table. Using the pane split bar, these panes can be moved vertically so the user can display more of the Data Graph or Data Table. The Data Table also includes a vertical scroll bar so the user can view more Data Table without moving the pane split bar.

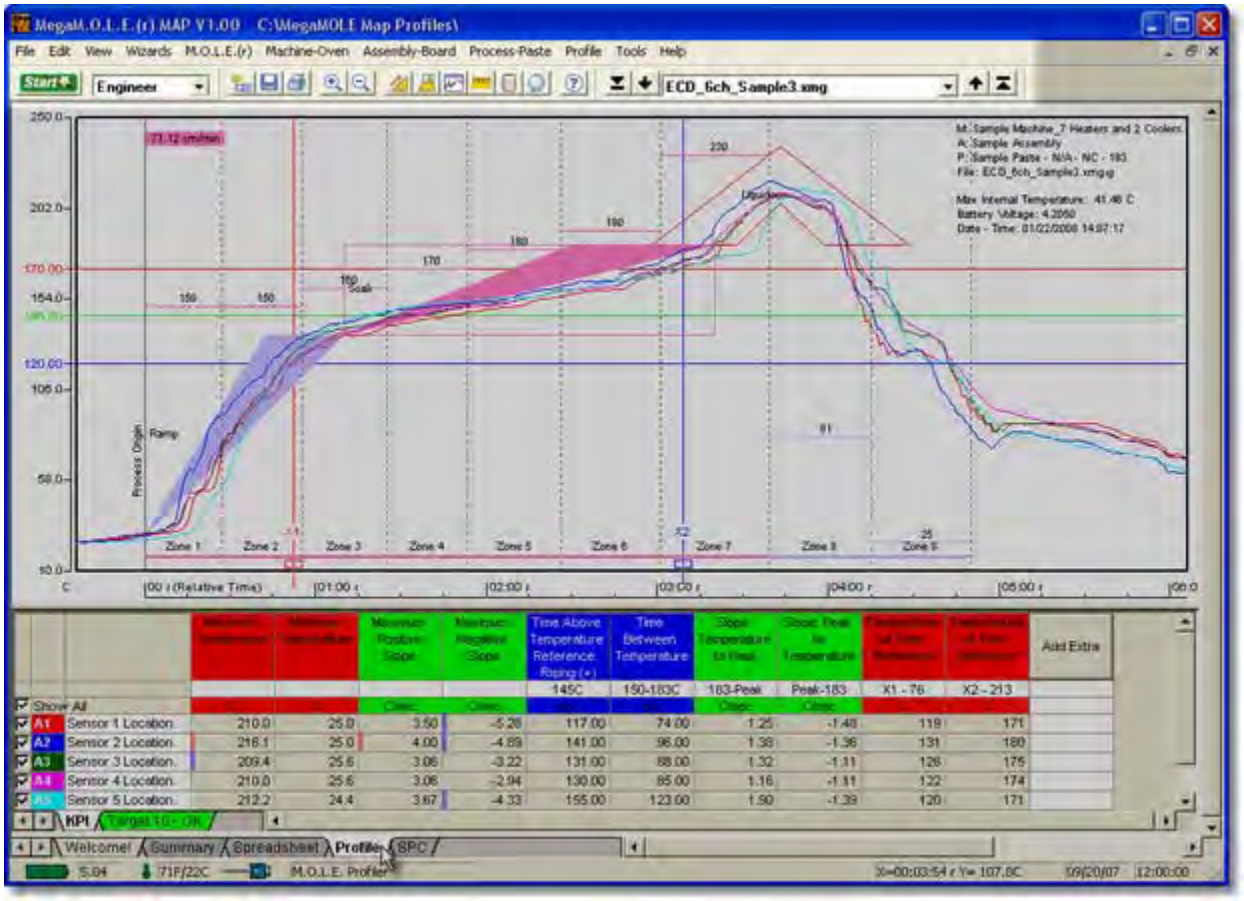
5.4.4.1. Menus & Toolbar

- **Menus:**

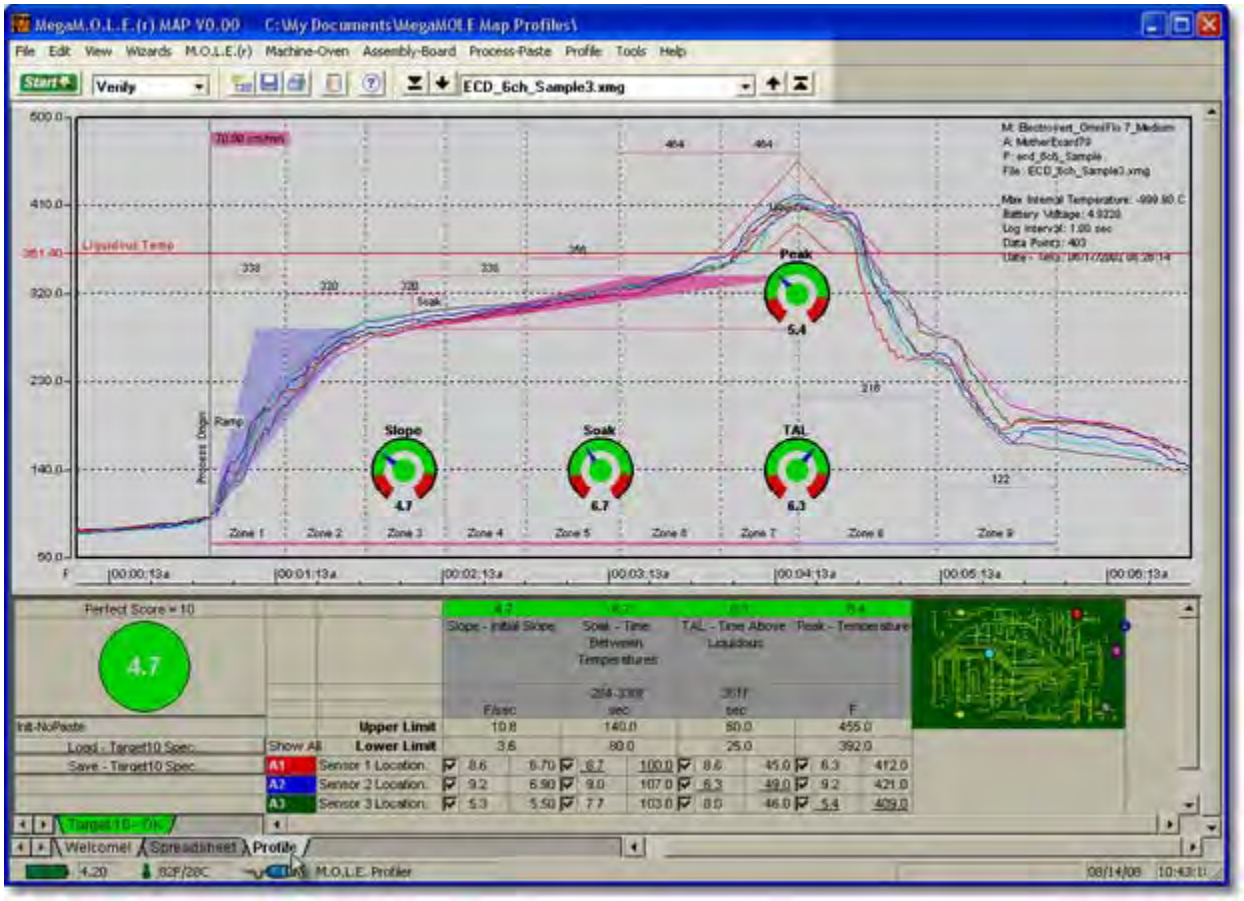
  File, Edit, Wizards, M.O.L.E.®, Machine-Oven, Assembly-Board, Process-Paste, Profile, Tools and Help.

- **Toolbar Buttons:**

  Engineer Mode - Start, Open Working Directory, Save, Print, Magnify, 100%, Slope, Peak Difference, Overlay, Measure, Notes, Prediction, Help, First (data run of the data set), Back (to previous data run), Forward (to the next data run), and Last (data run of the data set).



Verify Mode - Start, Open Working Directory, Save, Print, Notes, Help, First (data run of the data set), Back (to previous data run), Forward (to the next data run), and Last (data run of the data set).



5.4.4.2. The Data Graph

The Data Graph is a display that shows the data collected from the data run overlaid on a graph. The user can analyze and highlight various process features with the tools listed below.

> The features associated with the ***Data Graph*** can be used when in ***Engineer mode***. They can only be viewed when in ***Verify mode***.

Data Graph features:

1. Time & Temperature Scales
2. Data Plots
3. Process Origin
4. Conveyor Speed Indicator
5. Time Reference Lines
6. Temperature Reference Lines
7. Map Data
8. Machine Zones and Zone Sizes
9. Machine Zone Temperatures

The Data Graph features are described in the sections that follow. Some of these features are also controlled using the appropriate menu options. Refer to ***Software>Menu and Tool Commands*** for more information.

5.4.4.2.1. Time (X) & Temperature (Y) Scales

The Data Graph displays both Time (X) and Temperature (Y) scales.

> According to the type of sensor that is associated with the displayed profile, the Temperature (Y) scale may display different a type of scale other than Temperature .

Time (X) Scale:

The horizontal Time (X) scale displays values data points collected. The user can select four different types of Time (X) scales. The scales are:

- **Point:** The data points collected from the Process-Origin.
- **Time-Relative:** Time measured from the Process-Origin
- **Time-Absolute:** Time of day
- **Distance:** Distance from the Process Origin (Meters, Centimeters, Feet or Inches).

The Distance scale will not be accurate until an accurate conveyor speed is set.

Relative Time Scale

Distance Scale

Points Scale

Absolute Time Scale

Temperature (Y) Scale:

The vertical Temperature (Y) scale displays the scale of the measured temperature. Lower values are at the bottom and higher values at the top.

The Temperature (Y) scale includes temperature labels on the left side of the graph. These temperatures divide the vertical scale up to four equal parts and are automatically

scaled to fit the current Temperature (Y) scale limits. These units can be displayed in Celsius or Fahrenheit.

The amount of displayed Temperature (Y) grid lines can be changed on the Profile tab of the Preferences dialog box. Refer to topic ***Software>Menus>File>Preferences>Profile*** for more information.

Autoscaling:

The software includes a powerful Autoscaling option to automatically scale the Data Graph so the data will always be visible and easy to work with.

The software automatically selects a range of values for the Temperature (Y) scale to ensure that all the data fits on the screen. The user can change the range of temperature values displayed by using the ***Manual*** mode. Refer to topic ***Software>Menus>Profile>Temperature (Y) Scale*** for more information.

When the Magnify tool is used the Temperature (Y) scale will automatically scale to the temperatures viewed in the magnified window.

The software provides different methods to view Time (X) and Temperature (Y) values of any location on the Data Graph.

To view Time (X) & Temperature (Y) values:

- The Time (X)/Temp (Y) Readout in the Status bar continuously displays both Time (X) and Temperature (Y) values at the location of the mouse pointer. Details of this feature are described in topic ***Software>Menus>View>Status Bar***.
- The Time (X) value at the position of a Time (X) Ref line is displayed in the Data Table if a ***Temperature value at Time Reference*** calculation is loaded in the Data Table template.

5.4.4.2.2. Data Plots

The Data Plots in the Data Graph represent the data for each of the sensors connected to the M.O.L.E. Profiler. Each sensor is represented by a different color that corresponds to the color of its sensor location description in the Data Table.

A Data Plot in the Data Graph can be suppressed or restored at any time by clicking the channel check box with the corresponding sensor description in the Data Table. This allows the user to view any combination of the Data Plots or individually.

> When two or more Data Plots overlap the same values, the Data Plots overwrite each other. For example, if the Data Plot that represents the sensor connected to channel 5 and channel 1 have the same value, the channel 5 Data Plot will only appear unless the user suppresses it.

When printing a Data Graph in black and white, suppressing one or more Data Plots is useful for clearing a view of a Data Plot that is obscured by others near it. The Notes tool can also be used to help identify each Data Plot. Refer to topic ***Software>Menus>Tools>Notes*** for more information.

5.4.4.2.3. Process Origin

The Process Origin is a gray vertical line at the left edge of the Data Graph that indicates where the assembly process starts. When Points or Distance units are being used for the Time (X) values, the Time (X) values to the left of the Process Origin are displayed as negative and those to the right as positive in the ***Time (X)/Temp (Y) Readout***.

To move the Process Origin:

1) Position the mouse pointer over the Process Origin.
2) When the mouse pointer becomes a ⇔, click and hold the left mouse button to drag it left or right releasing the mouse button when the Time (X) Reference line is at the desired location.

The X/Y Readout in the Status Bar indicates the true position of the Process Origin while it is being moving. After the mouse button is released, the X-Readout changes to zero at the Process Origin and displays negative numbers for X when the mouse pointer is moved to the left of the Process Origin.

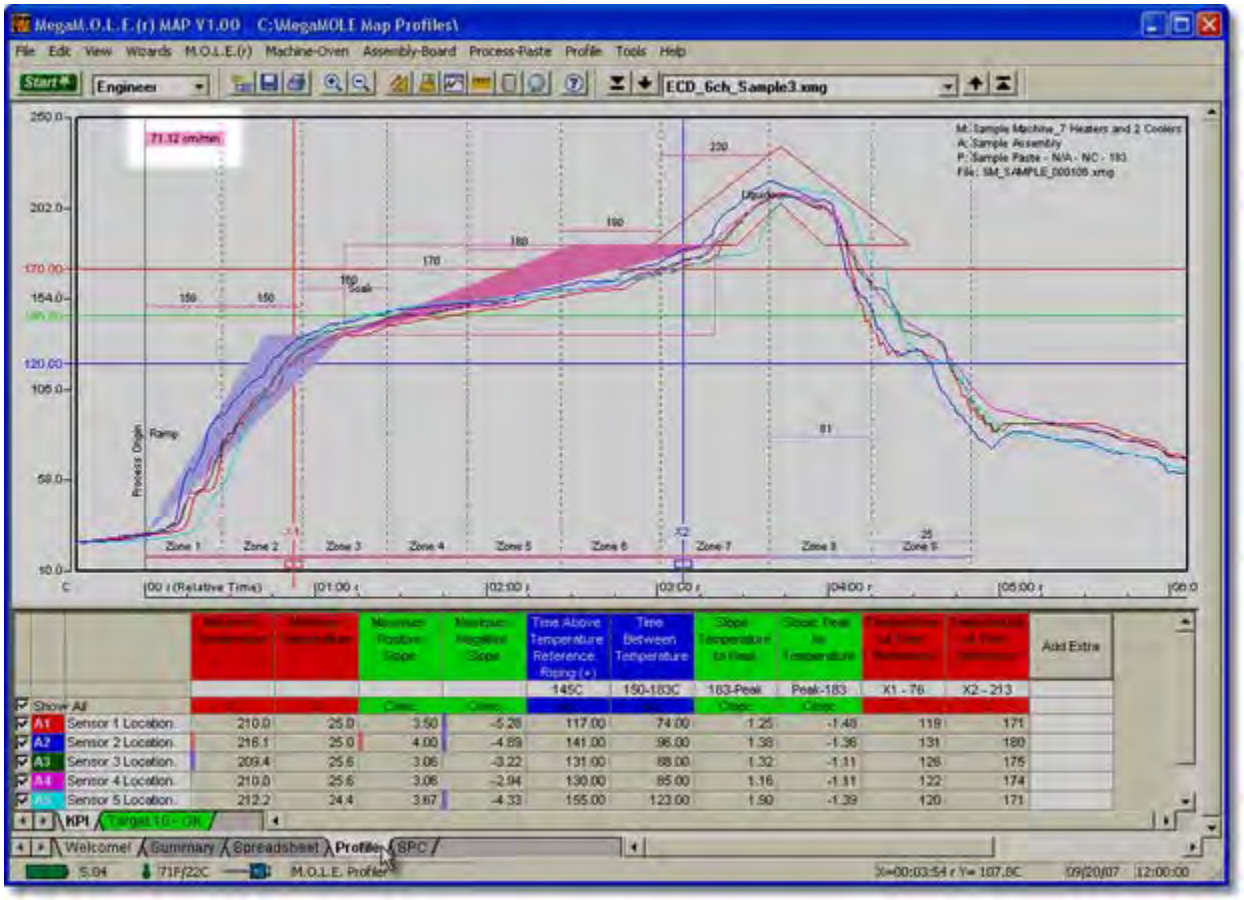
Reference line values are automatically adjusted when the Process Origin is moved.

To display the distance of a conveyor process along the X-axis, adjust the Process Origin to the data point that was recorded at the start of the conveyor process. Now set the conveyor speed in the ***Oven Configure*** dialog box located in the ***Profile*** menu.

5.4.4.2.4. Conveyor Speed Indicator

Located at the top of the Process Origin, there is a Conveyor Speed Indicator that displays the speed of the machine conveyor specified in the selected machine recipe. Refer to topic ***Software>Menus>Machine>Set Machine Information***.

Conveyor Speed can not be set or viewed after the Data Graph has been magnified.



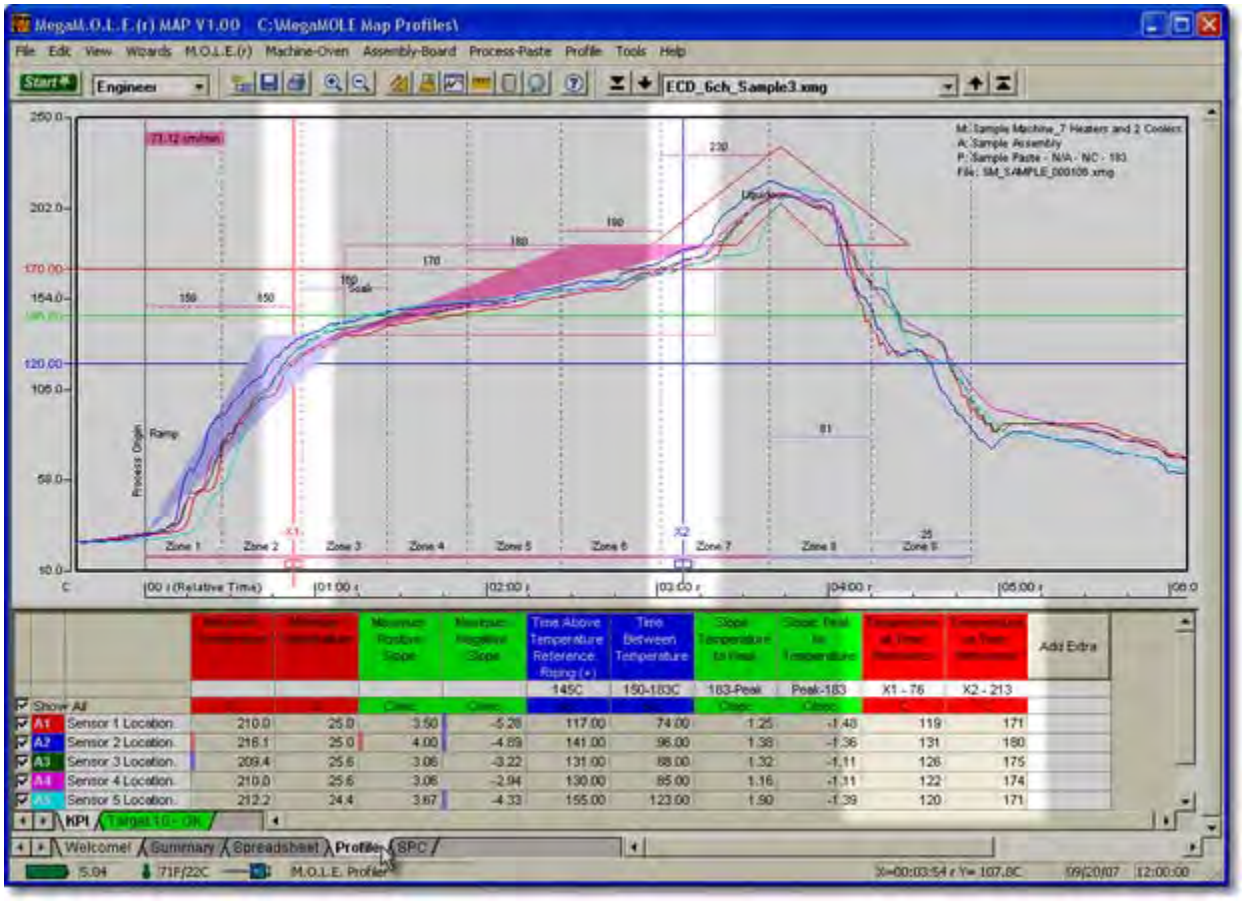
When the mouse pointer is placed over the conveyor speed indicator, it becomes a  . This informs the user that they can double-click the indicator to quickly change the conveyor speed in the machine recipe.

By changing the conveyor speed from the indicator, the user is modifying the selected machine recipe. This recipe can also be edited using the ***Software>Menus>Machine>Set Machine Information*** command on the ***Machine-Oven*** menu.

5.4.4.2.5. Time (X) Reference Lines

Time (X) Reference lines are colored vertical lines that indicate the Temperature (Y) values at the intersection of a Data Plot with each line. The values in the ***Temperature value at Time Reference*** Data Table column(s) indicate the Temperature (Y) values at the intersection of a Data Plot with an Time (X) Reference line. The Time (Y) Reference lines can be added to the Data Graph using the ***Software>Menus>Profile>Add Time (X) Reference Lines*** command in the ***Profile*** menu.

The Time (X) value at the position of a Time (X) Reference line will only be displayed in the Data Table if a ***Temperature value at Time Reference*** calculation is loaded in the Data Table template.



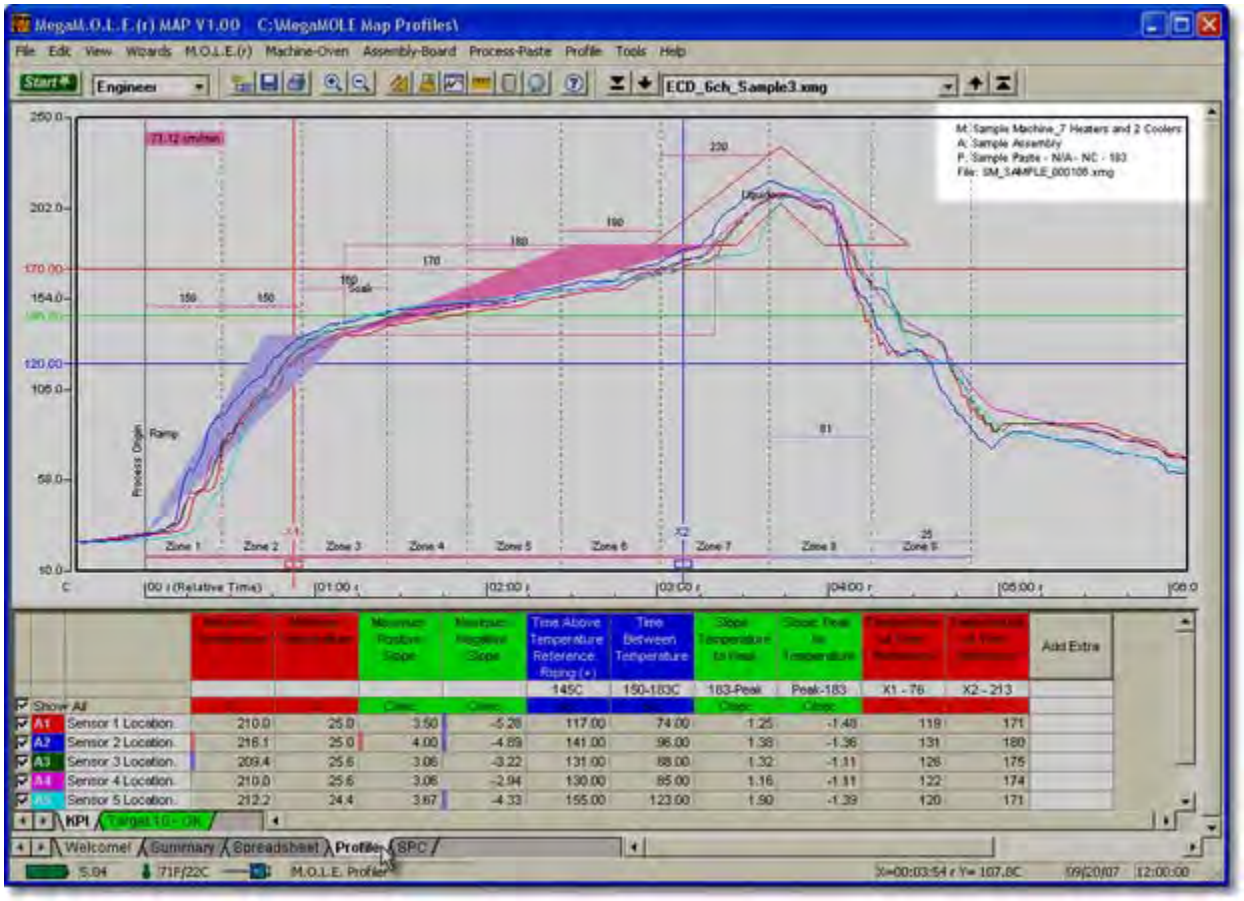
5.4.4.2.6. Temperature (Y) Reference Lines

Temperature (Y) Reference lines are colored horizontal lines that are positioned within the Temperature (Y) scale in the graph. Temperature (Y) Reference lines can be added to the Data Graph using the ***Software>Menus>Profile>Set Temperature (Y) Reference Lines*** command in the ***Profile*** menu.

5.4.4.2.7. MAP Data

MAP data is the Machine model, Assembly number and Process name data associated with the displayed data run. This data is located in the upper right corner of the Data Graph along with the data run filename. This data can be specified when creating or modifying the Machine, Assembly and Process information

The user can turn the MAP data ON or OFF using the ***Show on Profile*** commands located on the ***Machine***, ***Assembly*** and ***Process*** menus.



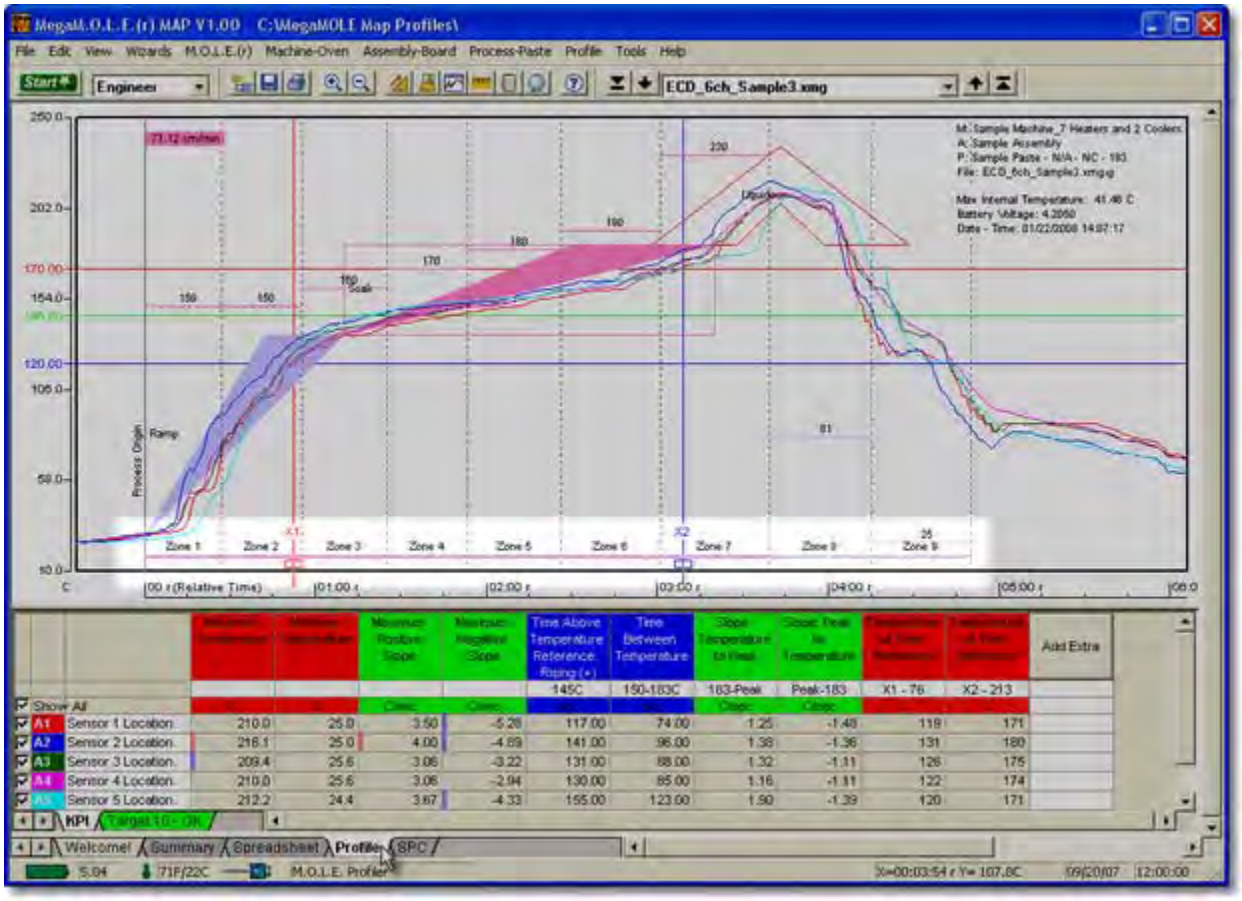
5.4.4.2.8. M.O.L.E. Status

M.O.L.E. status information displays the Max internal temperature, Battery Voltage and the data run Date - Time at the time the data run was performed. This information is located in the upper right corner of the Data Graph below with the MAP Data.

The user can turn the M.O.L.E. status information ON or OFF using the ***Show on Profile*** commands located on the ***M.O.L.E.*** and ***Profile*** menus.

5.4.4.2.9. Machine Zones

The Time (X) scale can be divided into zones that represent the machine zones in a process defined in units of length or time. Zones can be specified editing or creating a new machine model. Refer to topic ***Software>Menus>Machine>Set Machine Information*** or ***Create new Machine*** for more information.



To display defined zones along the Time (X) scale, select the ***Show on Profile*** command on the ***Machine*** menu. When zones are displayed, they appear as Magenta and Blue colored lines along the bottom of the data graph and as dotted vertical lines that extend top to bottom. The Magenta zones indicate heating and Blue zones indicate cooling. The first zone begins at the Process Origin. When the Process Origin is moved, the zones move with it.

When importing SMG SPC (**.MDM**) files, the machine zones remain the same zone colors as specified in the original (**.MDM**) file. If the user edits the imported machine zones, or applies a defined machine to the data run the zone colors will be updated Magenta and Blue.

5.4.4.2.10. Machine Zone Temperatures

For each defined zone, two zone temperatures can be established using the ***Set Machine Recipe*** command on the ***Machine*** menu. These temperatures might be upper and lower boundaries for the acceptable range of values in that zone or they might represent the settings of upper and lower heating elements in a process.

Zone Temperature Lines appear in the Data Graph as colored bars at the temperature set for each zone. (Zone Temperatures can be displayed only after zone sizes are defined). Upper Zone Temperature Lines appear in the Data graph as solid colored bars and the lower Zone Temperature Lines are dashed.

5.4.4.3. KPI Data Table

The KPI Data Table includes various user configured parameter values. Each column after the Sensor Locations allows the user to define parameters using the Template commands. Each row in the Data Table represents the channel sensor data from the M.O.L.E. Profiler.

> This is available when in Engineer Mode.

KPI Data Table features:

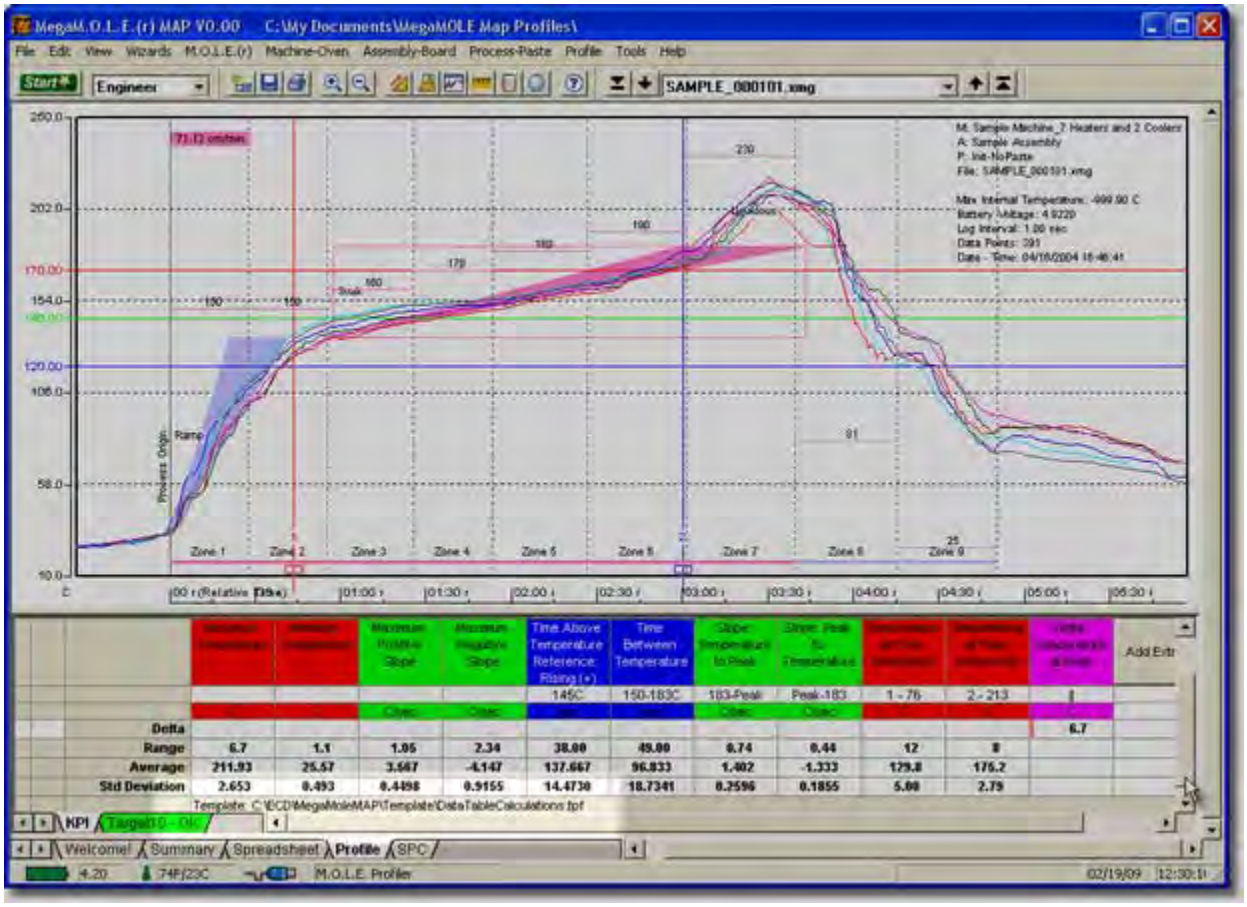
1. Sensor Locations
2. Channel Check Boxes
3. Data Table Template
4. Value Pop-up
5. Specification Limit Indicators

5.4.4.3.1. Data Table Template

The Data Table is built using a template file (***.TPF**) overlaid on a cell grid. Columns to the right of the ***Channel check boxes*** and ***Sensor Locations*** allow the user to define parameters using the Template commands.

The Data Table template is automatically loaded every time the software is started and is used as the default template for every downloaded data run. This template file is specified on the Profile Page Tab of the Preferences dialog box. Refer to topic ***Software>Menus>File>Preferences>Profile*** for more information.

For reference, the file name for the loaded template appears in the lower left corner of the template grid.



To display Template commands:

1) Move the mouse pointer over a column header.
2) When the mouse pointer becomes a , right-click and a shortcut menu appears.

Template commands can also be accessed on the View menu. Refer to topic ***Software>Menus>View Menu*** for more information. To add or edit a calculation refer to topic ***Software>Page Tabs>Profile>Data Table>Template>Add & Edit Content*** for more information.

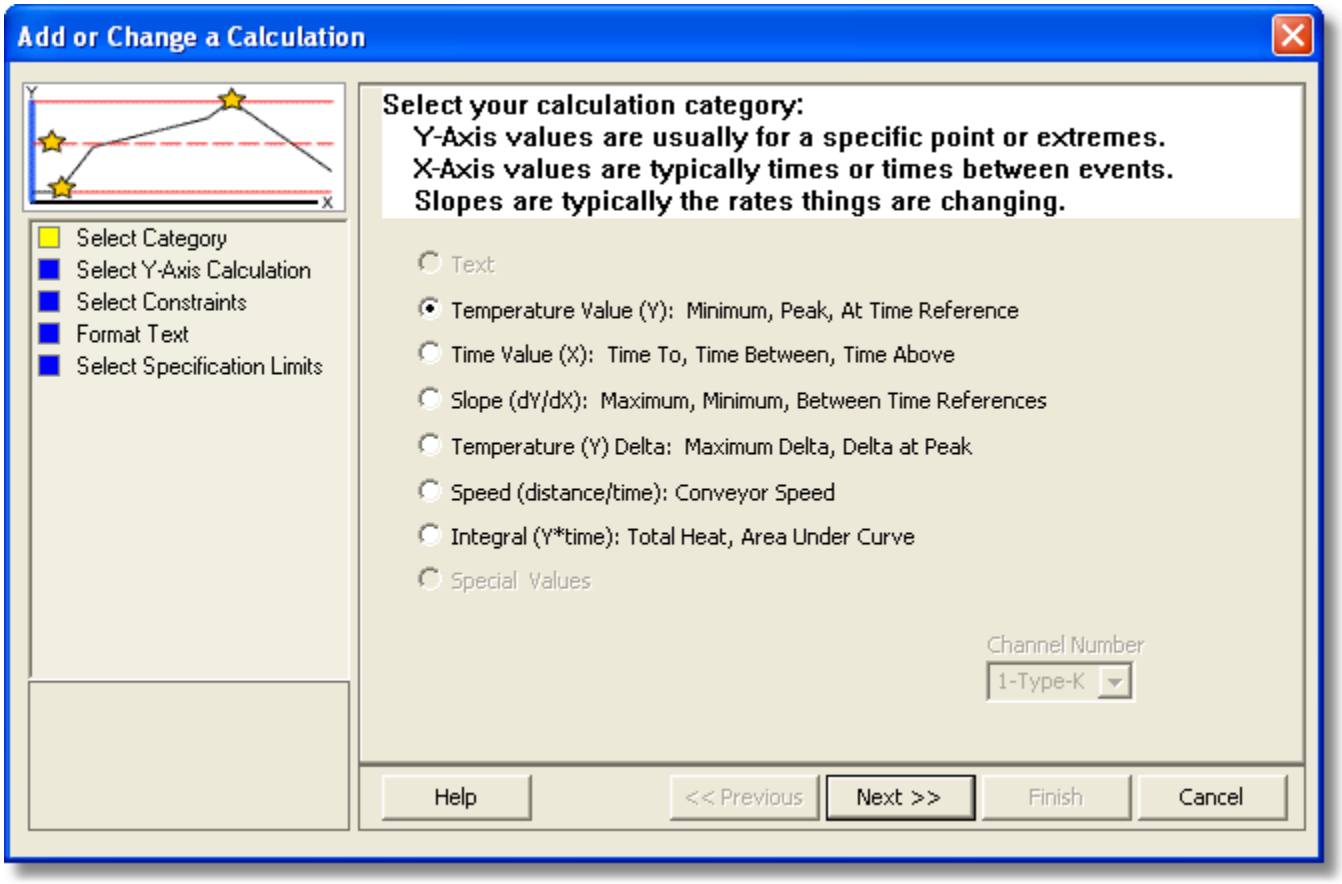
5.4.4.3.1.1. Add & Edit Content Wizard

To add or edit template content, the software includes a wizard to guide the user through the related content options. The Data Table template allows six different calculation categories to be displayed.

Add & Edit Content wizards:

1. Temperature Value (Y)
2. Time Value (X)
3. Slope (dX/dY)
4. Temperature (Y) Delta
5. Speed (distance/time)
6. Integral (Y*time)

This wizard contains all the related steps to add or edit content to the template. It is recommended to process all steps in order but the software allows you to navigate forward and backward setting options individually. When the minimum options have been selected, ***Finish*** command button will become active.



5.4.4.3.1.1.1. Temperature Value (Y)

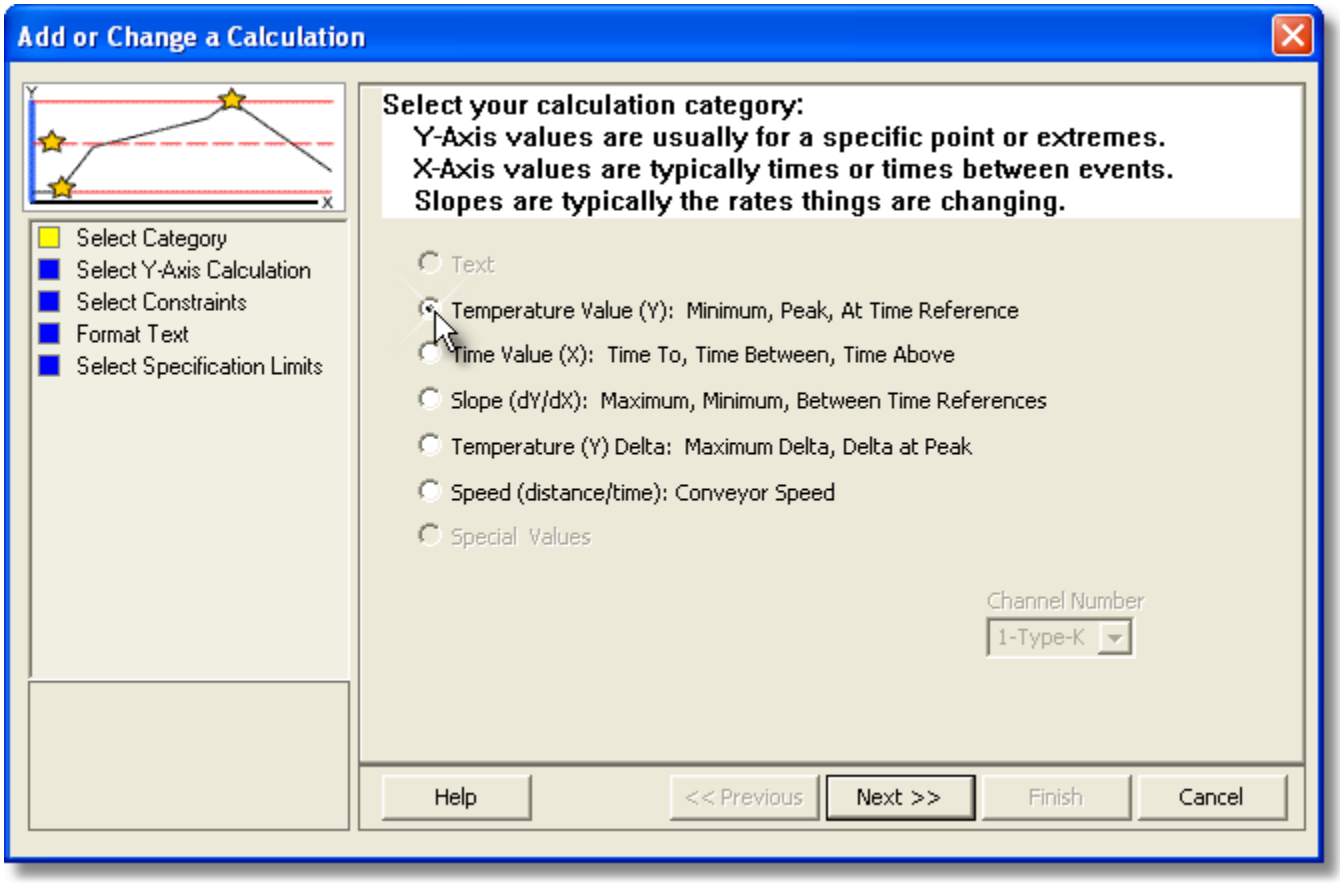
To add or edit Y-Axis Values content:

1) Right-click a template cell and a shortcut menu appears.
2) Select ***Add Content*** or ***Edit Content*** from the shortcut menu and the ***Add or Change a Calculation*** wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

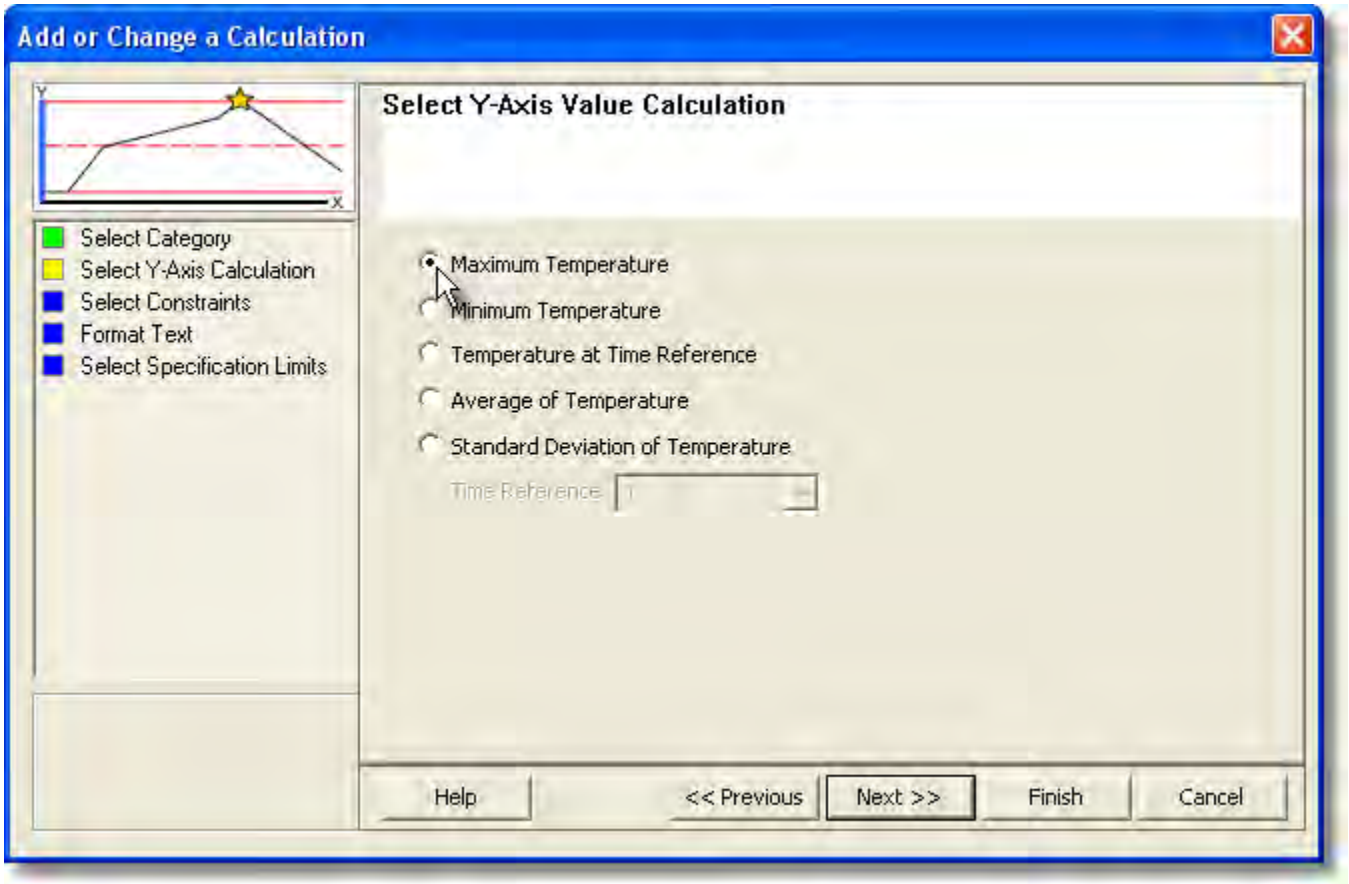
Current Completed Remaining

3) Click ***Temperature Values (Y)***.



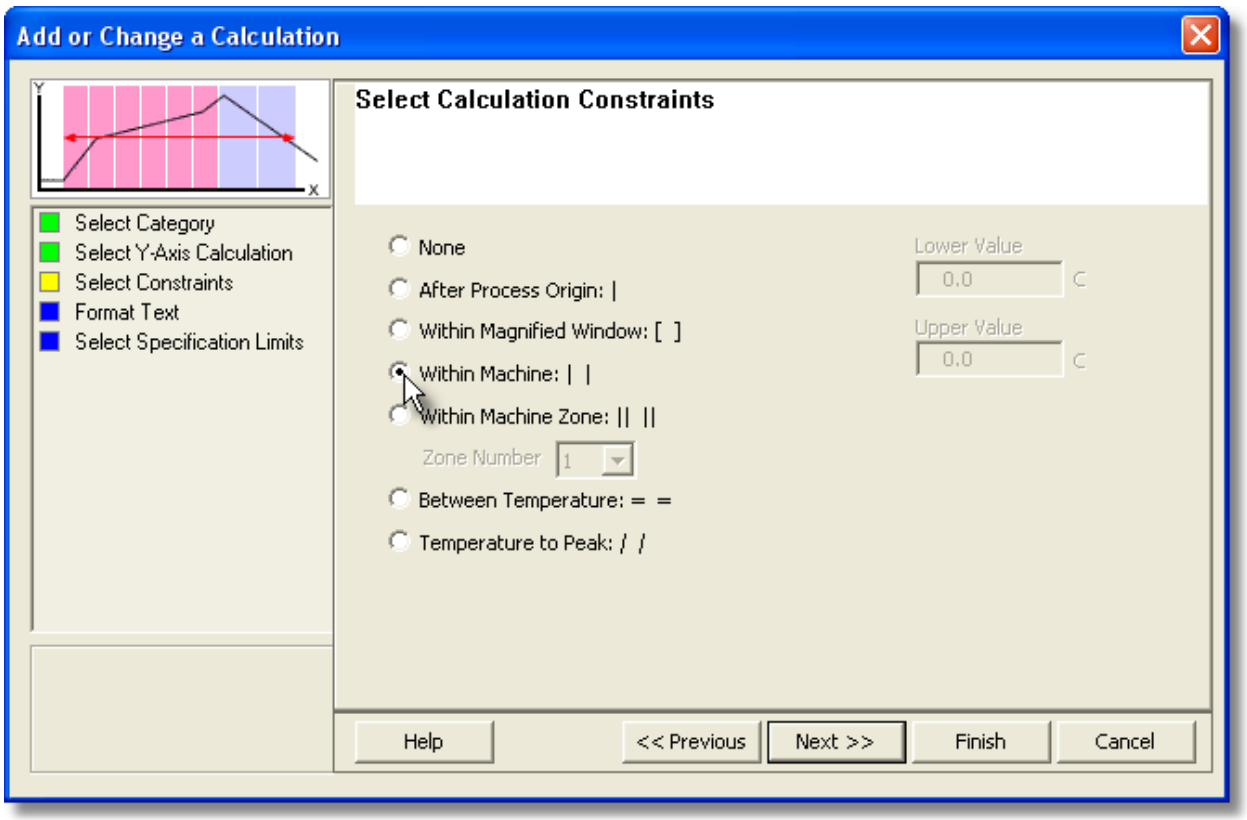
4) Select the ***Next*** command button.
5) Select a Temperature (Y) Axis Value.

If ***Temperature at Time Reference*** calculation is selected, the software requires the user to select an established Time (X) Reference line. If one is not established the software automatically creates one on the Profile Page Tab Data Graph.

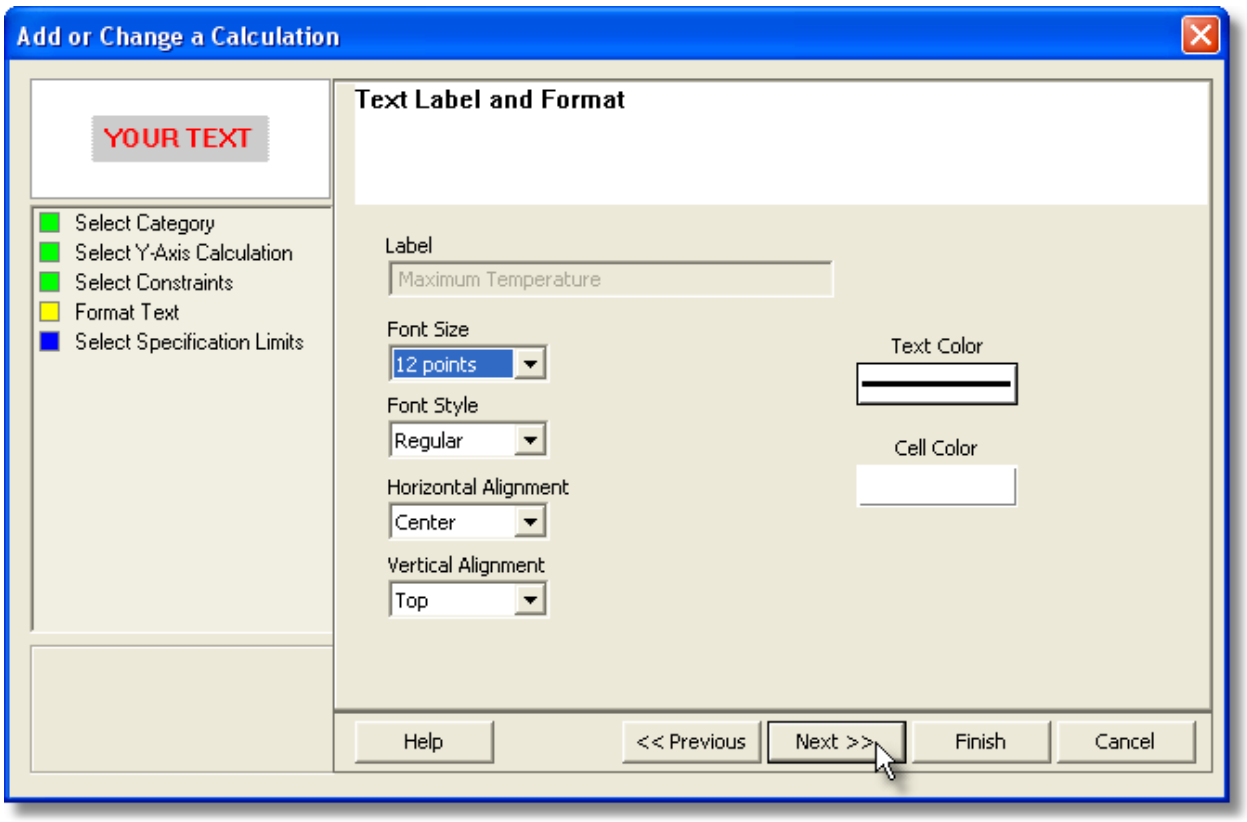


6) Select the ***Next*** command button.
7) Select the calculation constraints. These options are the specified area on the Time (X) Axis where the values are to be extracted from. When a constraint is applied, the constraint symbol appears in the header of the calculation.

If the ***Within Magnified Window*** constraint is selected and the Magnify tool is used to zoom in on a portion of the Data Graph, the Data Table displays the statistics for those values within the magnified window.

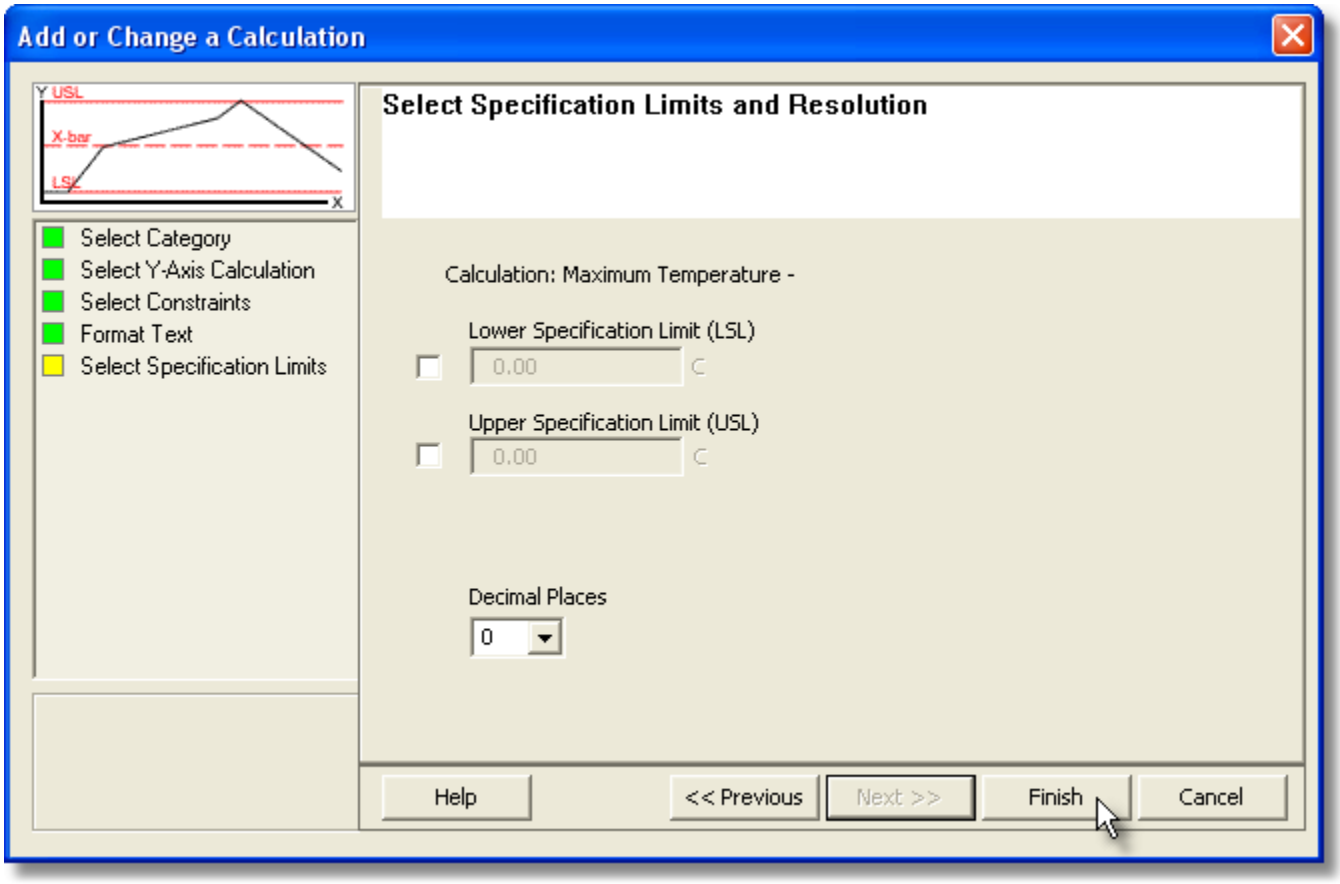


8) Select the ***Next*** command button.
9) Select desired text formatting options.



10) Select the ***Next*** command button.

11) Select Specification Limits and Units. If these values are violated colored bars will appear in the formatted template cell. Refer to topic ***Software>Page Tabs>Profile>Data Table>Template>Specification Limit Indicators*** for more information.



12) Select the ***Finish*** command button to complete the wizard and display the new calculation data in the selected template column.

5.4.4.3.1.1.2. Time Value (X)

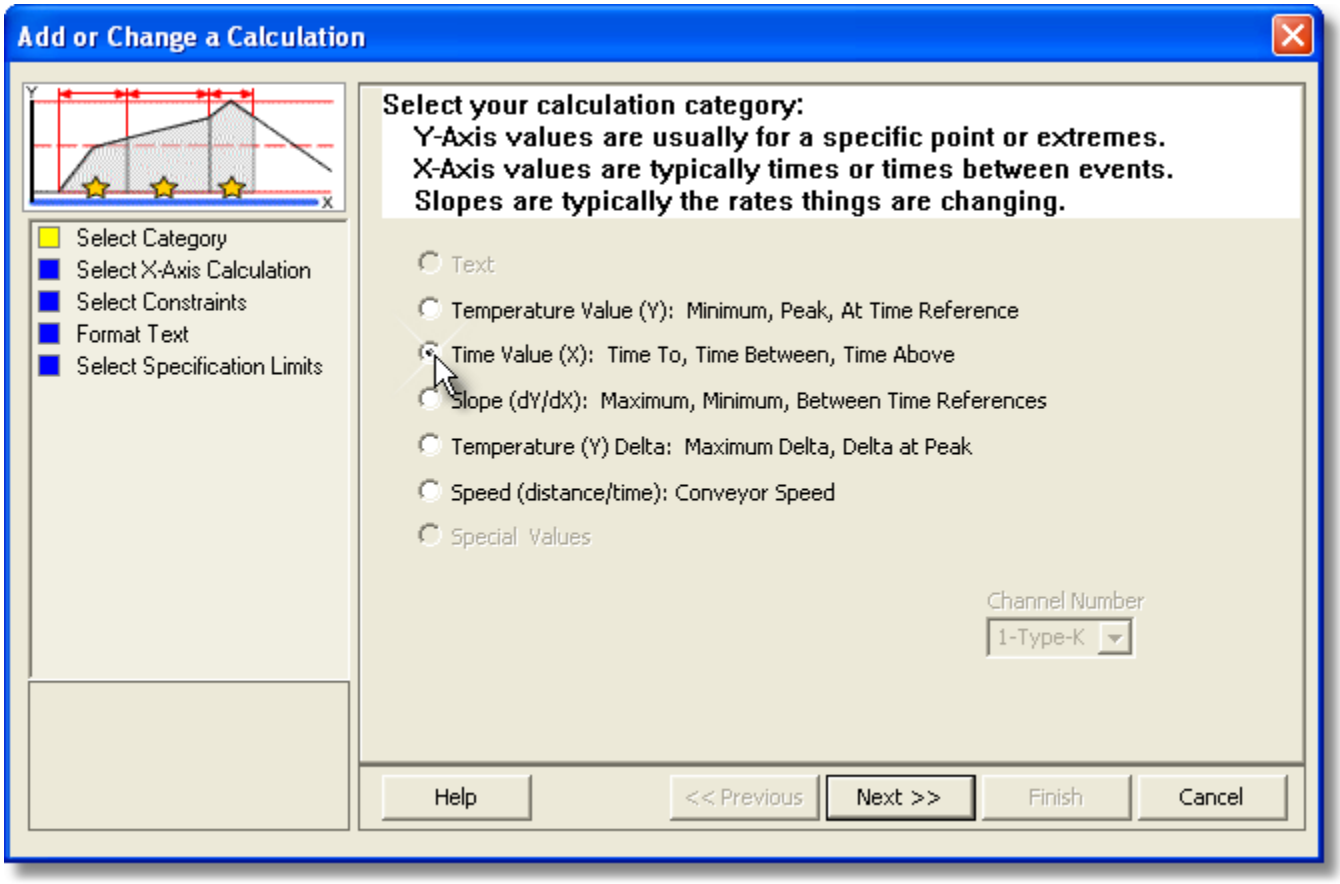
To add or edit X-Axis Values content:

1) Right-click a template cell and a shortcut menu appears.
2) Select ***Add Content*** or ***Edit Content*** from the shortcut menu and the ***Add or Change a Calculation*** wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

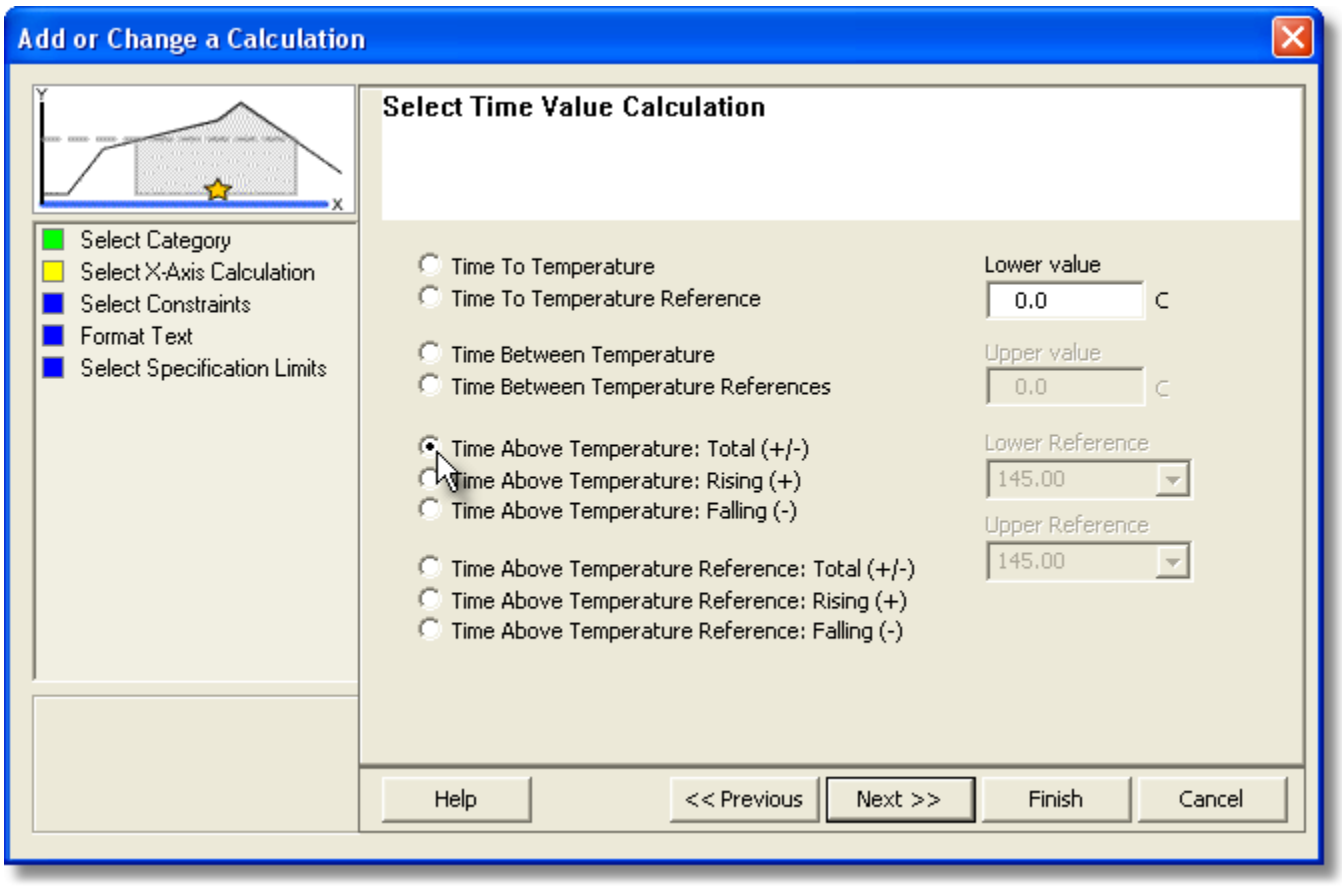
Current Completed Remaining

3) Click ***Time Value (X)***.



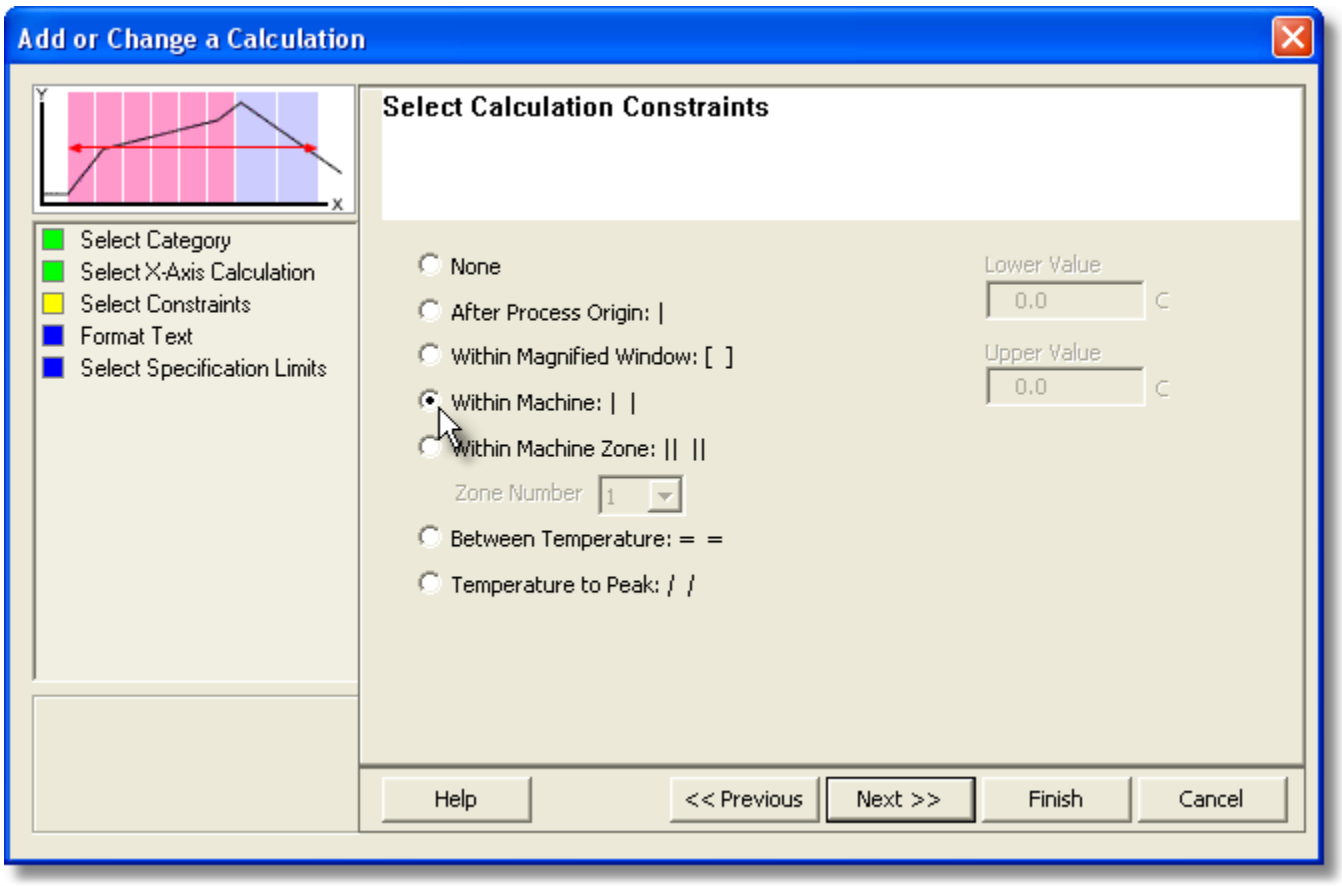
4) Select the ***Next*** command button.
5) Select a Time (X) Axis Value.

If any ***Temperature Reference (Y)*** calculation is selected, the software requires a Temperature (Y) Reference Line to be established. Refer to topic ***Software>Menus>Profile>Add Temperature (Y) Reference Lines***.

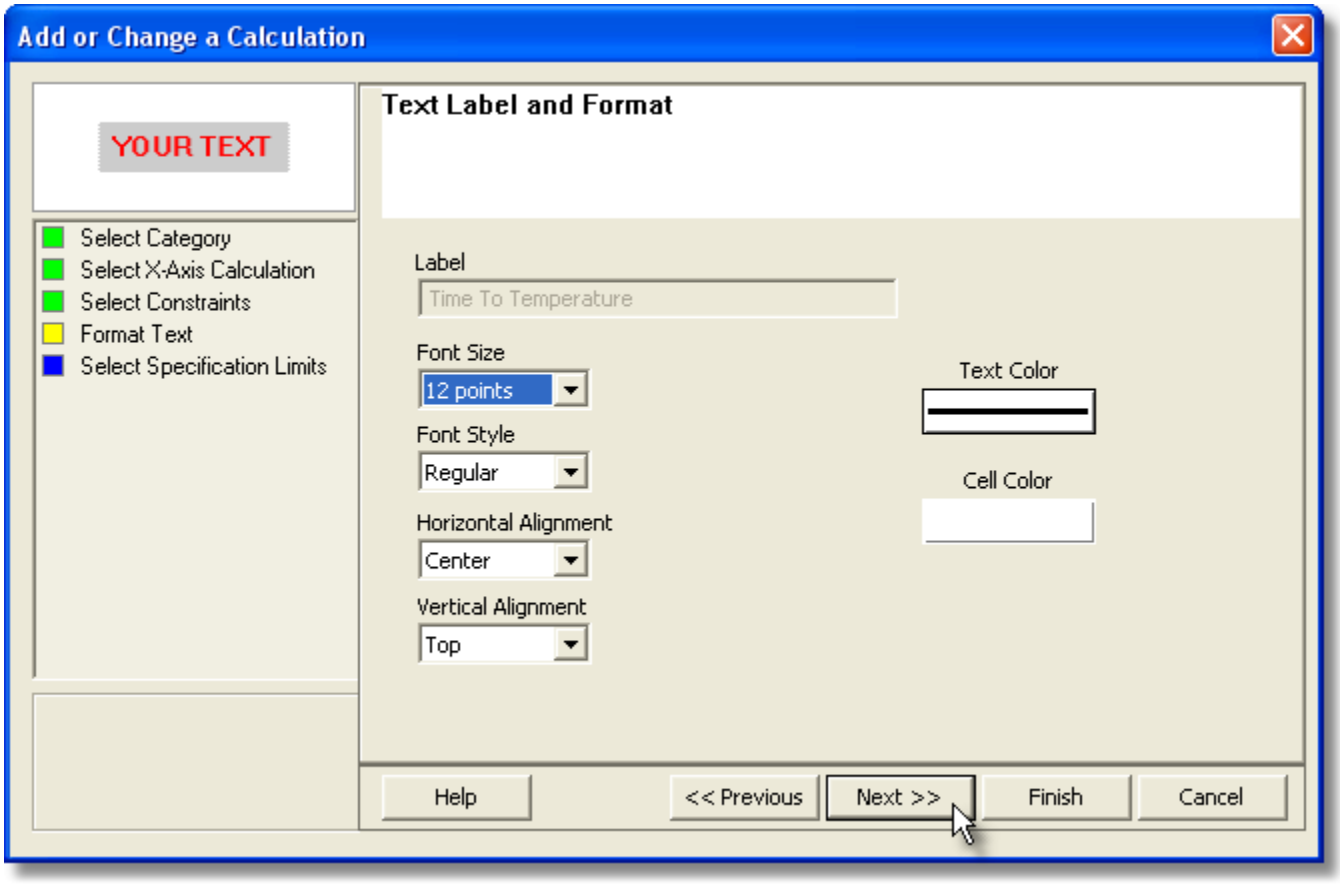


6) Select the ***Next*** command button.
7) Select the calculation constraints. These options are the specified area on the Time (X) Axis where the values are to be extracted from. When a constraint is applied, the constraint symbol appears in the header of the calculation.

If the ***Within Magnified Window*** constraint is selected and the Magnify tool is used to zoom in on a portion of the Data Graph, the Data Table displays the statistics for those values within the magnified window.

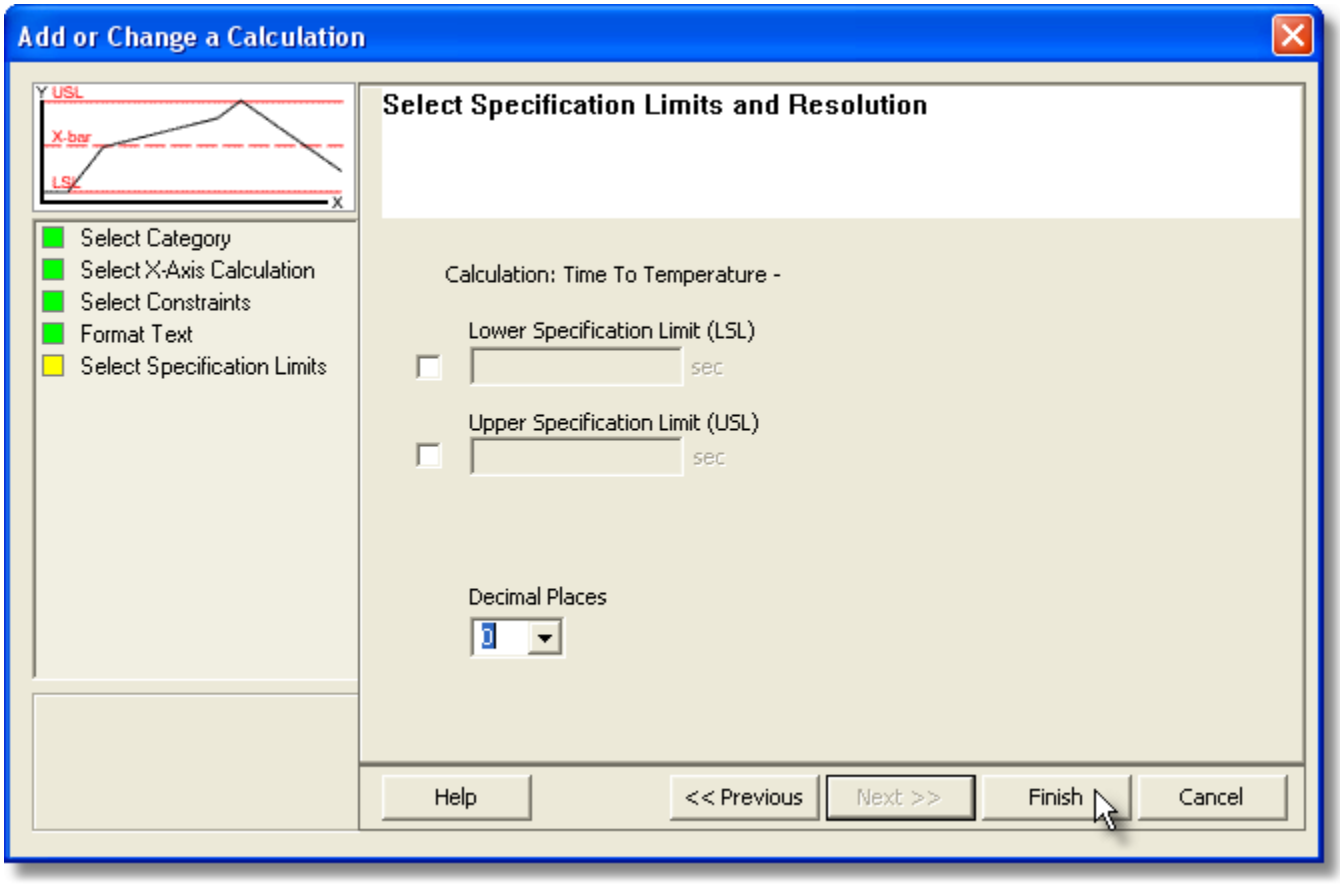


8) Select the ***Next*** command button.
9) Select desired text formatting options.



10) Select the ***Next*** command button.

11) Select Specification Limits and Units. If these values are violated colored bars will appear in the formatted template cell. Refer to topic ***Software>Page Tabs>Profile>Data Table>Template>Specification Limit Indicators*** for more information.



12) Select the ***Finish*** command button to complete the wizard and display the new calculation data in the selected template column.

5.4.4.3.1.1.3. Slope (dX/dY)

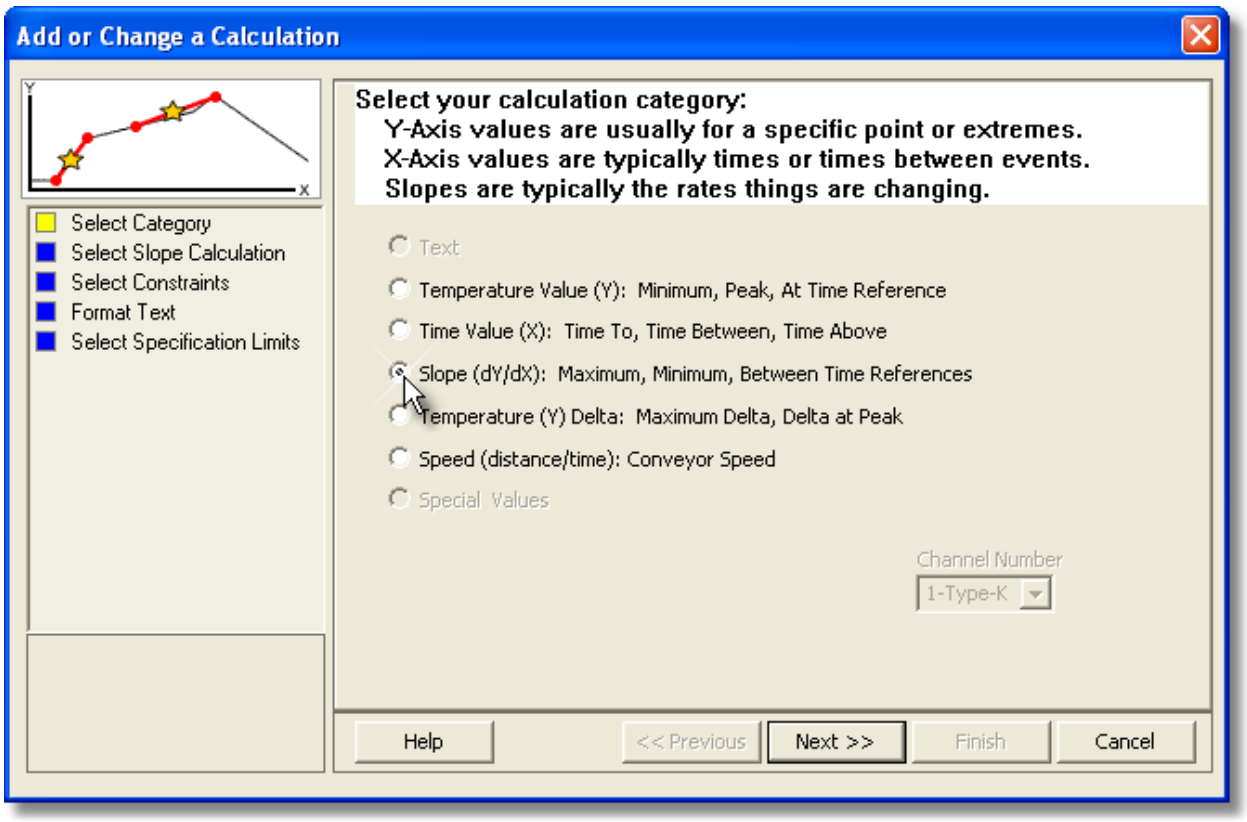
To add or edit Slope Value content:

1) Right-click a template cell and a shortcut menu appears.
2) Select ***Add Content*** or ***Edit Content*** from the shortcut menu and the ***Add or Change a Calculation*** wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

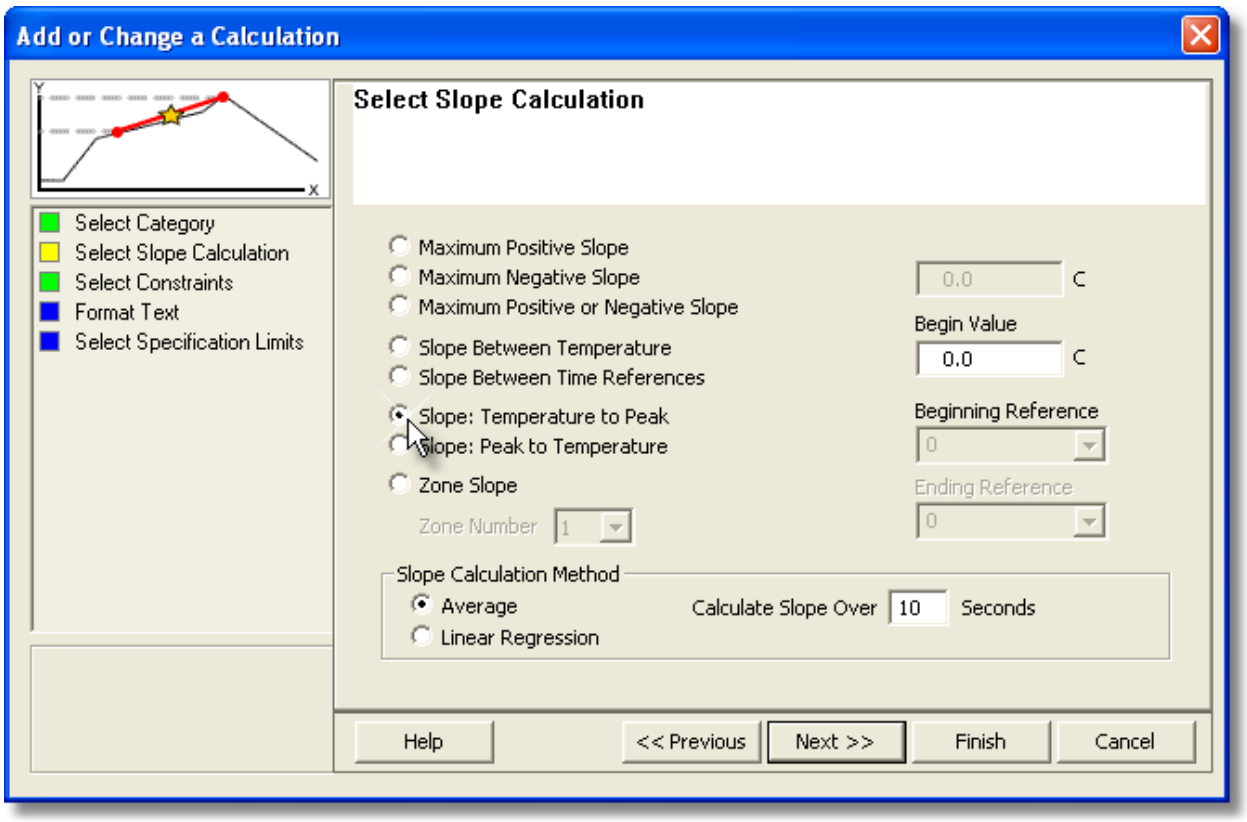
Current Completed Remaining

3) Click ***Slope (dX/dY)***.

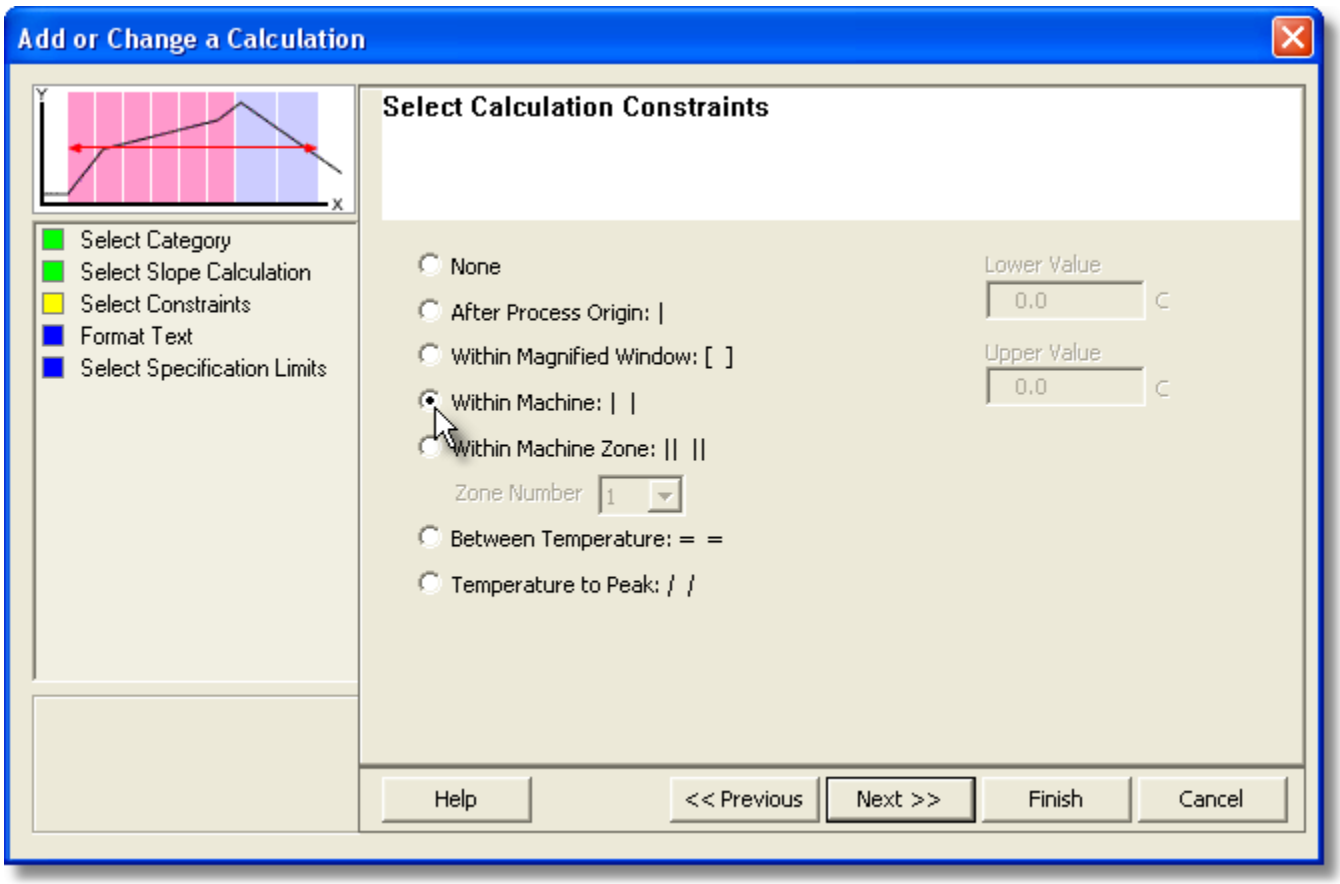


4) Select the ***Next*** command button.
5) Select a Slope Value.

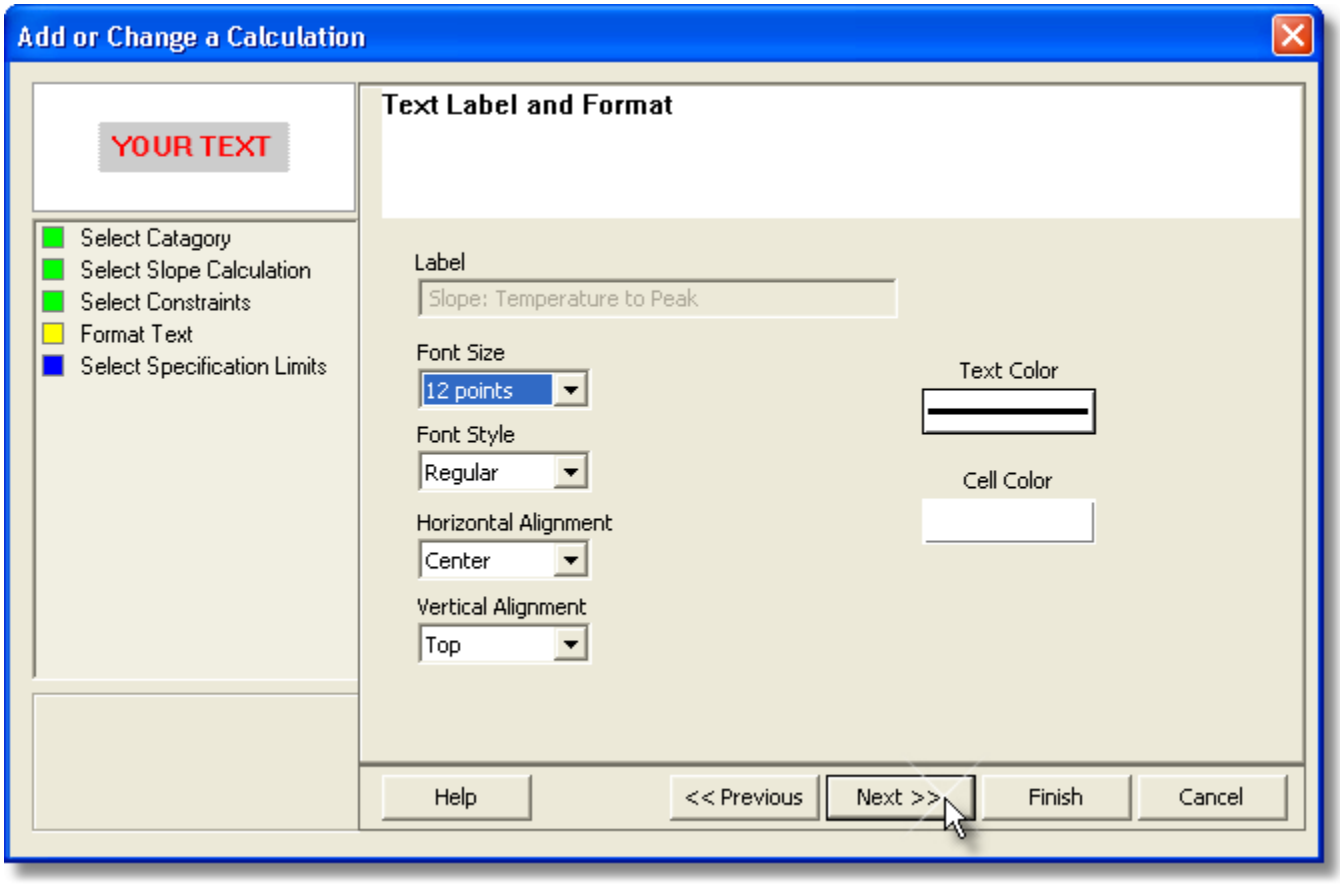
If ***Slope Between Time References*** calculation is selected, the software requires the user to select an established Time (X) Reference line. If one is not established the software automatically creates one on the Profile Page Tab Data Graph.



6) Select the ***Next*** command button.
7) Select the calculation constraints. These options are the specified area on the Time (X) Axis where the values are to be extracted from. When a constraint is applied, the constraint symbol appears in the header of the calculation.

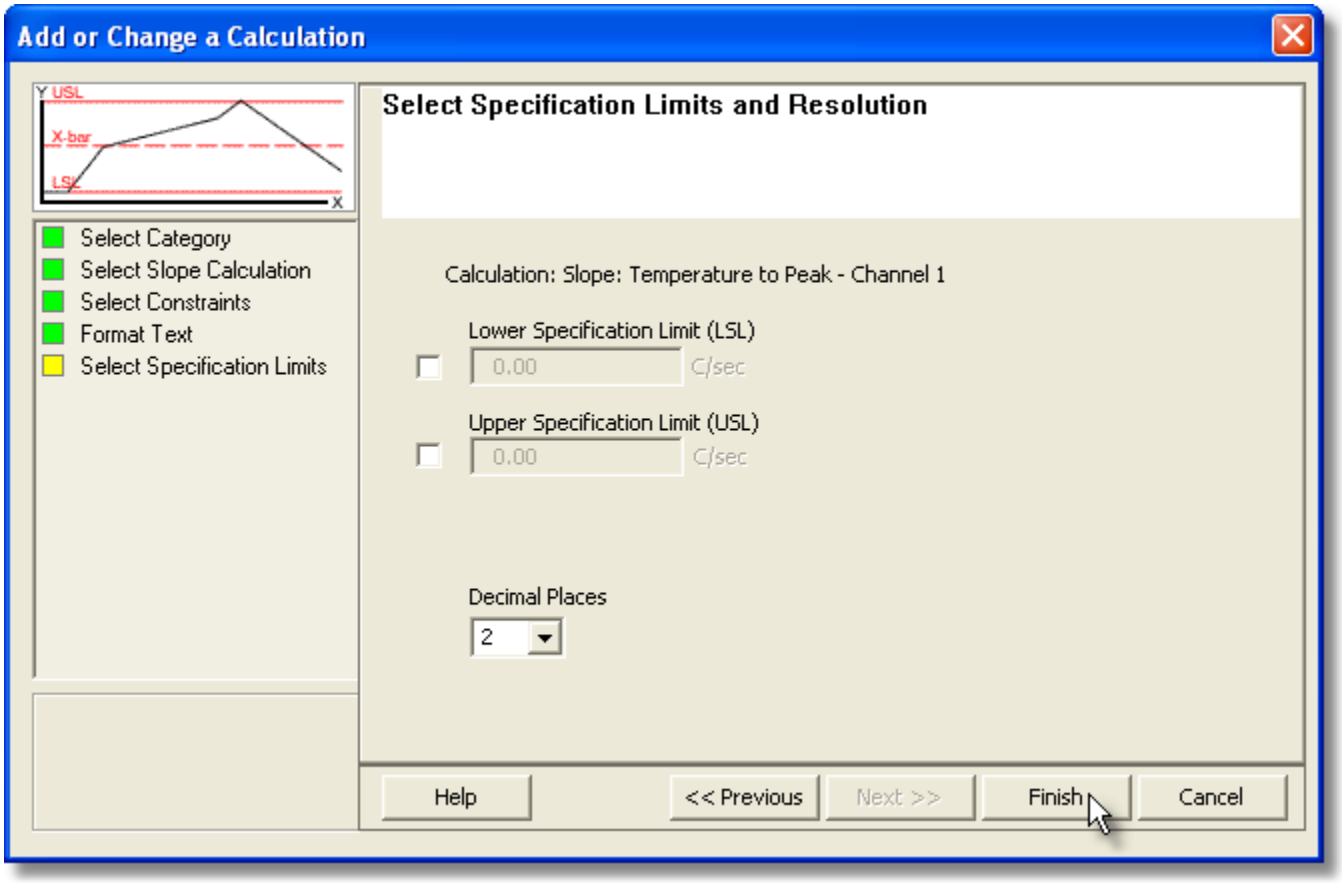


8) Select the ***Next*** command button.
9) Select desired text formatting options.



10) Select the ***Next*** command button.

11) Select Specification Limits and Units. If these values are violated colored bars will appear in the formatted template cell. Refer to topic ***Software>Page Tabs>Profile>Data Table>Template>Specification Limit Indicators*** for more information.



12) Select the ***Finish*** command button to complete the wizard and display the new calculation data in the selected template column.

5.4.4.3.1.1.4. Temperature (Y) Delta

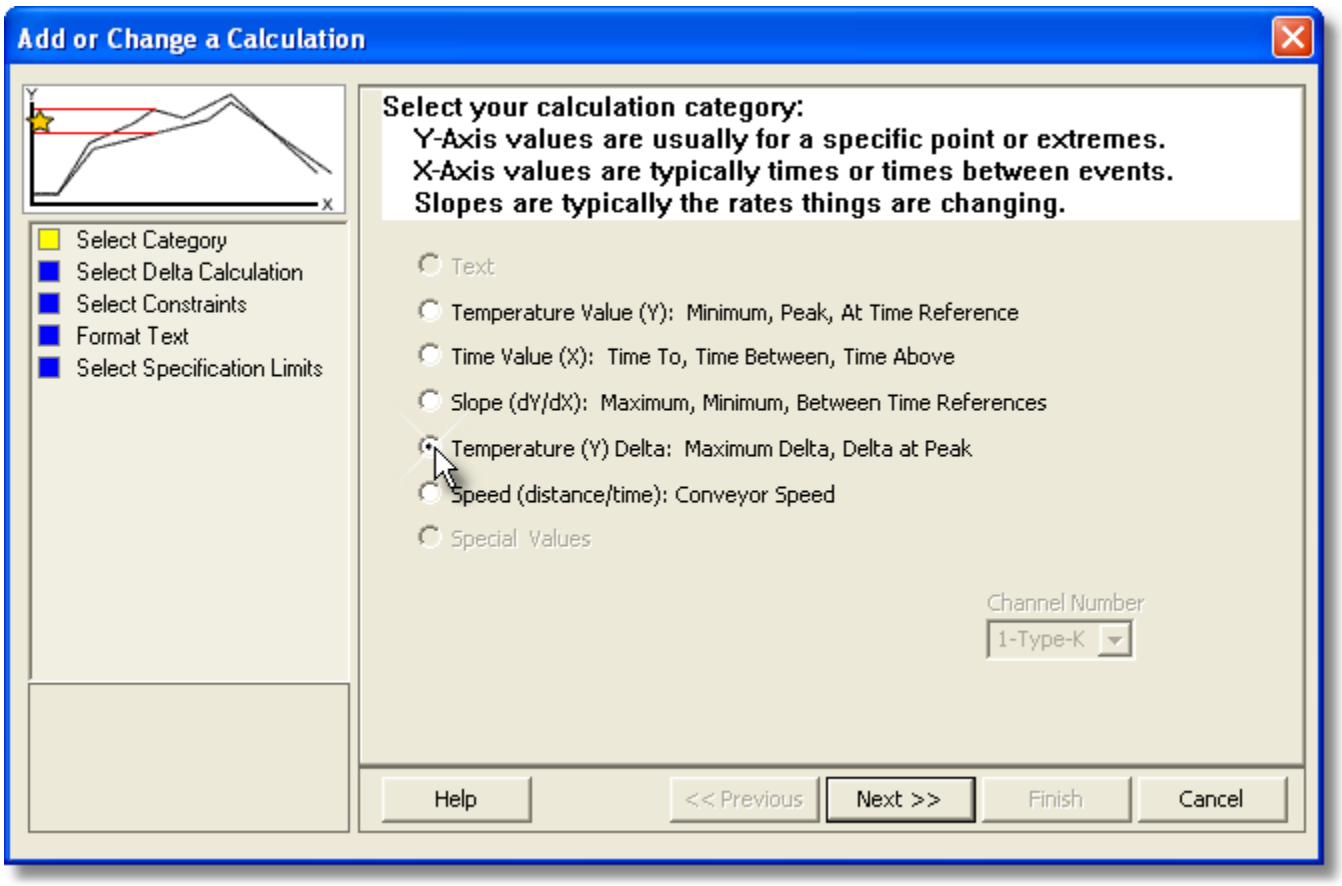
To add or edit Temperature (Y) Delta content:

1) Right-click a template cell and a shortcut menu appears.
2) Select ***Add Content*** or ***Edit Content*** from the shortcut menu and the ***Add or Change a Calculation*** wizard appears.

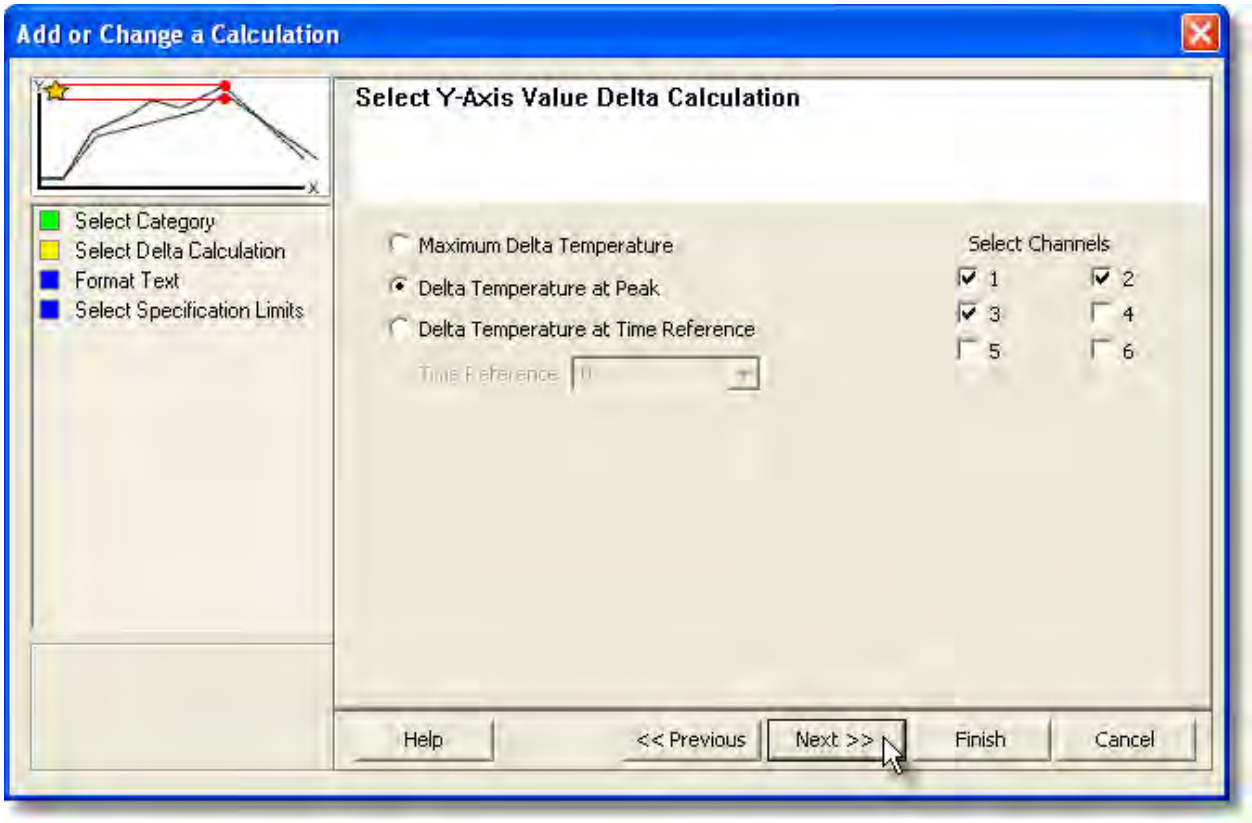
When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

Current Completed Remaining

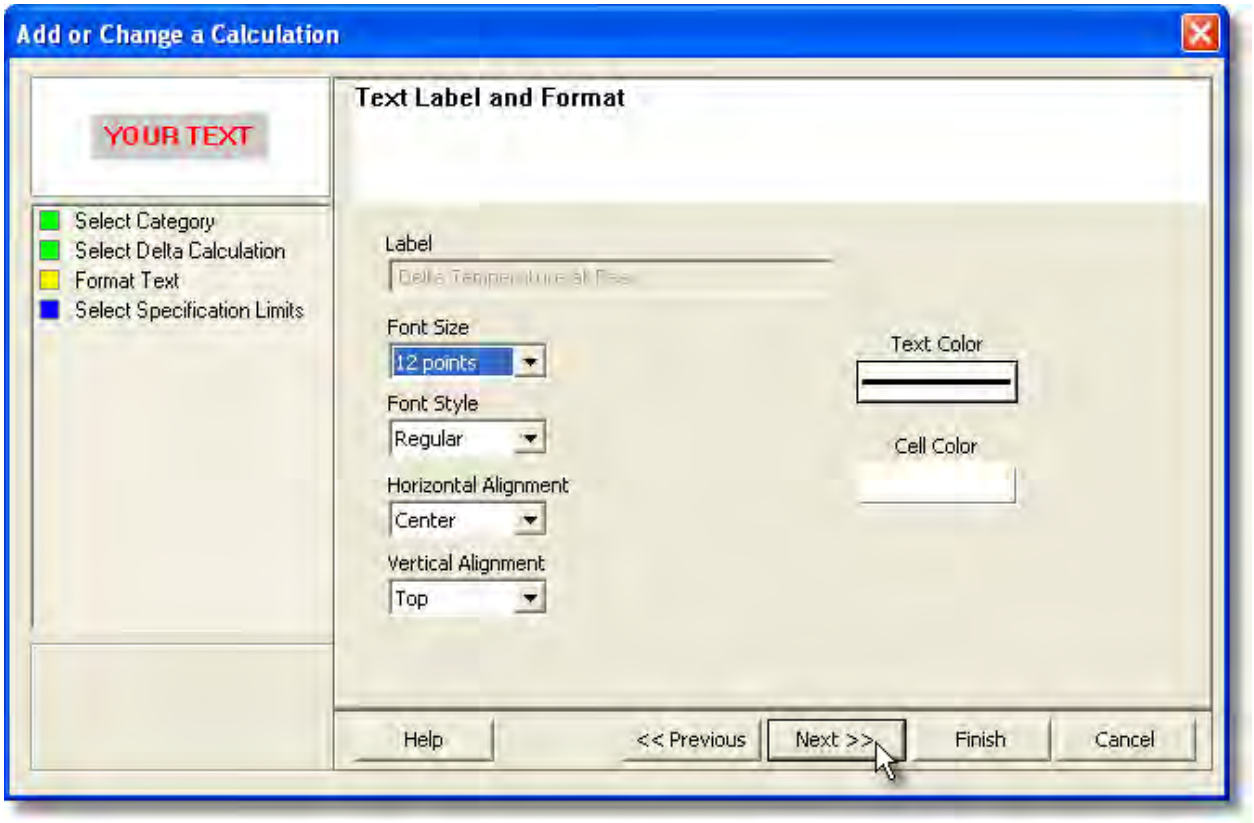
3) Click ***Temperature (Y) Delta*** and which channel to derive the data from.



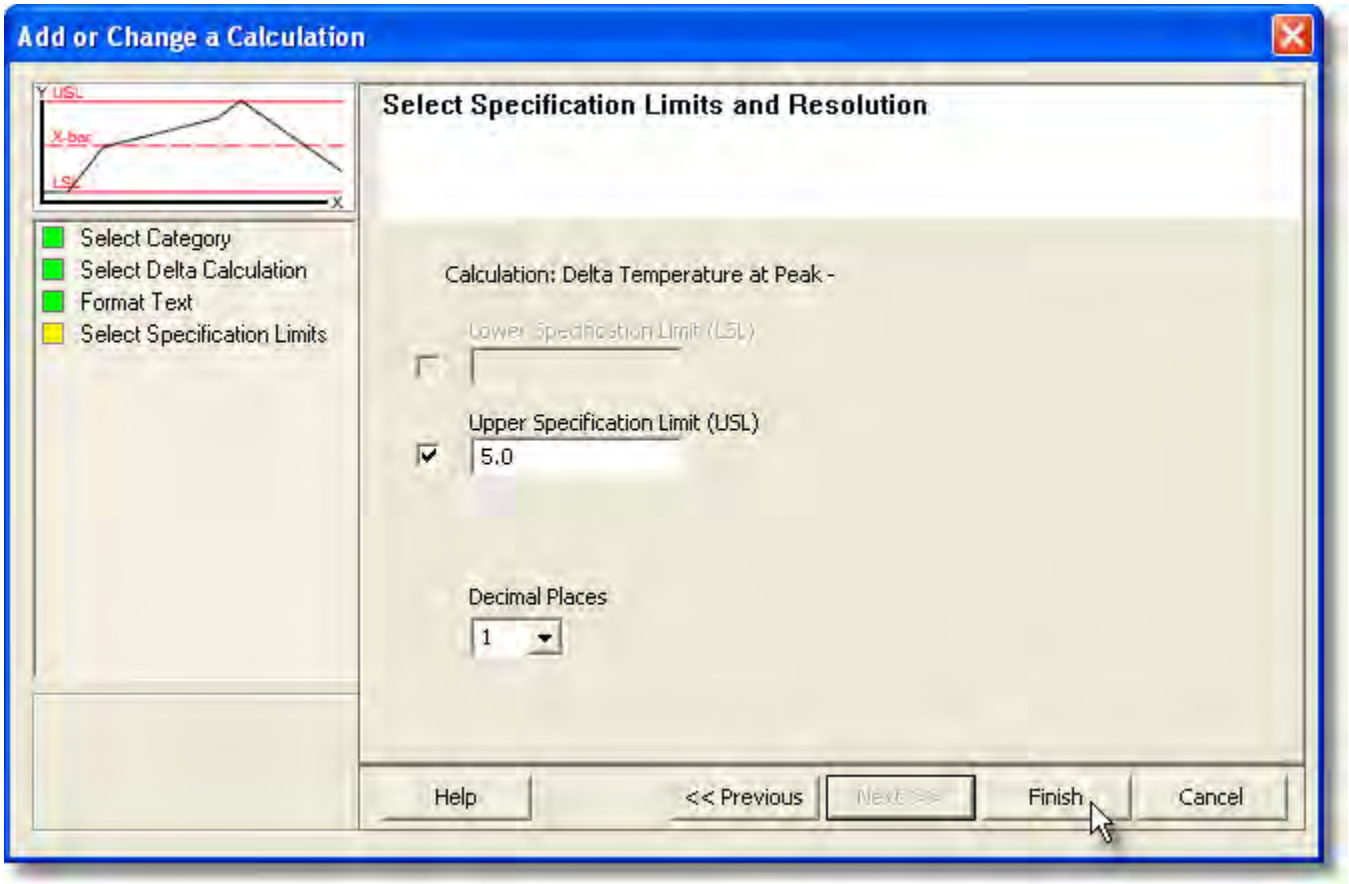
4) Select the ***Next*** command button.
5) Select a Y-Axis value delta calculation and which channels to you wish to be included in this calculation.



6) Select the ***Next*** command button.
7) Select desired text formatting options.



8) Select the ***Next*** command button.
9) Select Specification Limits and Units. If these values are violated colored bars will appear in the formatted template cell. Refer to topic ***Software>Page Tabs>Profile>Data Table>Template>Specification Limit Indicators*** for more information.



10) Select the ***Finish*** command button to complete the wizard and display the new calculation data in the selected template cell.

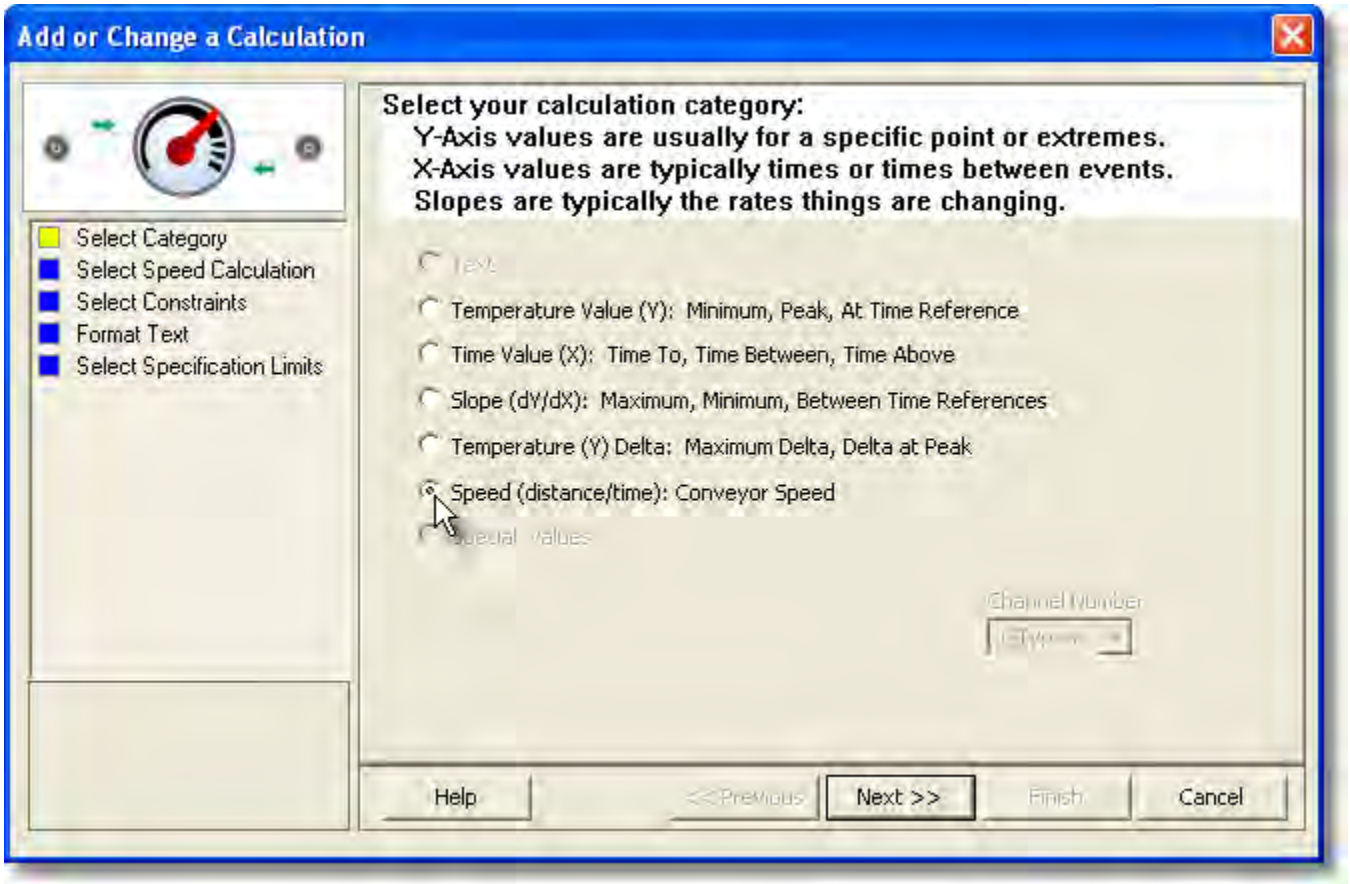
5.4.4.3.1.1.5. Speed (distance/time)

To add or edit Speed (distance/time) content:

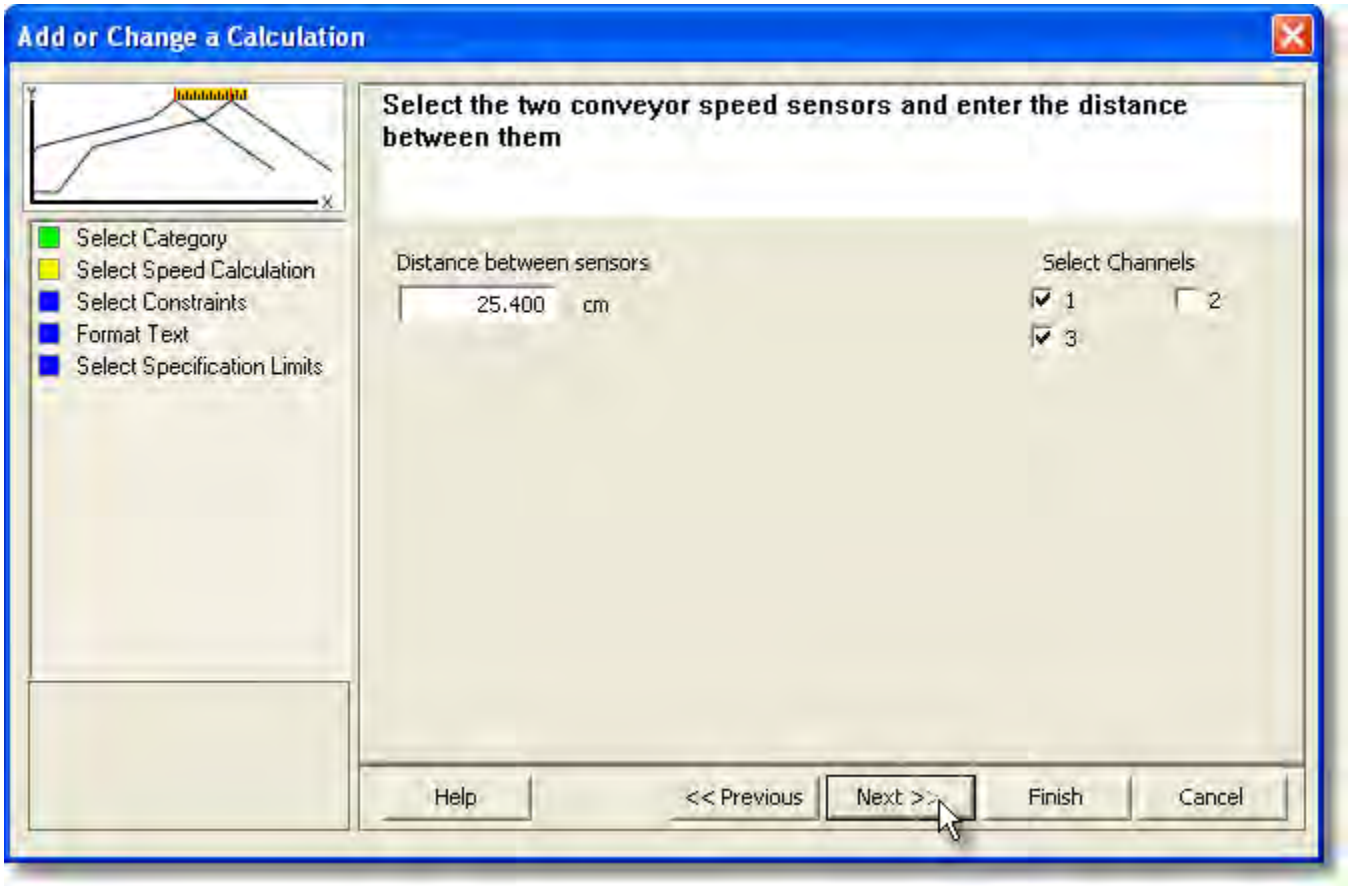
1) Right-click a template cell and a shortcut menu appears.
2) Select ***Add Content*** or ***Edit Content*** from the shortcut menu and the ***Add or Change a Calculation*** wizard appears.

> When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.
>
> Current Completed Remaining

3) Click ***Speed (distance/time)***.

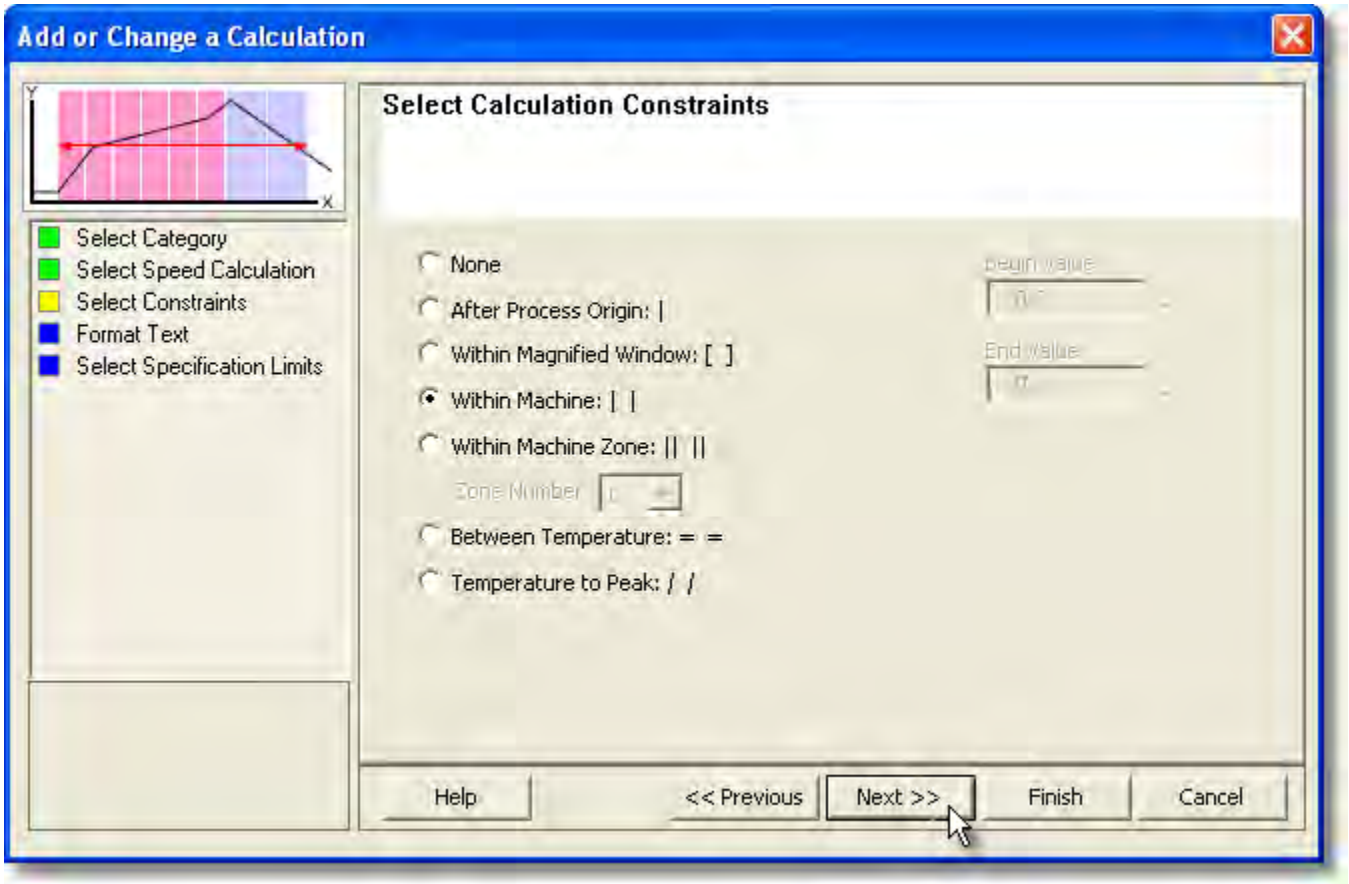


4) Select the ***Next*** command button.
5) Select the two conveyor speed sensors and the distance between them.

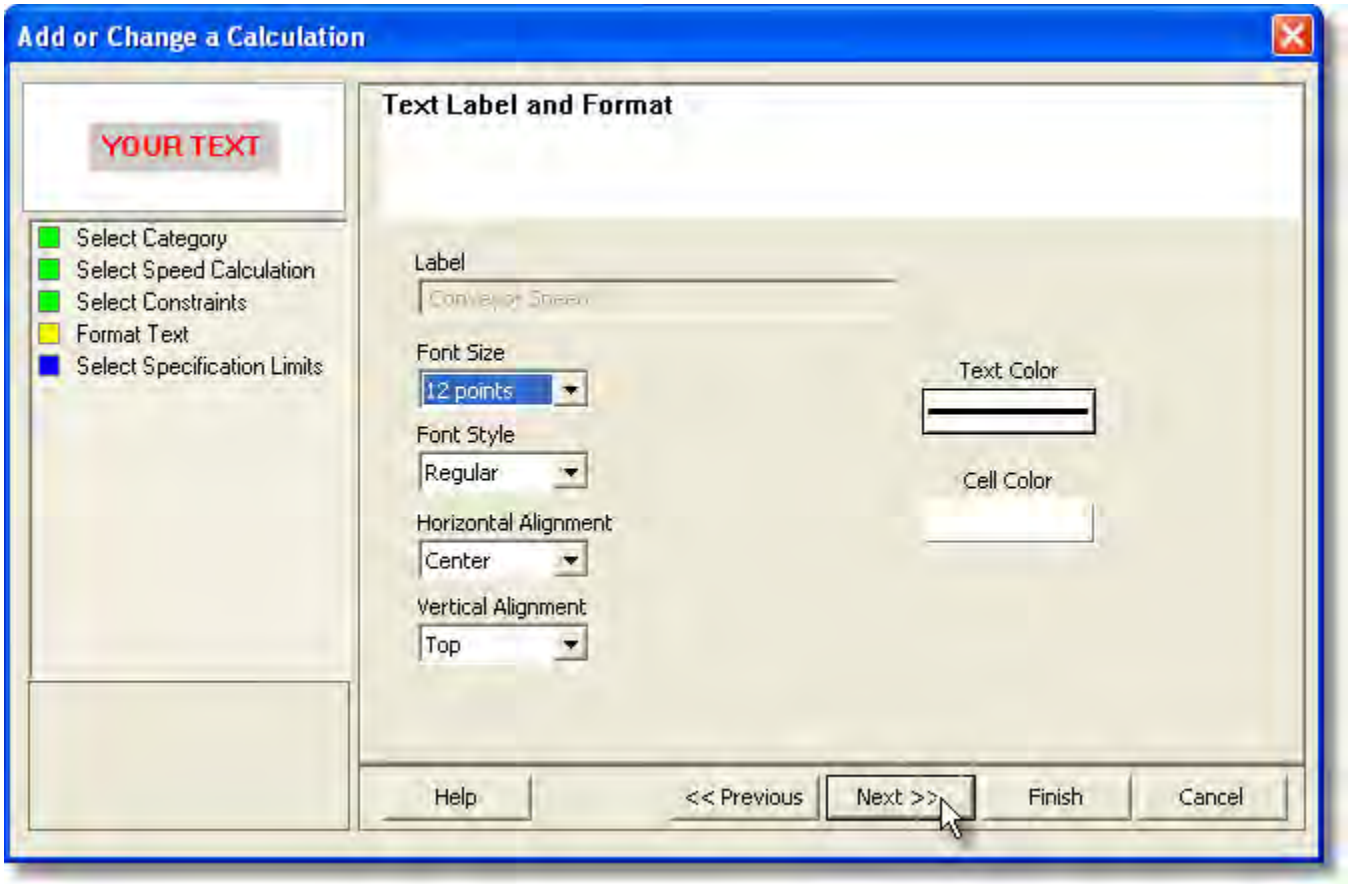


6) Select the ***Next*** command button.
7) Select a Time (X) Axis Value.

If any ***Temperature Reference (Y)*** calculation is selected, the software requires a Temperature (Y) Reference Line to be established. Refer to topic ***Add Temperature (Y) Reference Lines***.

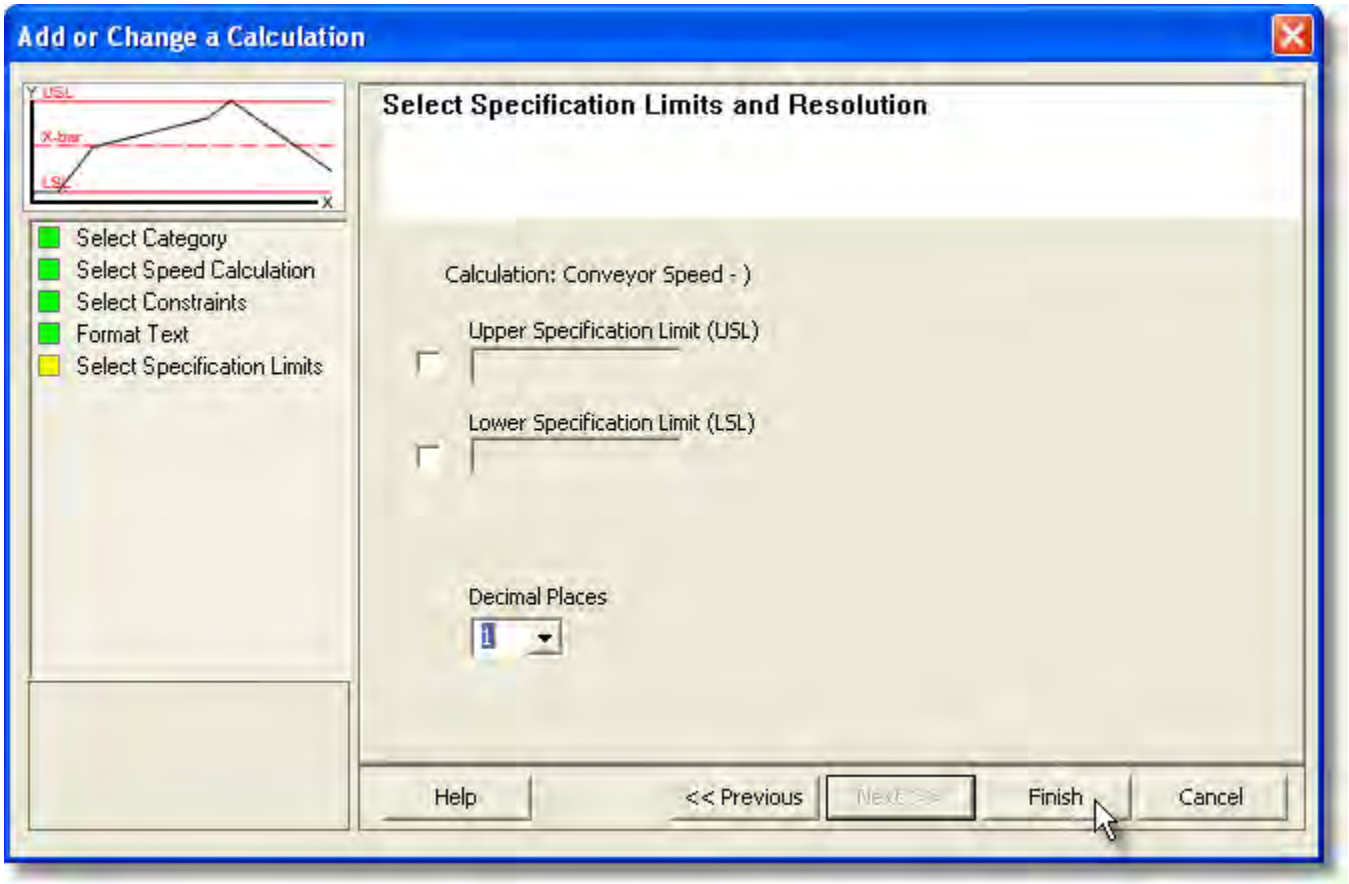


8) Select the ***Next*** command button.
9) Select desired text formatting options.



10) Select the ***Next*** command button.

11) Select Specification Limits and Units. If these values are violated colored bars will appear in the formatted template cell. Refer to topic ***Software>Page Tabs>Summary>Template>Specification Limit Indicators*** for more information.



12) Select the ***Finish*** command button to complete the wizard and display the new calculation data in the selected template cell.

5.4.4.3.1.1.6. Integral (Y*time)

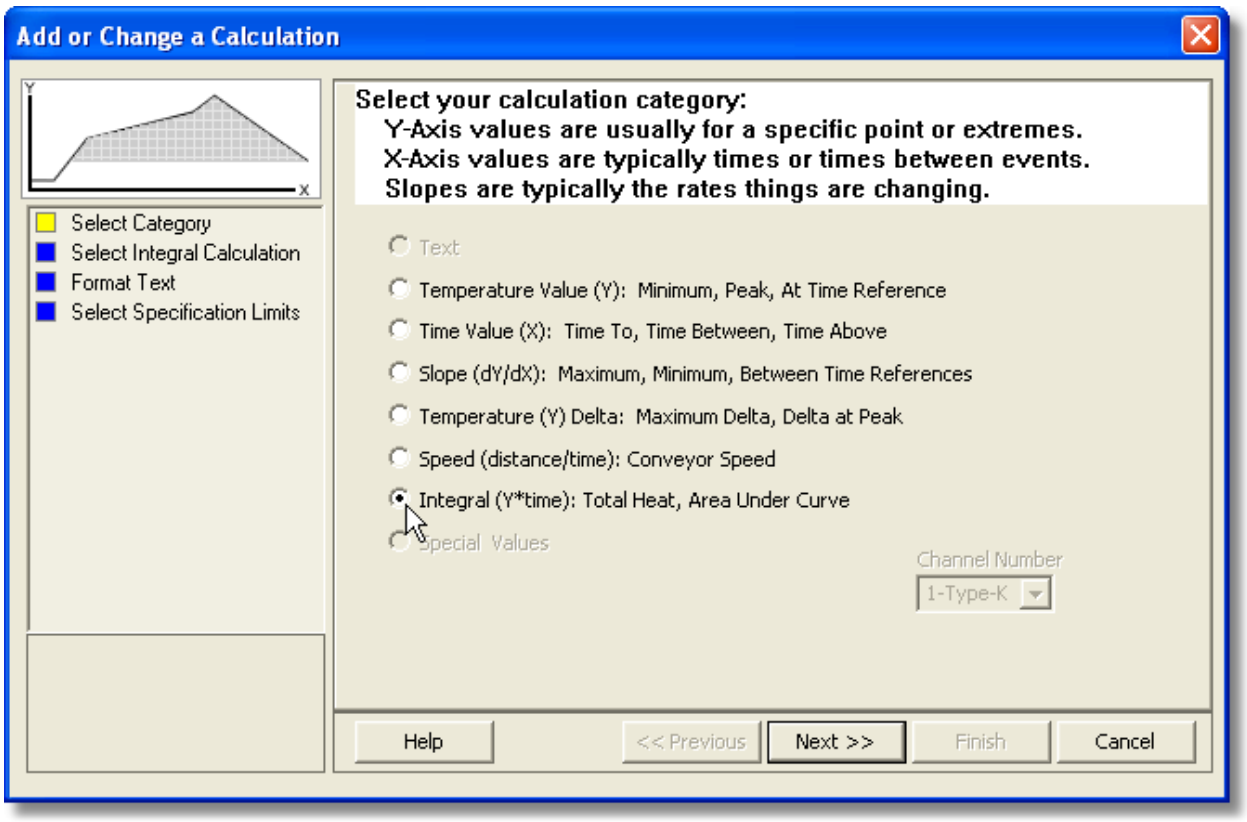
To add or edit Speed (distance/time) content:

1) Right-click a template cell and a shortcut menu appears.
2) Select ***Add Content*** or ***Edit Content*** from the shortcut menu and the ***Add or Change a Calculation*** wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

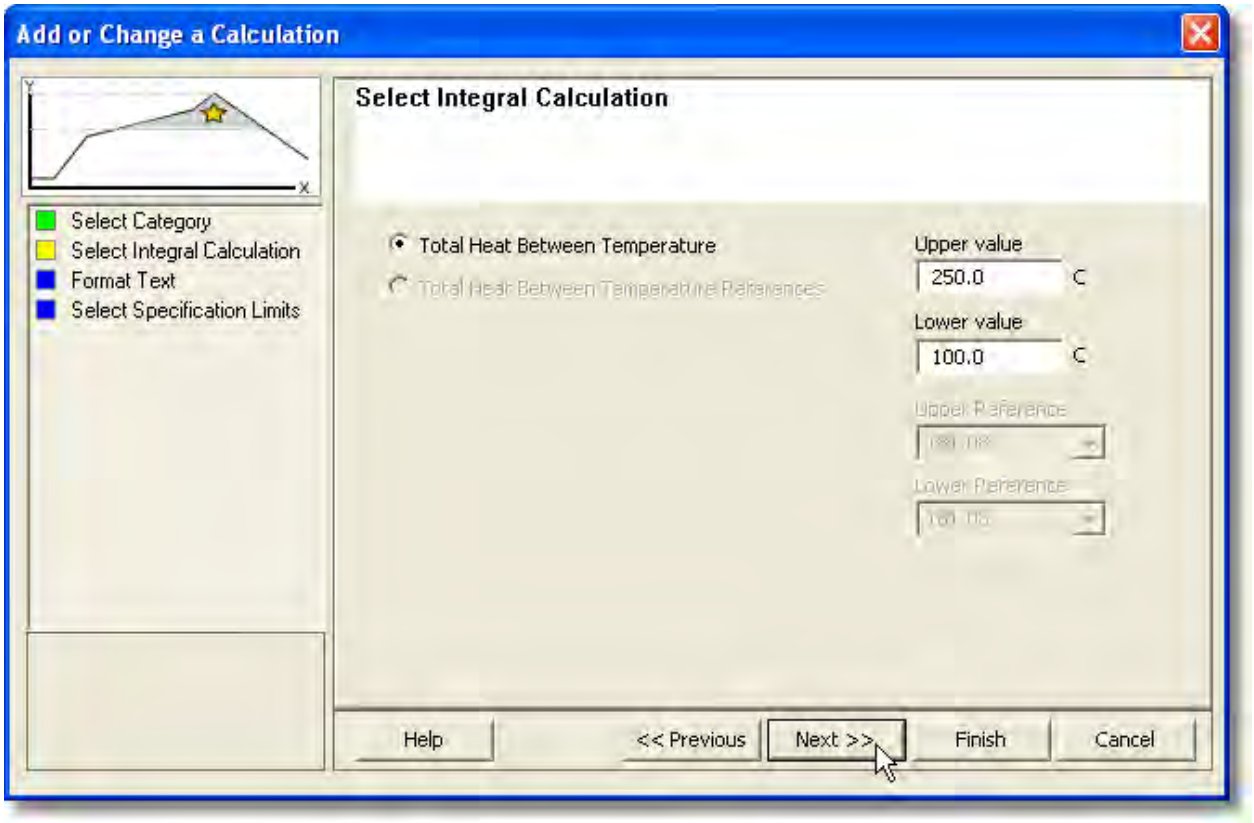
Current Completed Remaining

3) Click ***Intergral (Y*time)***.

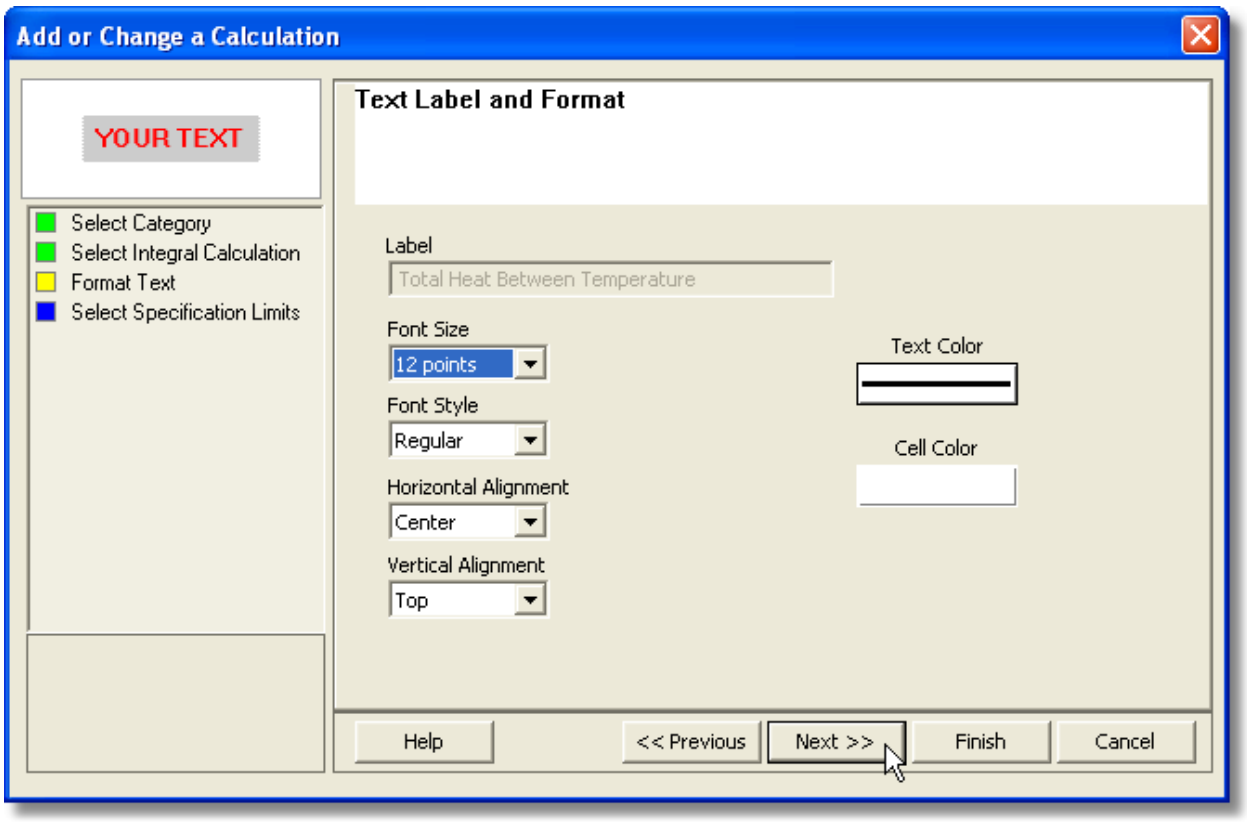


4) Select the ***Next*** command button.
5) Enter the Lower value to define the base of the integral calculation and an Upper value to define maximum value to include in the integral.

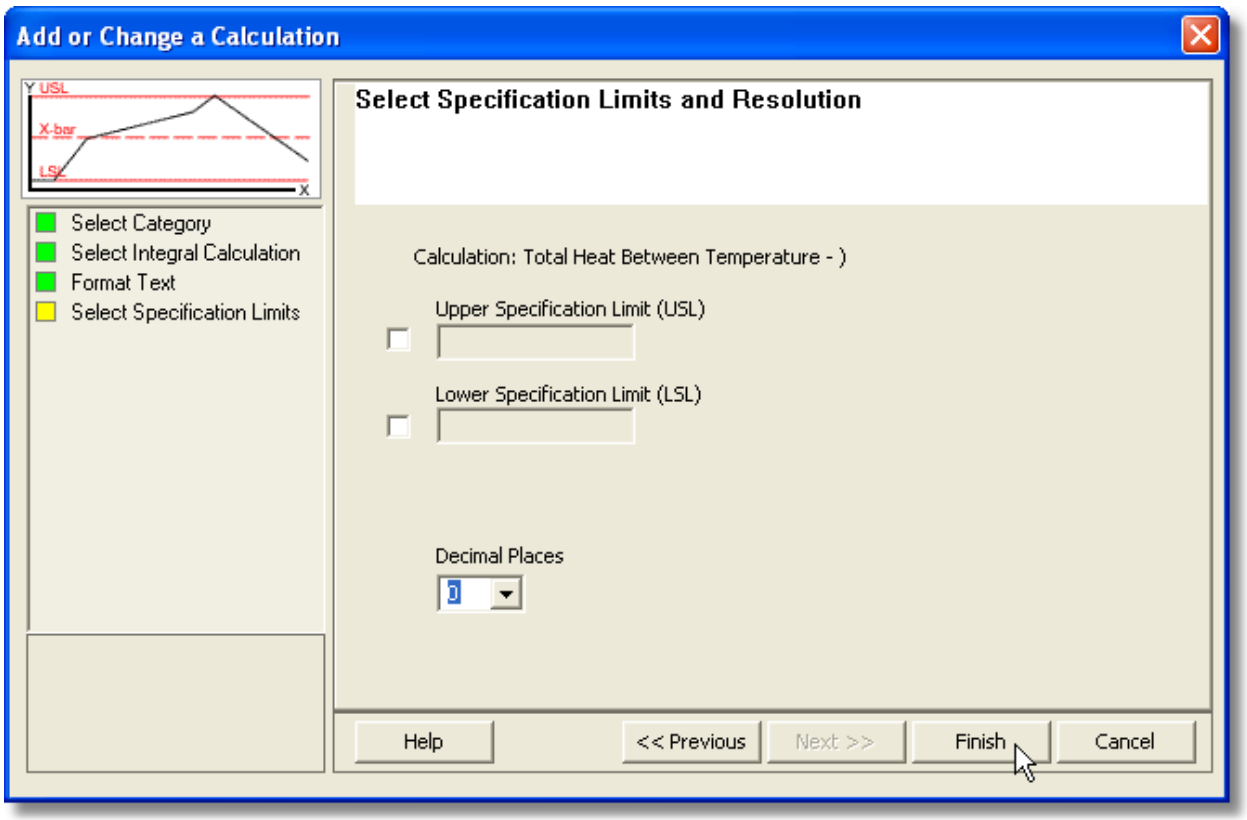
To not restrict the maximum value of the integral, a very large value can be set for the Upper value.



6) Select the ***Next*** command button.
7) Select desired text formatting options.



8) Select the ***Next*** command button.
9) Select Specification Limits and Units. If these values are violated colored bars will appear in the formatted template cell. Refer to topic ***Software>Page Tabs>Profile>Data Table>Template>Specification Limit Indicators*** for more information.



10) Select the ***Finish*** command button to complete the wizard and display the new calculation data in the selected template cell.

5.4.4.3.1.2. Specification Limit Indicators

Each Parameter displayed on the Data Tab can have both Lower and Upper specifications applied. If a specification limit is violated, the software displays a red or blue indicator on the left edge of the Data Table cell.

If a USL has been exceeded, that parameter indicator will appear in **red** (indicating it is above the specification limit). If a parameter is less than the user specified LSL, that parameter indicator will be appear in **blue** (indicating below the specification limit).

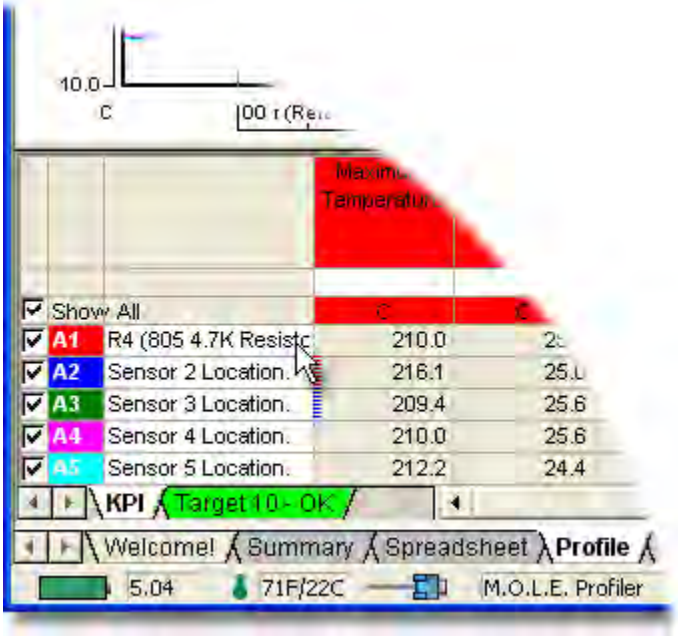
Refer to topic *Software>Page Tabs>Profile>Data Table>Template>Add & Edit Content Wizard* for information on how to apply LSL and USL values.

5.4.4.3.2. Sensor Location Description

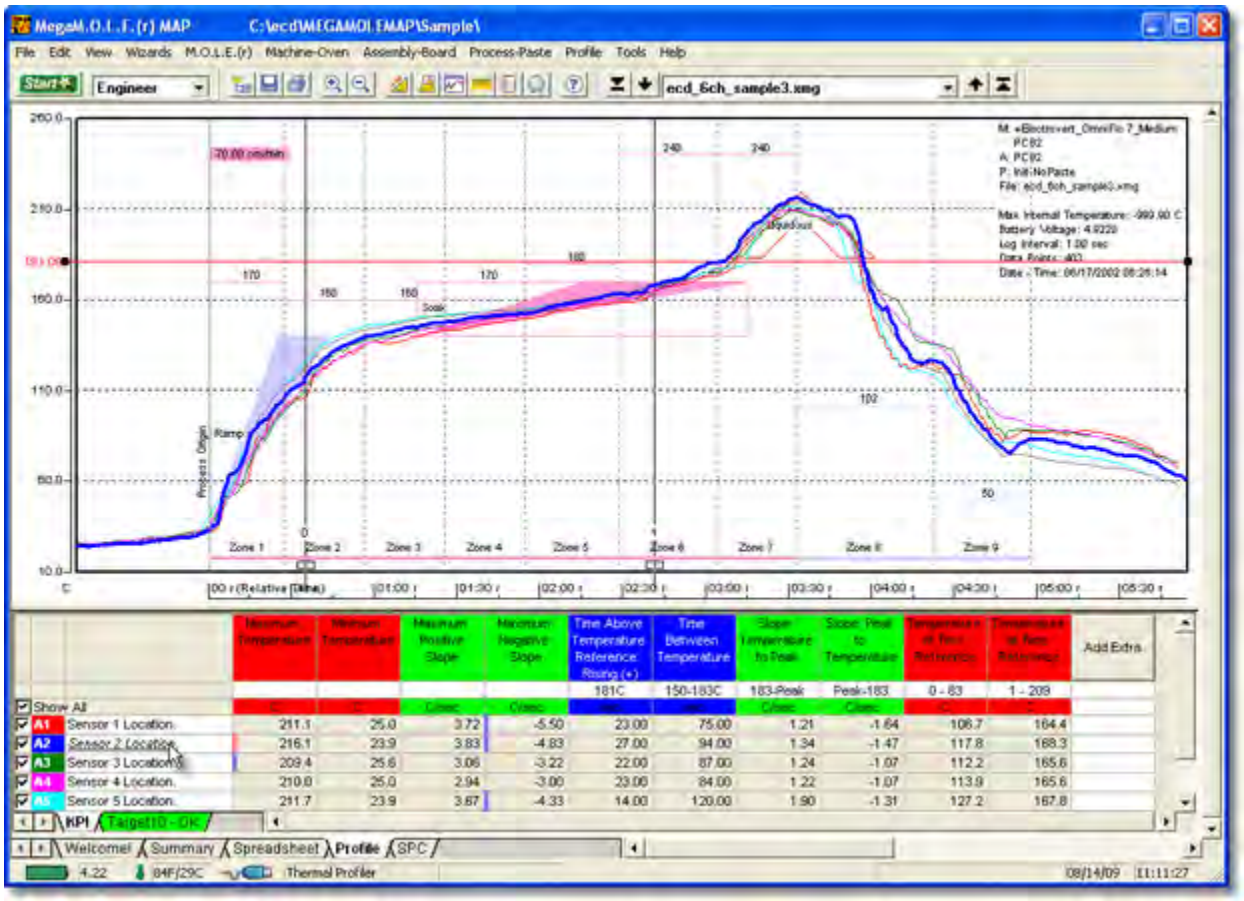
The user can use the Sensor Location cells in the Data Table to describe the location where each sensor is connected to the test product. The color and description indicates which Data Plot on the Data Graph it represents.

To change a Sensor location description:

1) Click a Sensor Location cell and type the desired name and press the [***enter***] key. The Sensor Location description can also be accessed by using the ***Set Assembly Information*** command in the ***Assembly*** menu.



When the user places the mouse pointer over a Sensor Location Description, that channel on the Data Graph profile will be become bolder so the user can easily identify it.



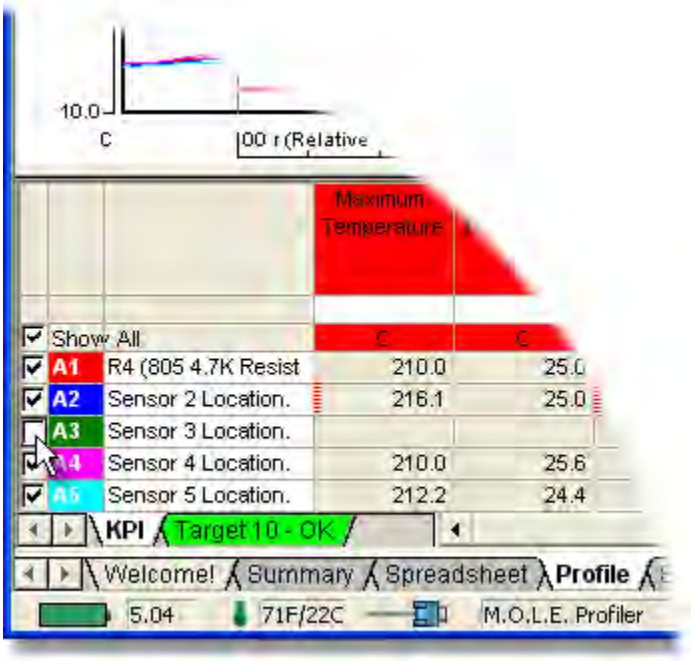
5.4.4.3.3. Channel Check Boxes

The Channel check boxes control whether the associated Data Plot is displayed on the Data Graph and whether the data for that channel are included in the data table calculations.

To turn a Data Plot ON or OFF:

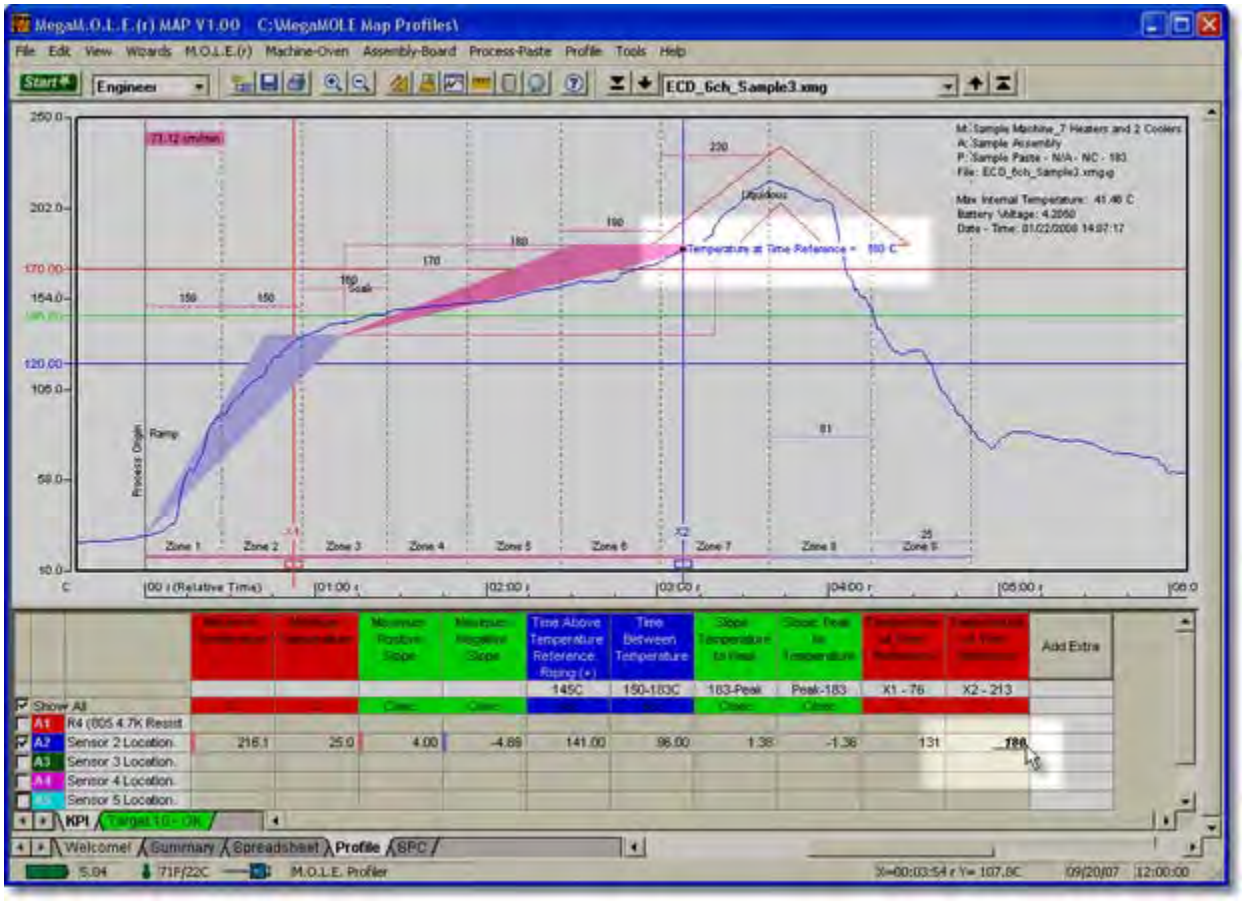
1) Click the channel check box beside a Sensor location description to turn it “ON” or “OFF”.

The user can click the ***Show All*** check box to turn all channels “ON” or “OFF”. This is helpful when a data run has a large amount of channels and they want to view a smaller amount. To achieve this, click the ***Show All*** check box to turn all channels “OFF”. Then click the desired channel check boxes to turn them “ON”



5.4.4.3.4. Value Pop-up

Each value in the Data Table can be displayed as a Value Pop-up. A Value Pop-up is graphically illustrated on the Data Graph showing how and where that value was extracted from the profile.



To display a Value Pop-up:

1) Select the Profile Page Tab view.
2) Move the mouse pointer and hover over a desired value cell in the Data Table. That value will be displayed on the Data Graph where that value was extracted. To display more than one value pop-up at one time, left-click on each desired value cell.

To print Value Pop-ups displayed on the Data Graph, they must be displayed using selection method. Value Pop-ups displayed using the hover method will not print.

To remove a Value Pop-up:

1) Using the mouse pointer, select the object on the Data Graph by clicking it once. The object trackers will then become bold indicating that it has been selected.
2) Press the [Delete] key on the keyboard to remove the object.

Additional methods to remove value pop-ups are, left-click on each value cell displayed or press the [ESC] key to remove them all at one time. Also, selecting a different page tab refreshes the Data Graph.

5.4.4.4. Target 10-OK

Target 10-OK is a simple yet powerful way to achieve the pursuit of the perfect profile. The user specifies requirements for the profile initial slope, soak, TAL (time above liquidous), peak parameter and the channels that these requirements are to be applied. Then the software automatically calculates a single go/no-go number.

A Target 10 specification is created using the ***Create Target 10 Specification*** workflow wizard. Refer to topic ***Menus>Wizards Menu>Create Target 10 Specification*** for more information.

The features associated with ***Target 10-OK*** can only be used when in ***Engineer mode***. They can only be viewed when in ***Verify mode***.

Target 10-OK feature allows the user to answer the following questions:

1) How do I specify a good profile?

- Answer: Based on the selected process specification and specification limits, the user can set the four process parameters (Initial slope, Soak, TAL & Peak).

2) How do I know I have a good profile?

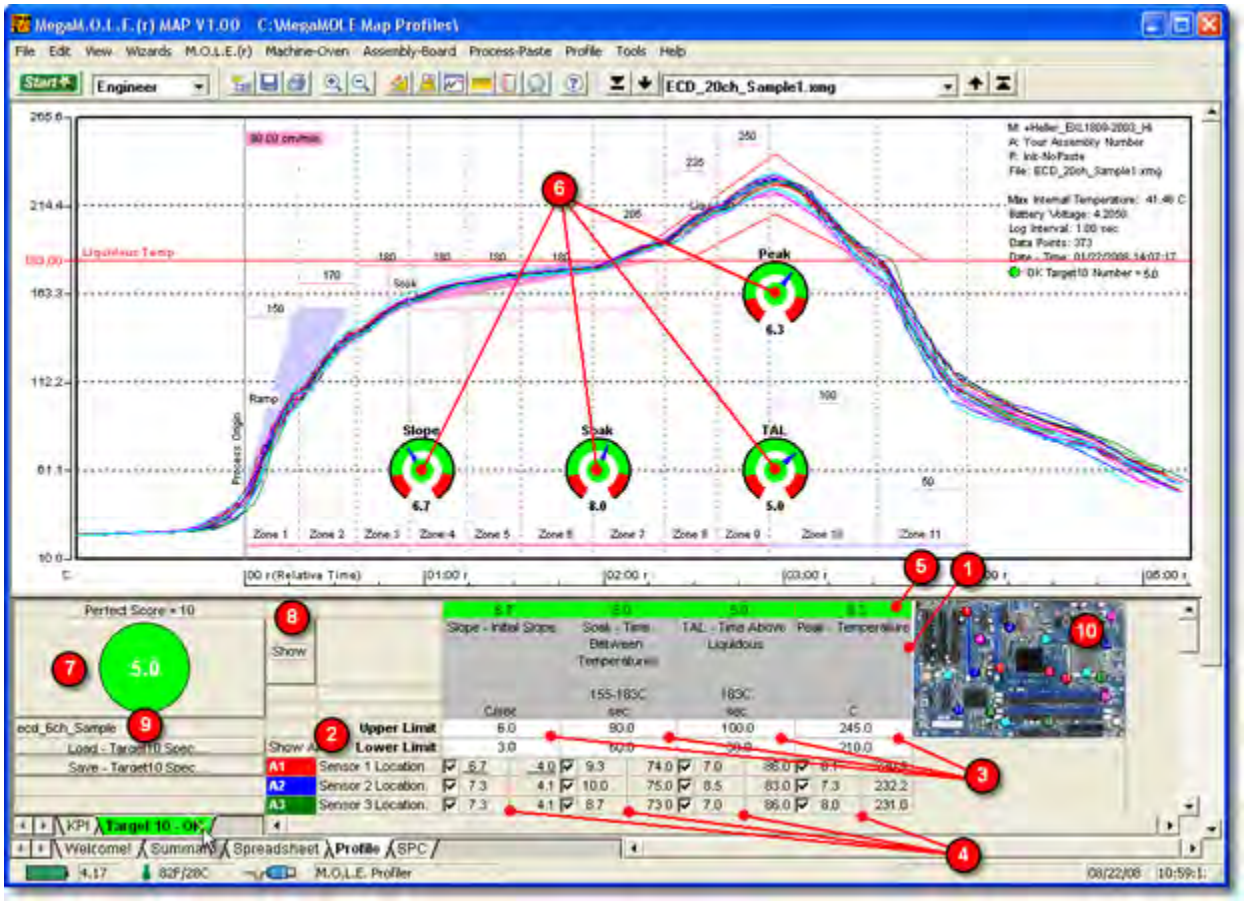
- Answer: Based on the specified settings, the active individual parameter indicators (Slope, Soak, TAL & Peak) display the normalized values. Once Target 10-OK numbers are calculated, they reduce the evaluation of the displayed data run profile to a single number. This number appears in a two state (Red-Green) indicator with the worst condition number appearing in the Final Indicator symbol.

  A score of less than 0.0 is bad, 0.0-5.0 is good, 5.1-9.9 better and 10.0 being the perfect score.

3) How can I improve the profile?

- Answer: Using the ***Prediction*** Tool, the user can change zone temperature values or the conveyor speed and adjust the outcome toward a perfect 10.0.

Target 10-OK features:



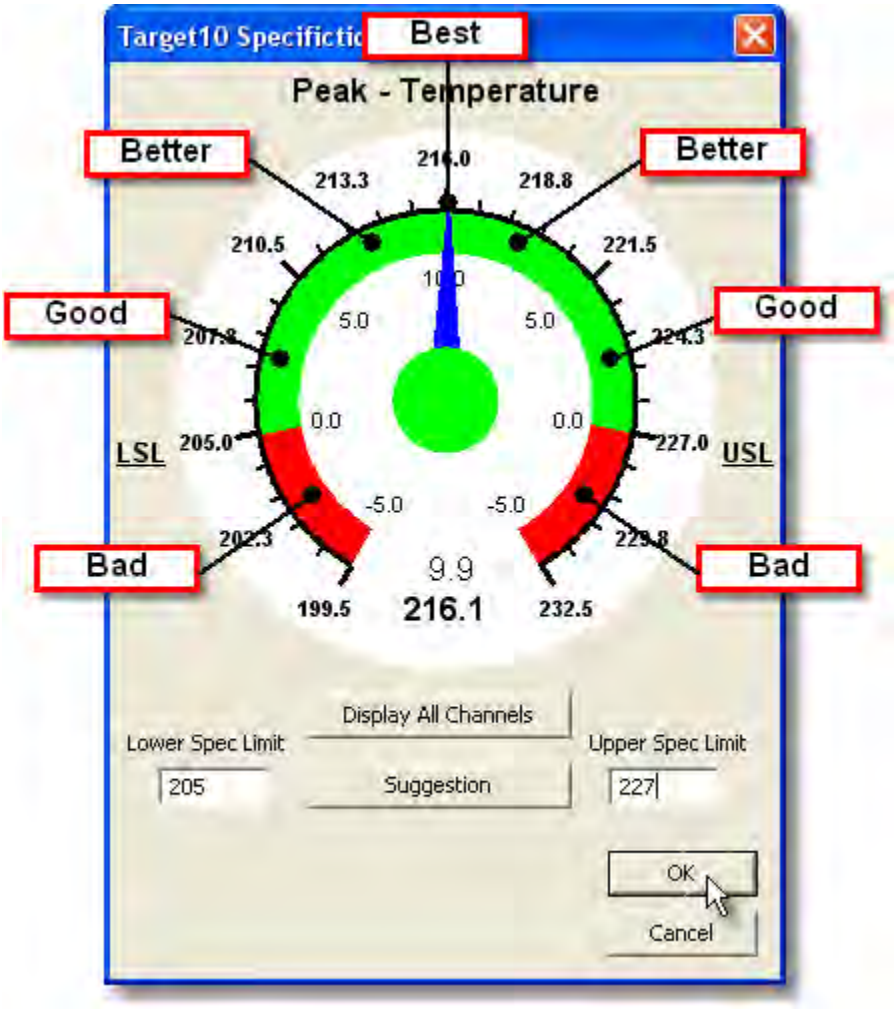
1. **Process Parameters:** Initial slope, Soak, TAL & Peak parameters derived from the associated paste for the currently selected data run.
2. **Limit Adjustment:** Upper and lower specification limits from the selected process for each parameter. The user can adjust these as needed to meet their requirements.
3. **Parameter Values:** Actual values derived from the current data run.
4. **Normalized Values:** Parameter values in the data run converted to a single number based on a 0-10 scale. The software takes the parameter value then determines where it is in respect to the upper and lower specification limits. If the actual parameter value is in the exact center of the specification limits the normalized value will be a perfect 10.0.

Example: The Peak Temperature has an upper limit of 240.0°C and a lower limit of 195.0°C. The software subtracts the upper limit (240.0°C) from the lower limit (195.0°C) equaling (45°C). Then the software creates a 0-10 scale by dividing the 45°C by 20 equaling a scale of 1 point for every 2.25°C.

If the actual parameter value for channel 1 is 210.0°C. The software then determine where that value lands on the 0-10 scale. In this case it is 15°C higher than the lower limit so the software divides the 15°C by the scale value of 2.25°C which equals at 6.7 on the scale.

❺ **Worst Condition:** Once all of the Target 10-OK numbers are calculated into normalized values, the software reduces the evaluation of the displayed data run profile to a single worst condition number for each process parameter.

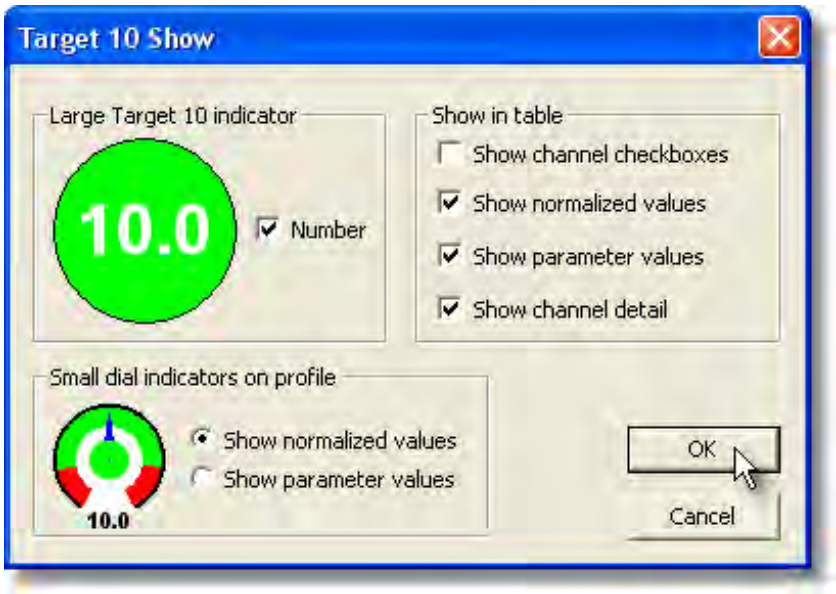
❻ **Individual Parameter Indicators:** These are individual visual indicators of the worst condition number for each process parameter. The user can click these indicators to launch the detail dialog box where they can visually analyze the worst condition number for each channel.



❼ **Final Indicator Symbol:** This is a two state (Red-Green) indicator that displays the worst condition number out of the four process parameters. This indicator can also be displayed on the data graph for easy identification in an manufacturing environment. To display click the ***Final Indicator Symbol*** to toggle the data graph. To restore the ***Individual Parameter Indicators*** select the symbol again or single-click anywhere within the data graph.

The Target 10-OK tab also indicates the go/no-go state by appearing in **GREEN** or **RED**. This is useful when the user is viewing the KPI tab so they can immediately know the Target 10-OK status of the displayed data run.

❽ **<u>Show button:</u>** The user can select this button to display or hide various Target 10-OK features.



❾ **<u>Target 10 Specification File Management:</u>** This area includes ***Load*** and ***Save*** Target 10 buttons to load and save Target 10 specification files (***.T10**). The ***Load*** button is used to load a saved Target 10 specification file which is displayed on the Data Graph. This typically is used to determine if different Target 10 specification may be a better match with the currently displayed data run. The ***Save*** button is

used to save a Target 10 specification if any adjustments have been made, or creating a new one based off of an existing Target 10 specification.

If a different Target 10 specification is saved with a data run, it does not affect the original Target 10 specification associated with the data run when using the ***OK*** button on the MEGAM.O.L.E.® or V-M.O.L.E.® profilers.

⑩ **Assembly Image:** This is a thumbnail image of the assembly product associated with the currently displayed data run. To view the sensor locations, right-click over the image and select the ***Enlarge*** command. When in ***Engineer*** mode the user has the ability to set the sensor locations. When in ***Verify*** mode, the sensor locations can only be viewed.

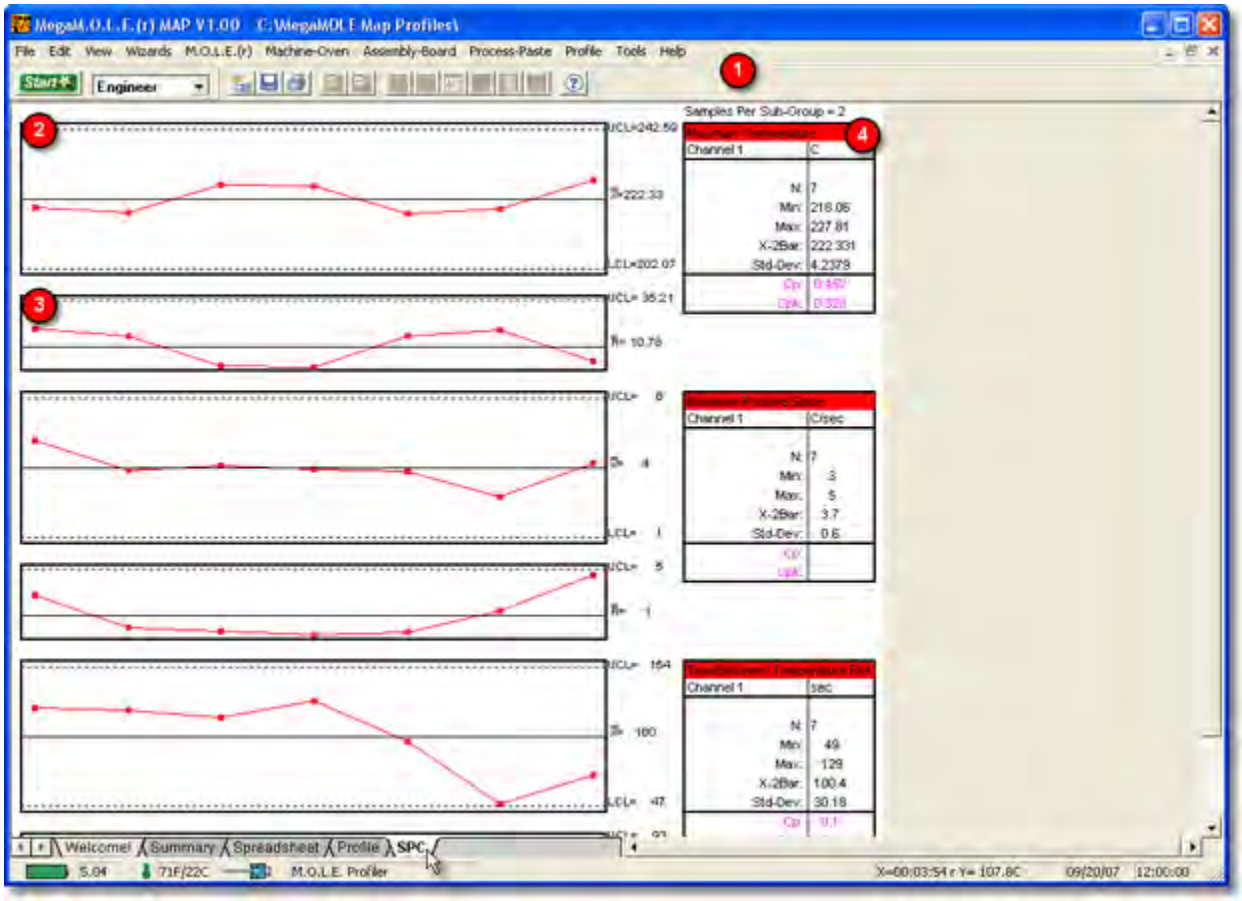
5.4.5. SPC Page Tab

The SPC Page Tab displays the specified parameters flagged on the Spreadsheet Page Tab in SPC X-Bar and R charts. Refer to topic ***Software>Page Tabs>Spreadsheet>SPC Flags*** for more information.

This is available when in Engineer Mode.

SPC Page Tab features:

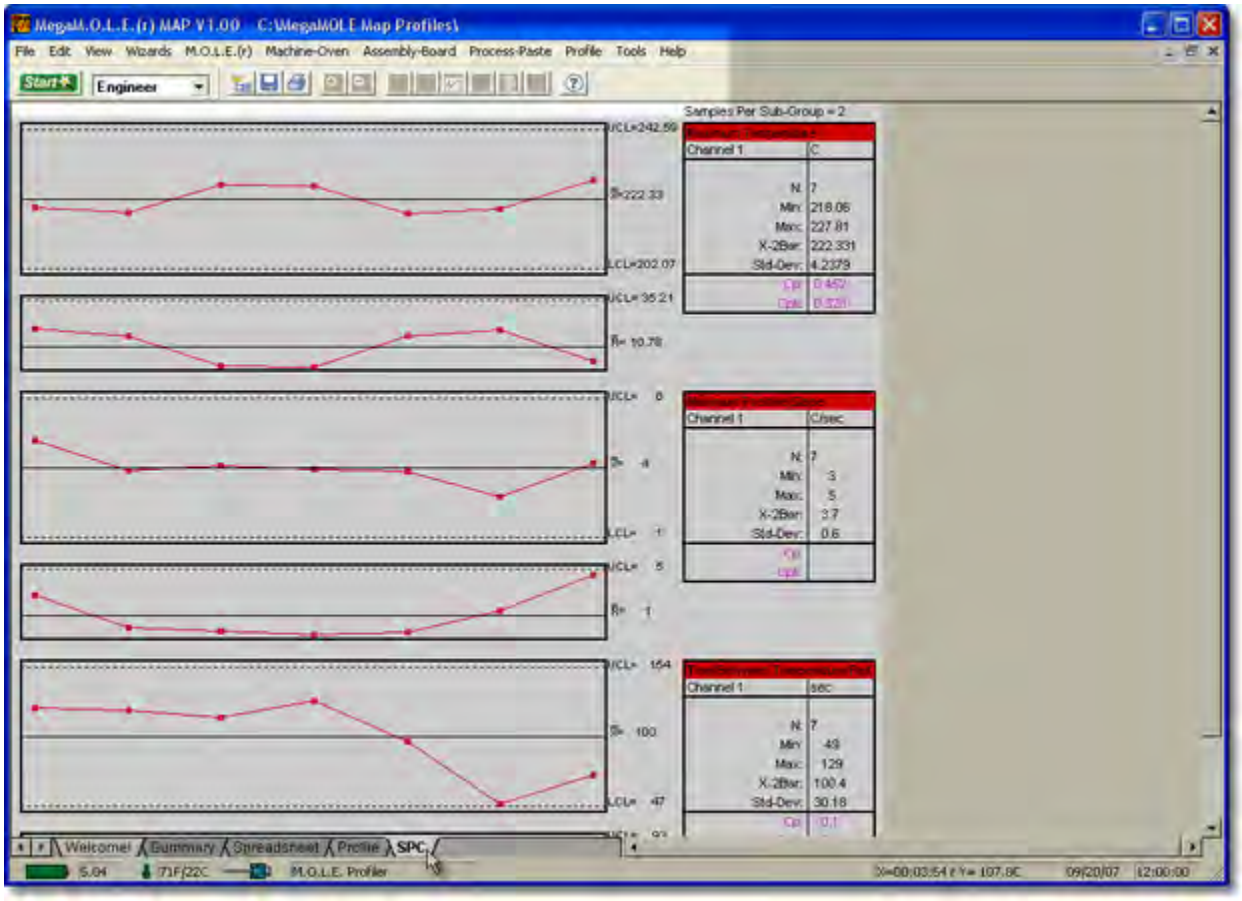
❶ **Menus and Toolbar buttons**
❷ **X-Bar Chart**
❸ **R Chart**
❹ **Statistics box**



5.4.5.1. Menus & Toolbar

- **Menus:** File, Edit, Wizards, M.O.L.E.®, Machine-Oven, Assembly-Board, Process-Paste, Profile, Tools and Help.
- **Toolbar buttons:**

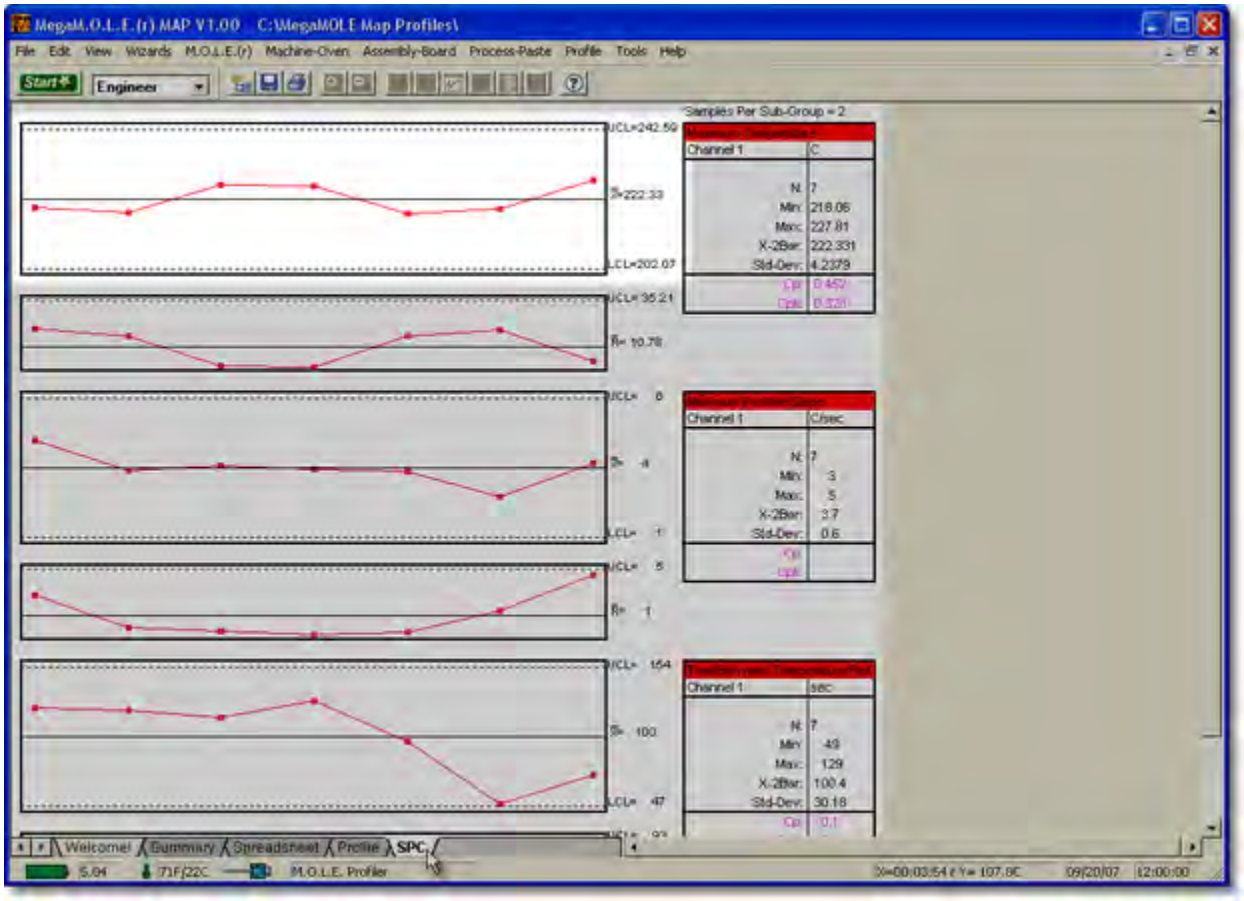
  Engineer Mode - Start, Open Working Directory, Save, Print, and Help.



Verify Mode - Tab not available.

5.4.5.2. X-Bar Chart

The X-Bar Chart is the graphical chart produced from samples of a flagged parameter on the Spreadsheet Page Tab. The chart uses a rolling average of 2 through 6 sample points. The user can specify the sample points on the ***SPC*** Page Tab of the ***Preferences*** dialog box. The X-bar is the average of the data samples and the UCL and LCL are calculated using a formula based on the Range data.

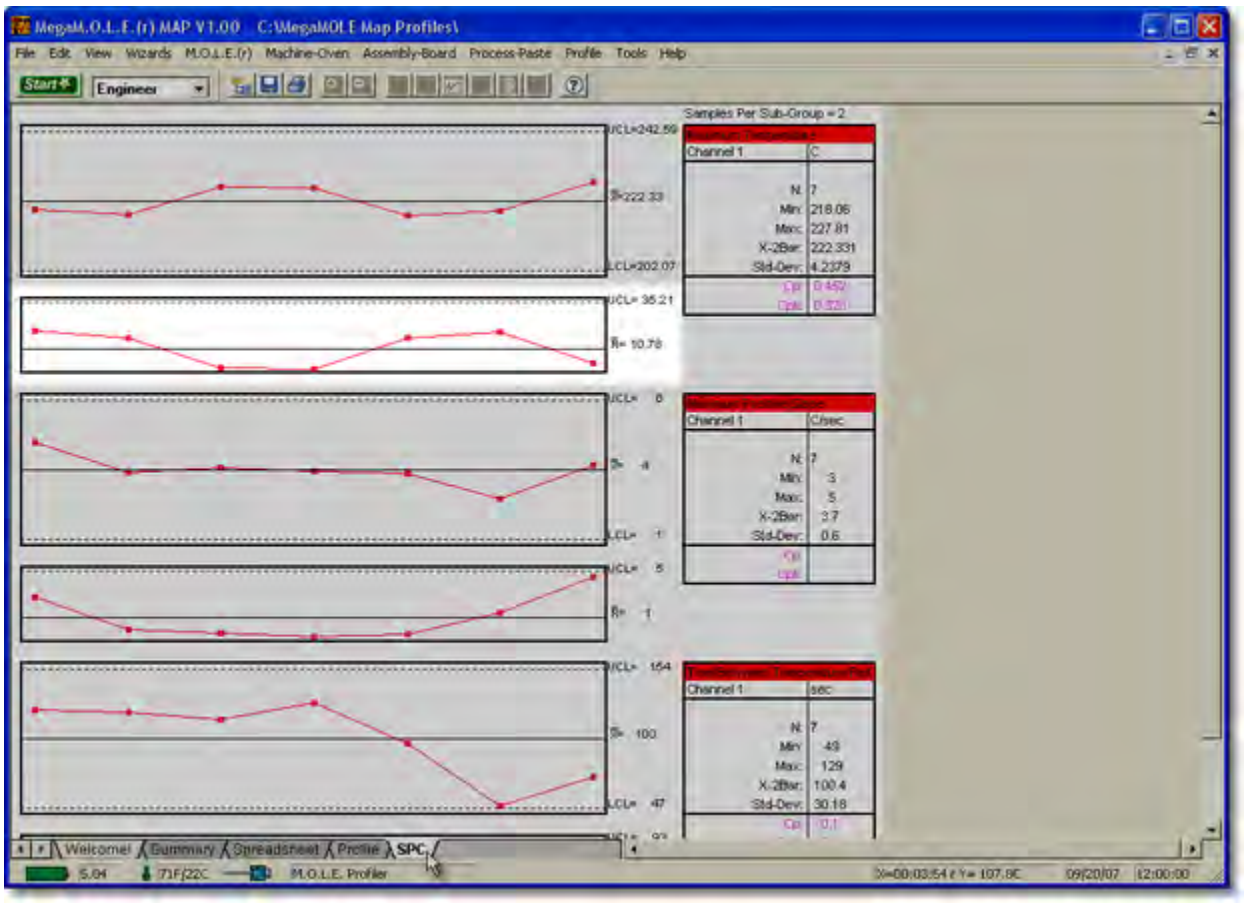


The calculation numbers vary depending on the data in the Spreadsheet Page Tab. Using the filter function or the hide command allows the user to select the specific data runs to include on the SPC chart.

5.4.5.3. R Chart

The R Chart is the graphical chart produced from samples of a flagged parameter on the Spreadsheet Page Tab. The R-Bar is the averages of the range samples.

If the Sub-Group size on the ***SPC*** Page Tab of the ***Preferences*** dialog box is set to 1, the R chart becomes a moving range (mR) chart. The moving range is the difference between a specified X value and the one preceding it.



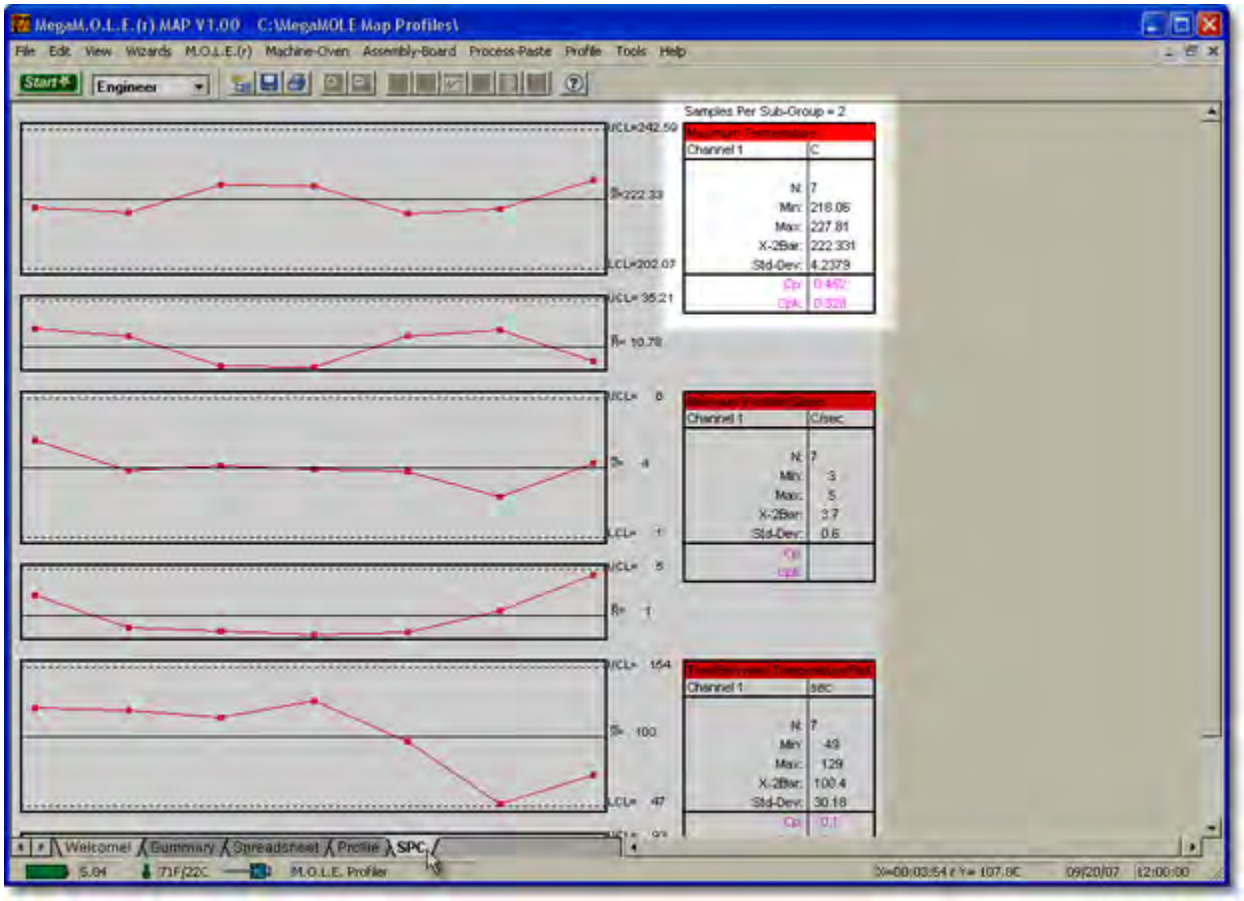
The calculation numbers vary depending on the data in the Spreadsheet Page Tab. Using the filter function or the hide command allows the user to select the specific data runs to include on the SPC chart.

5.4.5.4. Statistics Box

The Statistics Box reflects the current SPC data from the selected, sorted and filtered data set parameter.

Statistics box data:

- ***N*** = Number of subgroups.
- ***Min.*** = The lowest data point on the graph.
- ***Max.*** = The highest data point on the graph.
- ***X-2 bar*** = The current X-Bar Bar calculation.
- ***Std. Dev.***= The Standard Deviation of the selected parameter.
- ***Cp; Cpk*** = Process capability indeces (Refer to ***Appendix B*** for more information).



5.5. Menu and Tool Commands

5.5.1. File Menu

This section explains how to use all of the Menu and Toolbar button commands. Each of the following sections will list all of the commands specific to each of the menus. Commands in the File menu are used to manipulate and configure data run files.

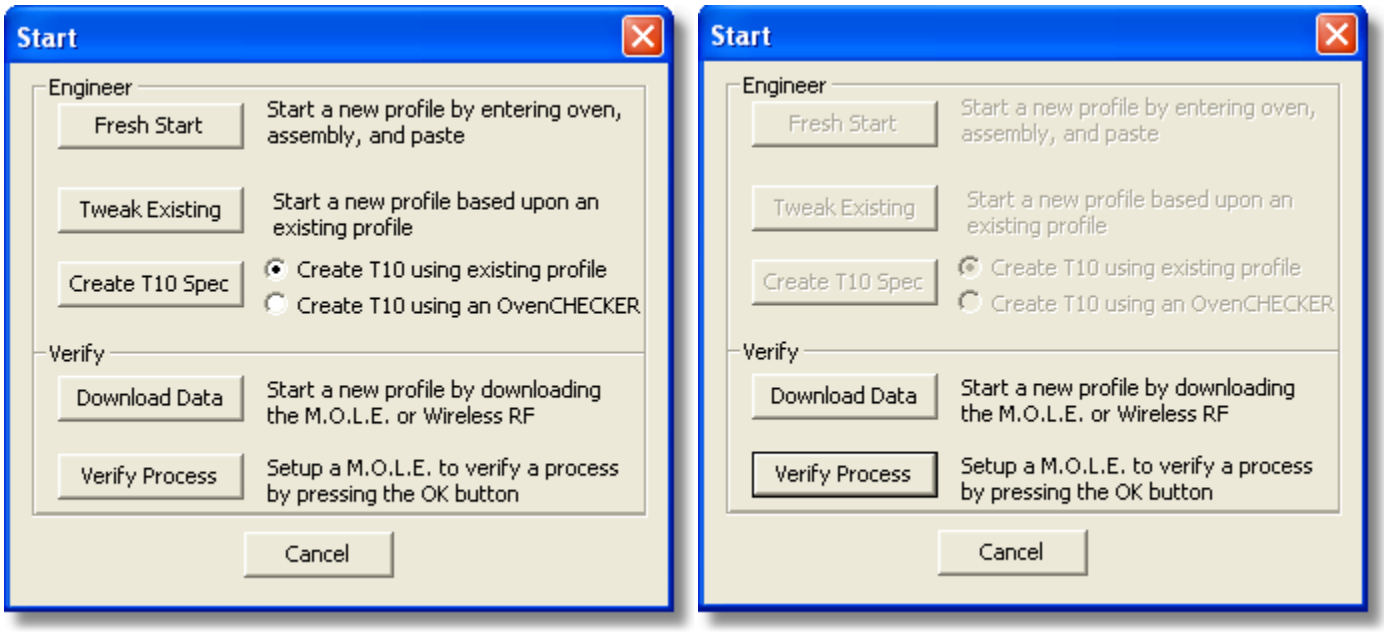
The dimmed menu commands are used in other page tabs.

5.5.1.1. New (Start)

The ***New (Start)*** command is a blank state starting point where users can choose from five different MEGAM.O.L.E.® MAP workflows. A MAP workflow is a wizard of steps based on which option is selected which help guide a user.

The dimmed workfows are associated with the ***Verify mode*** and can only be used when in ***Engineer mode***.

Engineer Mode **Verify Mode**



Workflows:

- **Fresh Start:** Start a new profile (data run) by entering Machine (oven), Assembly (board) and Process (Paste) information.
- **Tweak Existing:** Start a new profile (data run) based on an existing profile.
- **Create Target 10 File:** Create a Target 10 Specification using an existing profile (data run) or OvenCHECKER™.
- **Download Data:** Start a new profile (data run) by downloading the M.O.L.E. Profiler.
- **Verify Process:** Setup a M.O.L.E. Profiler to verify a process by presetting the OK button.

The ***New (Start)*** command can be accessed on the ***Toolbar*** and ***Get Started*** dialog box.

New (Start) button.

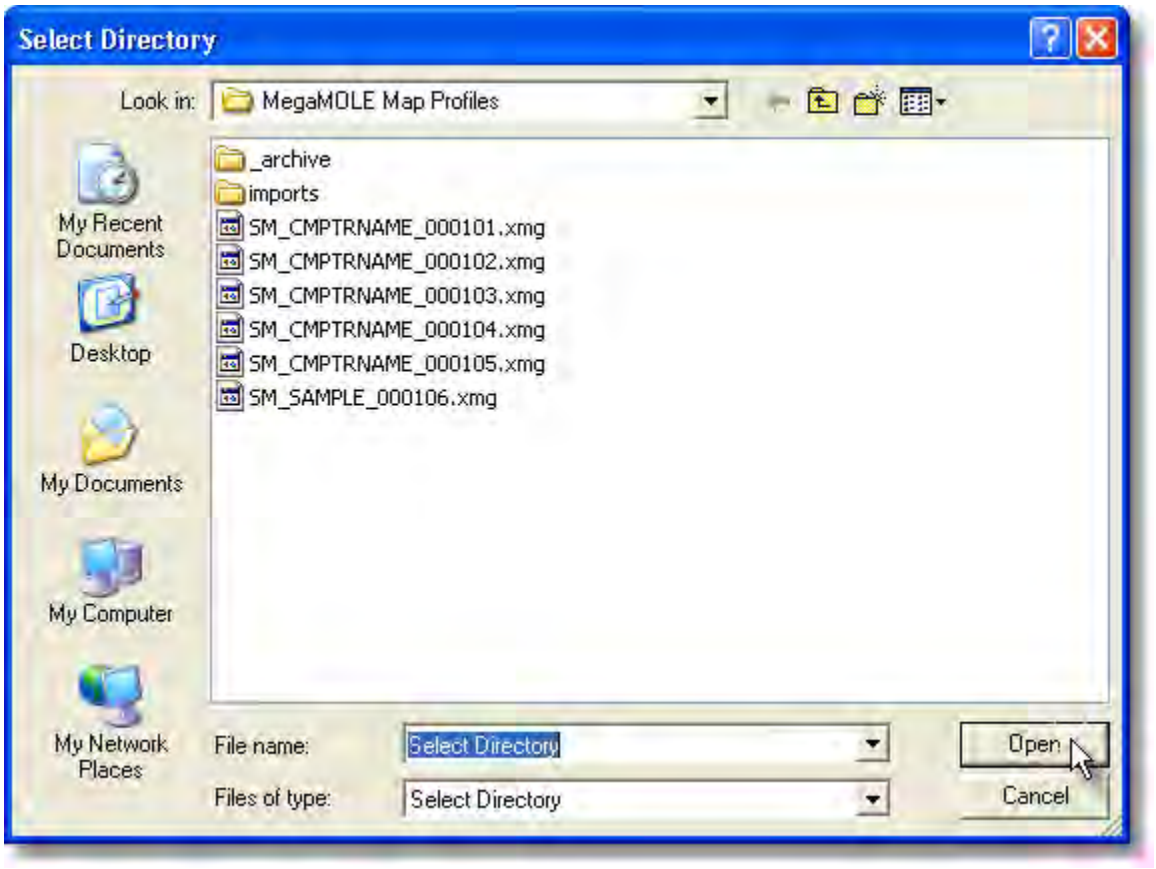
5.5.1.2. Open Working Directory

The M.O.L.E.® MAP software is a data run manager. The software does not store data run files (.XMG) it allows the user to save them in a directory of their choice. This can be useful to store data runs in different directories based on customer, shift or machine type.

This is available in both Engineer & Verify Modes.

To open a working directory:

1) On the ***File*** menu, click ***Open Working Directory***.



2) Navigate to the location where the data run files (.XMG) are located.
3) Click the ***Open*** command button to select the directory or ***Cancel*** to quit the command.

This command can be accessed on the Toolbar.

Open Working Directory button

5.5.1.3. Import

The Import command imports existing SMG/SMFW (.MDM) and M.O.L.E.® MAP (.XMG) files into the current working directory. When importing SMG/SMFW files, this process

automatically converts the profile, configured machine data, process documentation then saves it in the new (.XMG) file format.

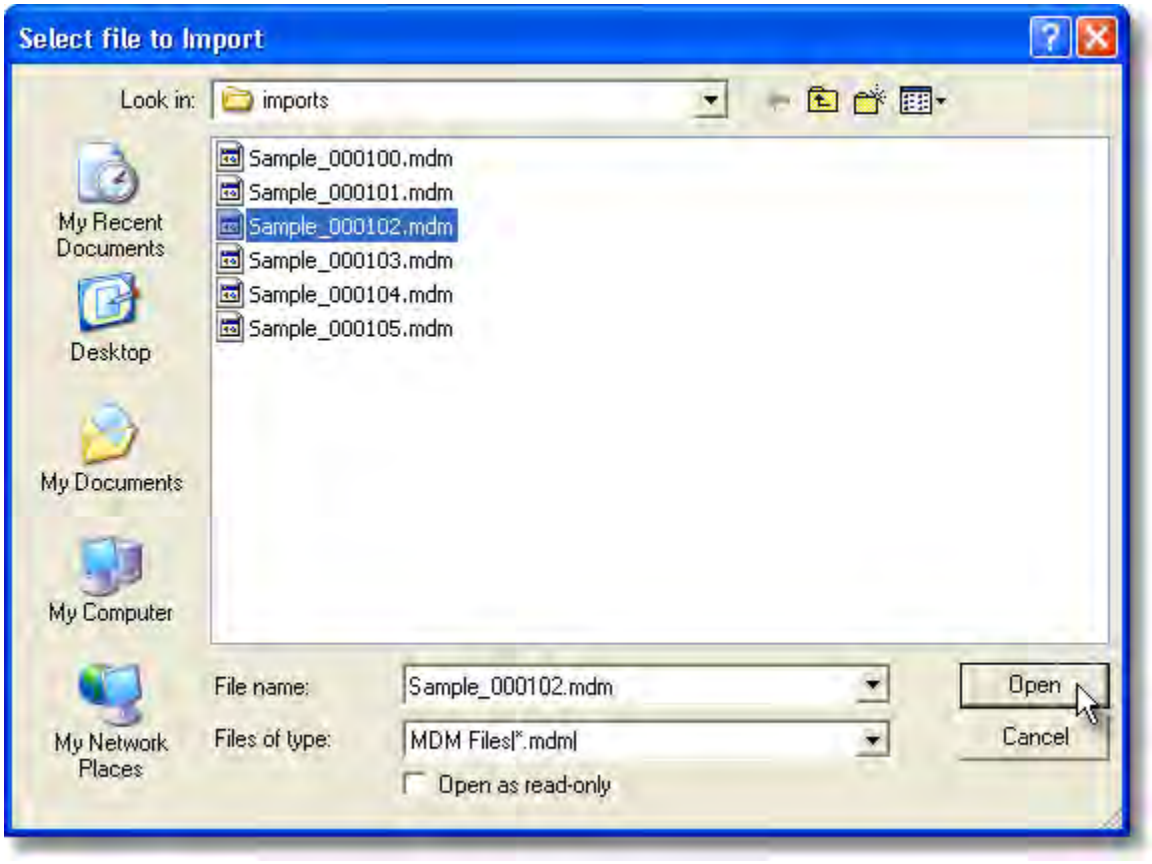
The import command also imports Text (.TXT) files. The values in these files must be either comma or tab separated values. This process automatically converts the data then saves it in the new (.XMG) file format.

This is available when in Engineer Mode.

5.5.1.3.1. SMG SPC (.mdm)

To import SMG SPC (.mdm) files:

1) On the ***File*** menu, point to ***Import*** and then select ***SMG-SPC (.mdm)***.



2) Navigate to the file folder where the file(s) to import are located.
3) Select the file to import.

You can import several files at one time. For consecutive files, click the first file in the list, press and hold down the SHIFT key, and then click the last file in the list. For files that are not consecutive, press and hold down the CTRL key, and then click each file that you want to import.

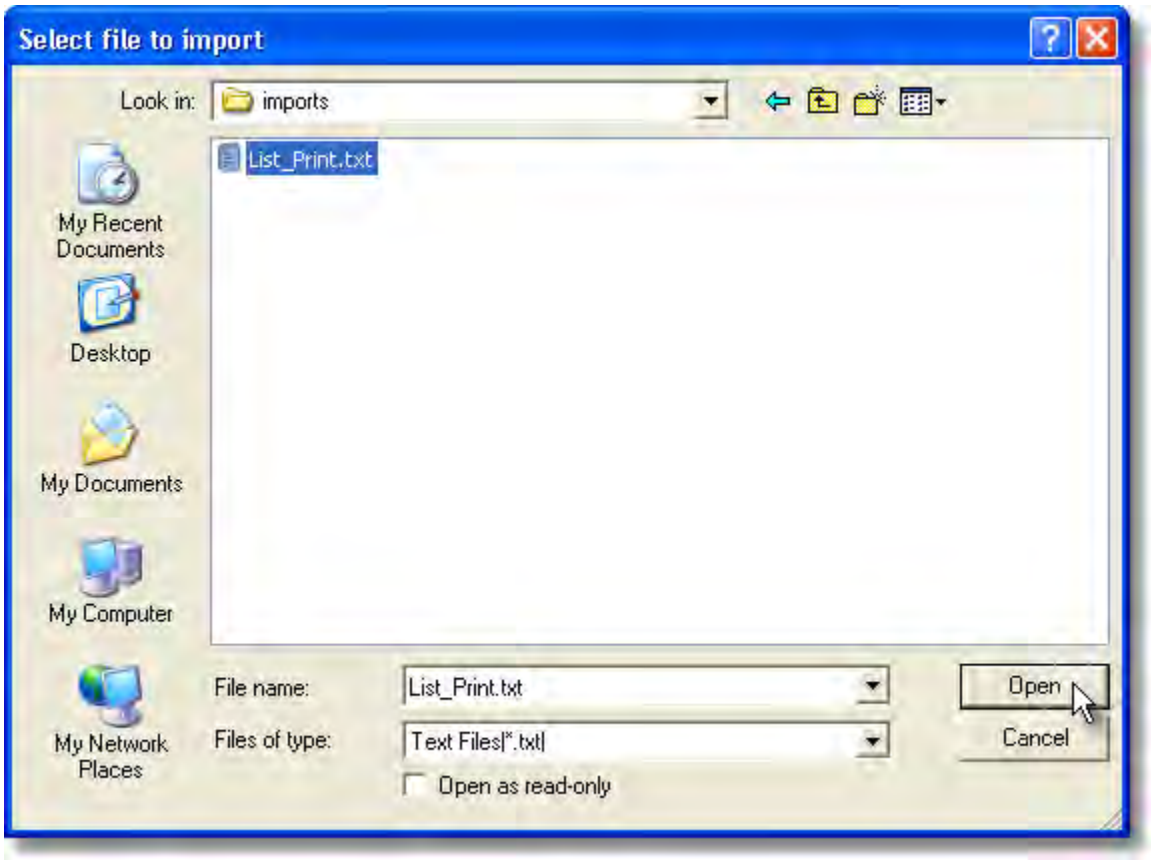
4) Click the ***Open*** command button to import or ***Cancel*** to quit the command.

The .MDM is automatically converted to a (.XMG) file and saved in the current open working directory.

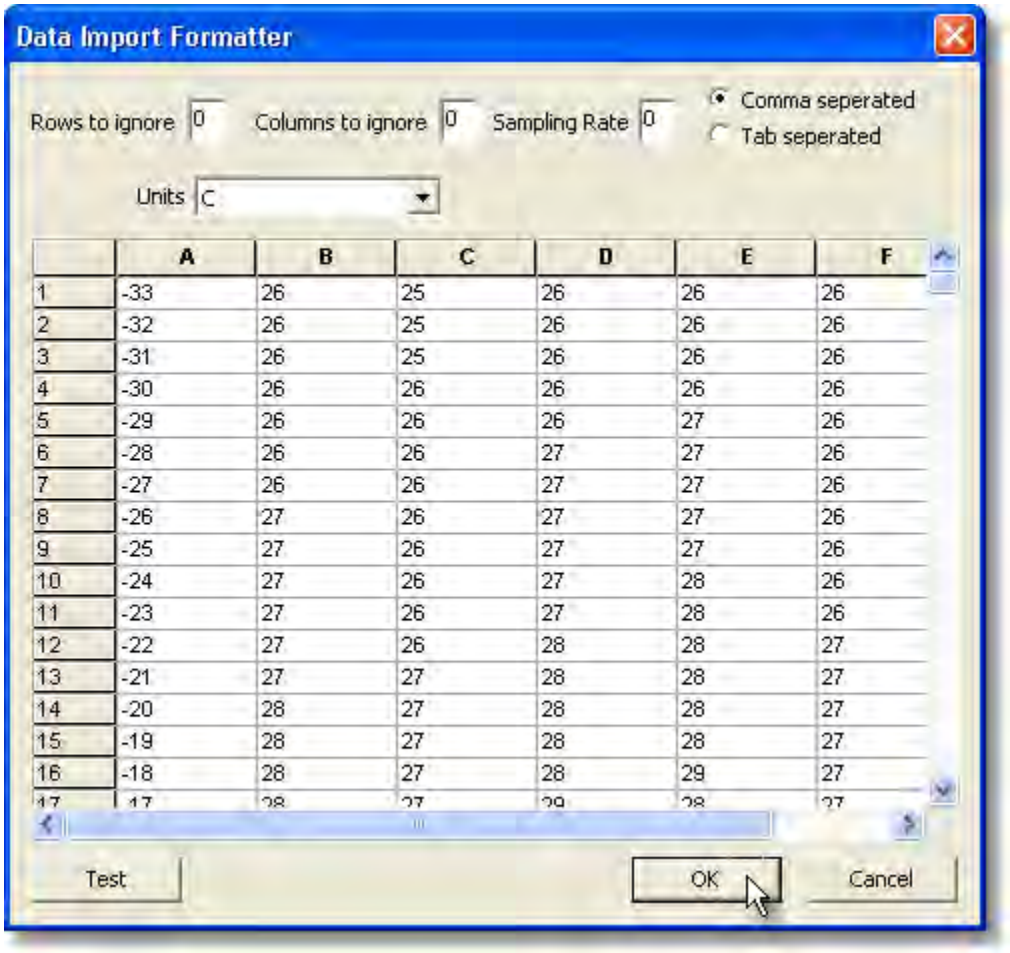
5.5.1.3.2. TEXT (.txt)

To import Text (.TXT) files:

1) On the ***File*** menu, point to ***Import*** and then select ***TEXT (.txt)***.



2) Navigate to the file folder where the file(s) to import are located.
3) Select the file to import.
4) Click the ***Open*** command button to import and the Data Import Formatter dialog box appears.



	A	B	C	D	E	F
1	-33	26	25	26	26	26
2	-32	26	25	26	26	26
3	-31	26	25	26	26	26
4	-30	26	26	26	26	26
5	-29	26	26	26	27	26
6	-28	26	26	27	27	26
7	-27	26	26	27	27	26
8	-26	27	26	27	27	26
9	-25	27	26	27	27	26
10	-24	27	26	27	28	26
11	-23	27	26	27	28	26
12	-22	27	26	28	28	27
13	-21	27	27	28	28	27
14	-20	28	27	28	28	27
15	-19	28	27	28	28	27
16	-18	28	27	28	29	27

5) Select from the formatter options.

> If the user is not sure if the Text file values are comma or tab separated, the Test command button can be used to test the format to display the data in columns and rows.

6) Click the ***OK*** command button to import or ***Cancel*** to stop.

5.5.1.3.3. MAP (.xmg)

<u>To import MAP (.xmg) files:</u>

1) On the ***File*** menu, point to ***Import*** and then select ***MAP (.xmg)***.

2) Navigate to the file folder where the file(s) to import are located.
3) Select the file to import.

> You can import several files at one time. For consecutive files, click the first file in the list, press and hold down the SHIFT key, and then click the last file in the list. For files that are not consecutive, press and hold down the CTRL key, and then click each file that you want to import.

4) Click the ***Open*** command button to import or ***Cancel*** to quit the command.

The .XMG is automatically saved in the current open working directory.

5.5.1.4. Export

The Export command exports a data run into Microsoft Excel. This process automatically launches Excel and inserts the selected data run information. The user can then save it as an Excel file format.

> This is available when in Engineer Mode.

To export data run information:

1) On the ***File*** menu, point to ***Export*** and then select ***Excel***.

The data run information is automatically converted to the Microsoft® Excel file format.

5.5.1.5. Save Data Run

The Save Data Run command saves the any changes made to the selected data run.

If the user selects a different page tab or exits the software, any changes made to the selected data run will automatically be saved.

This is available when in Engineer Mode.

To save the current data run:

1) On the ***File*** menu, click ***Save Data Run*** and the currently selected data run will be saved.

This command can be accessed on the Toolbar.

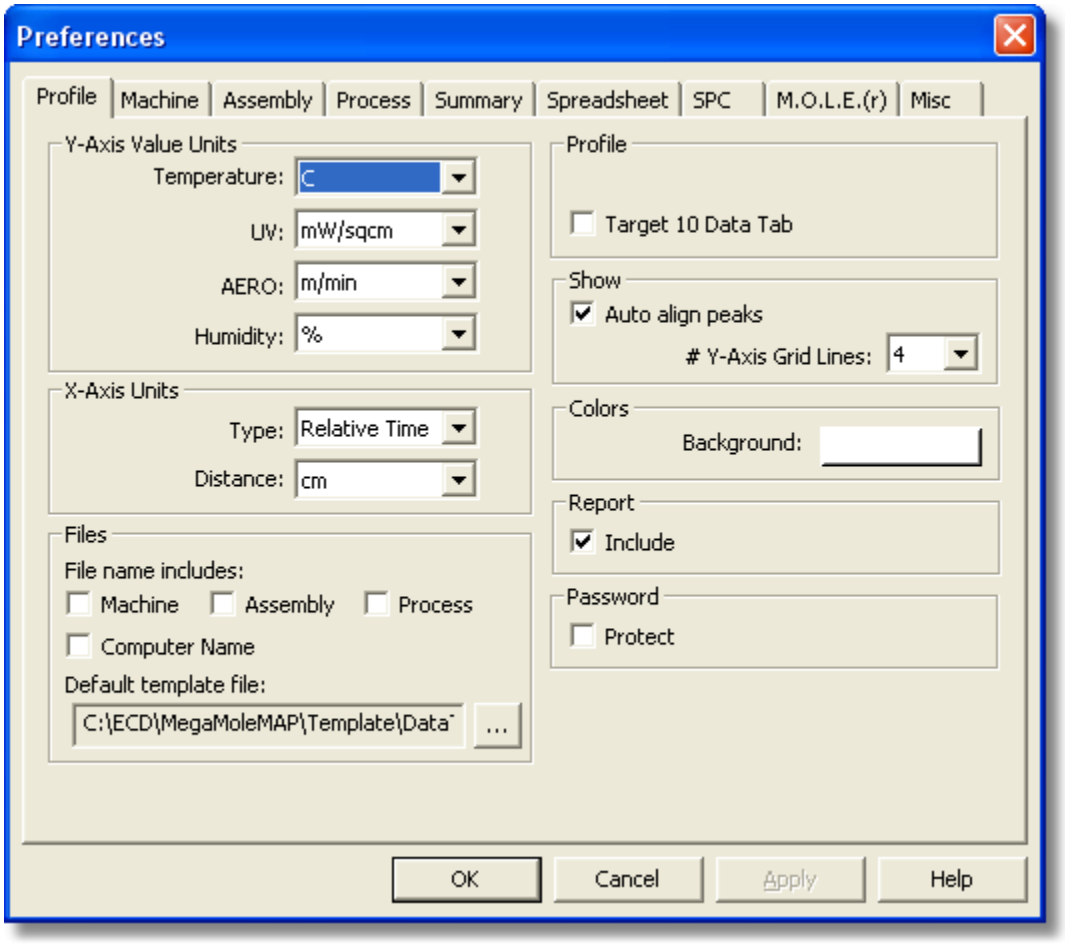
Save Data Run button

5.5.1.6. Preferences

The Preferences command allows access to property sheet that includes custom setup tasks and global settings for the software.

This is available when in Engineer Mode.

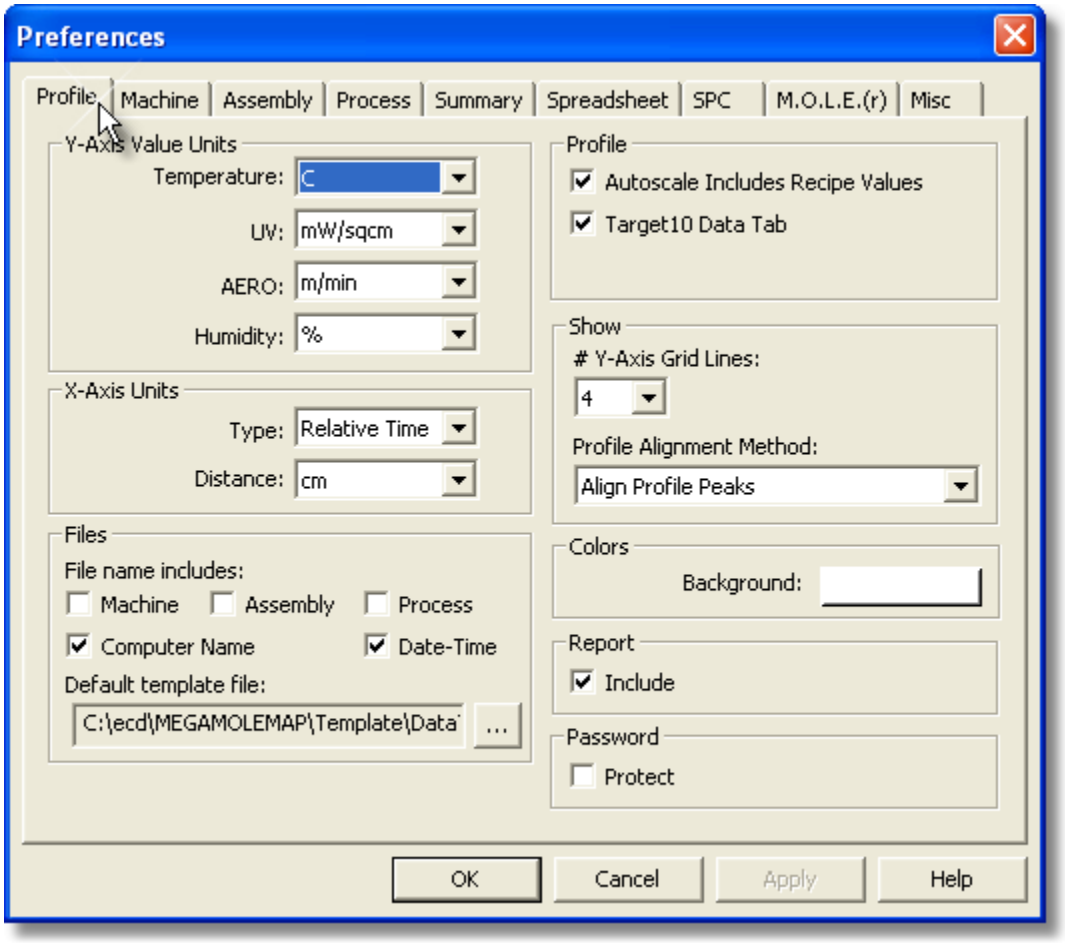
The ***Preferences*** property sheet includes various tabs associated with the each individual Page Tab and the MAP menus.



5.5.1.6.1. Profile

<u>To access profile preferences:</u>

1) On the ***File*** menu, click ***Preferences***, and then click the ***Profile*** tab.



Y-Axis Units

Temperature units can be globally set for the Y-Axis. The software also allows the user to set units for optional sensors such as, UV, AERO, and Humidity.

This command does not set the units reported by the M.O.L.E. profiler. It applies only to the software.

X-Axis Units

Time units and measurement type can be globally set for the X-Axis.

The user can select from the following scales:

- **Point:** the data points collected from the Process-Origin.
- **Time-Relative:** Time measured from the Process-Origin
- **Time-Absolute:** Time of day
- **Distance:** Distance from the Process Origin (Meters, Centimeters, Feet or Inches).

Files

The user can decide how to set the default file name when saving a data run profile (.XMG) and the default Data Table template they wish to use.

When saving a data run file, the software includes options to add the set Machine, Assembly, Process, Computer Name and Date-Time.

Once the default filename is set, the (.XMG) file will be incremented automatically to avoid that file from being overwritten.

If a user creates a new Data Table template, it can save using the template commands. If the new template is to be used as the default, the new one can be specified in this text box. The new template will now be loaded every time the program is started.

Profile

The user can decide if they want to include Recipe Values in the Data Graph when using the Autoscale command and display the Target 10-OK tab in the Data Table.

Refer to topics ***Profile>Set Temperature (Y) Scale*** and ***Software>Page Tabs>Profile>Target 10*** for more information.

Show

The user can select the default Auto align Peak temperature method and select the amount of Y-Axis gridlines to display on the Data Graph

When Auto align Peaks is selected, the software automatically aligns the Time (X) axis maximum peak values for each Data Plot so the results can be easily compared during analysis.

Colors

The software allows the user to change the background color of the Data Graph with colors from the Windows default pallet.

Report

Select the corresponding check box to include the Profile Page Tab when printing in Report format.

Password

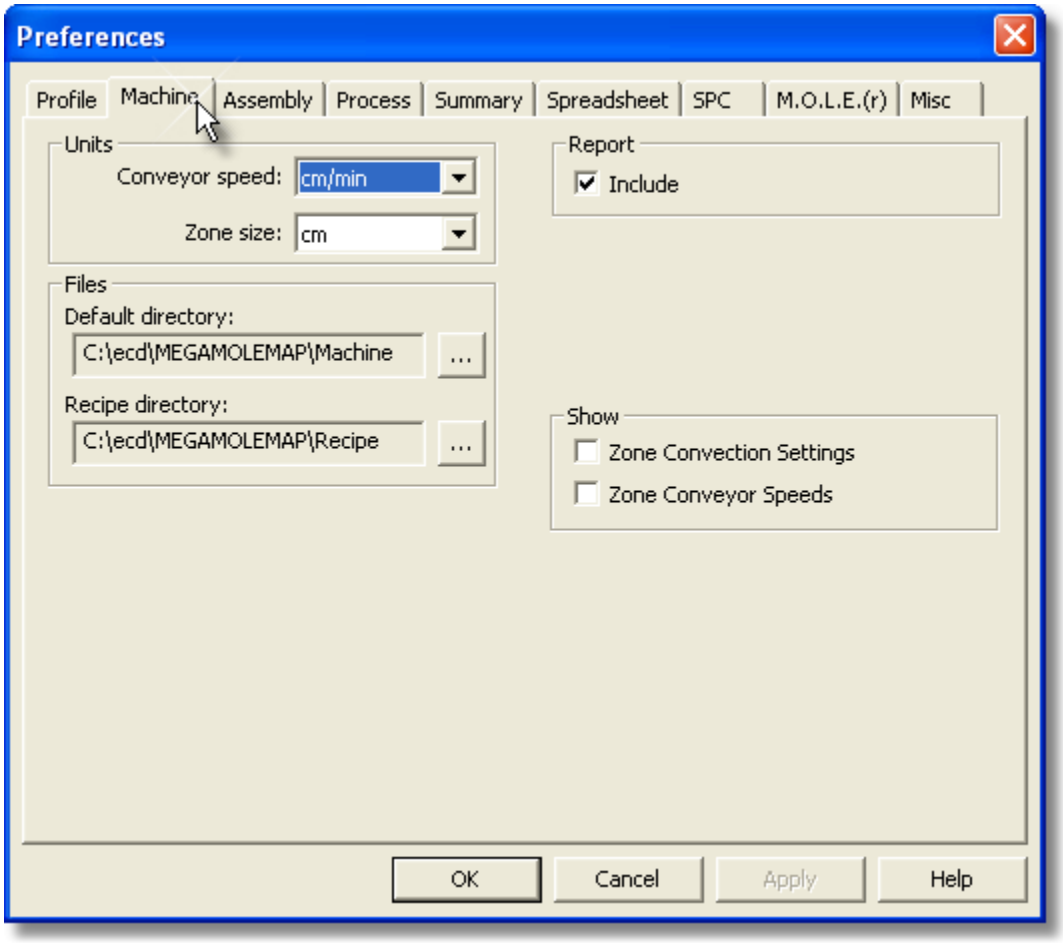
Select the corresponding check box to password protect the Profile Page Tab and preferences. If password protection has been selected, a dialog box appears prompting the user to enter the current password. The software will then need to be restarted to apply password protection settings.

If the default password has not been changed, the current password is **Admin**. Refer to topic ***Software>Menus>File>Preferences>Misc>Passwords*** for more information.

5.5.1.6.2. Machine

To access machine preferences:

1) On the ***File*** menu, click ***Preferences***, and then click the ***Machine*** tab.



Units

The user can set the machine conveyor speed and zone size units. These units will be used as the default when setting machine information.

Files

As the user creates Machine (**.OVS**) & Recipe (**.XMR**) files, they are saved to the specified default working directories.

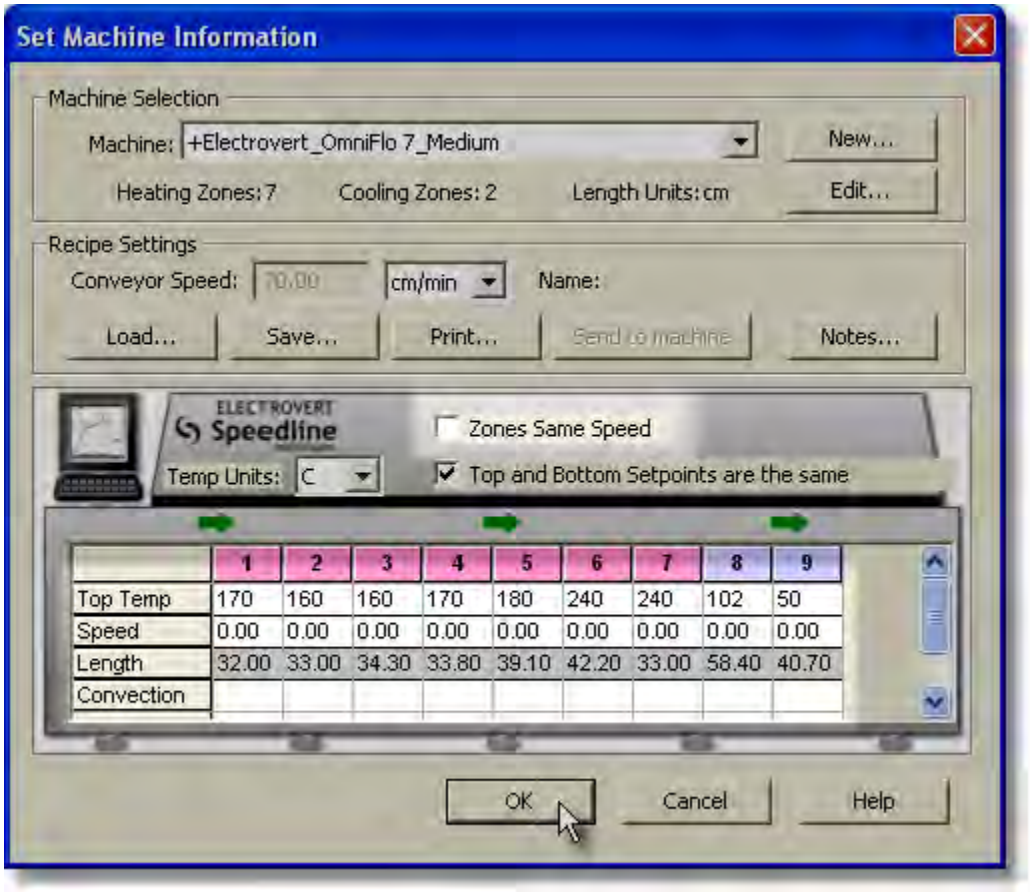
Changing the directory locations may be useful when the user would like to share them on a network drive.

Report

Select the corresponding check box to include the Machine and Recipe settings when printing in Report format.

Show

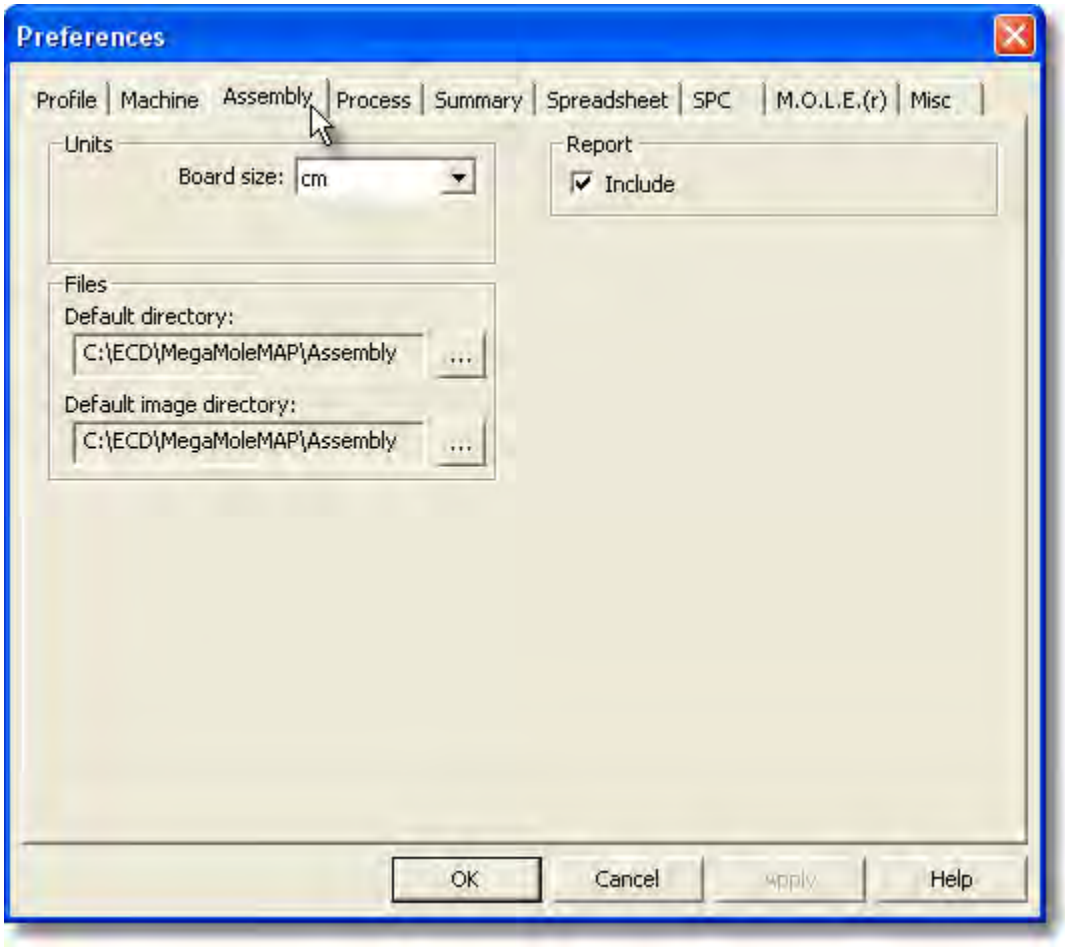
Select the corresponding check box to display the Zone Convection Settings and/or Zone Conveyor Speeds in the Set Machine Information dialog box. Having these options displayed is useful when the user wishes to have the ability to set the convection temperature and/or speed of the machine conveyor for each zone.



5.5.1.6.3. Assembly

To access assembly preferences:

1) On the ***File*** menu, click ***Preferences***, and then click the ***Assembly*** tab.



Units

The user can set the board size and component location units. These units will be used as the default when setting assembly information.

Files

As the user collects assembly board image files, they can be saved to the specified default working directory. When setting assembly information the user can select a product image. The software automatically starts in the directory specified as the default.

Changing the directory location may be useful when the user would like to share the images on a network drive.

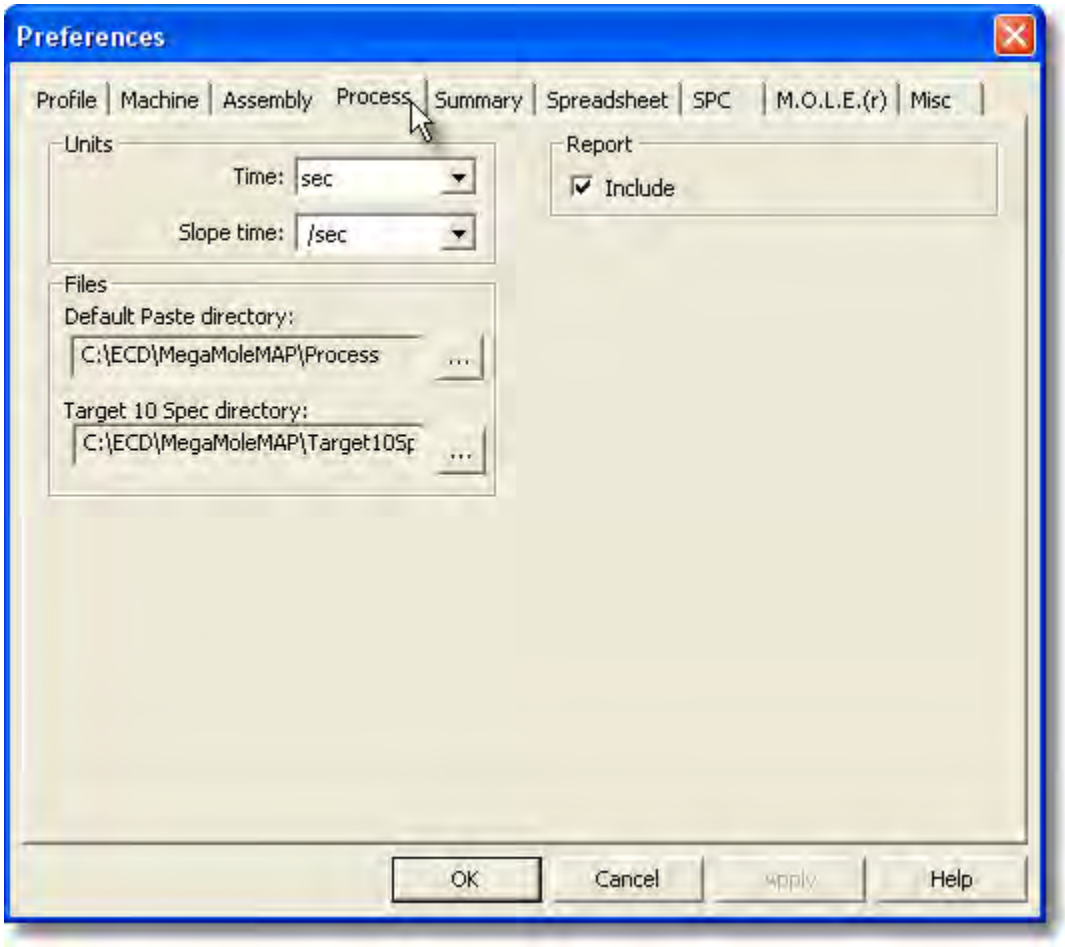
Report

Select the corresponding check box to include the Assembly settings when printing in Report format.

5.5.1.6.4. Process

To access process preferences:

1) On the ***File*** menu, click ***Preferences***, and then click the ***Process*** tab.



Units

The user can set the Time and Slope time process parameters extracted from a data run.

Files

The user can change the location where they store the paste database and Target 10 Specs files to a specified default working directory of their choice. Included with the software is a Paste database file (**paste1.psp**). As the user creates process recipes the software creates an extension paste file (**user1.psp**) which is combined with the default paste1.psp file.

Changing the directory location may be useful when the user would like to share the paste database on a network drive.

If the paste1.psp file is moved to a different location, the user1.psp file must also be copied to the new location.

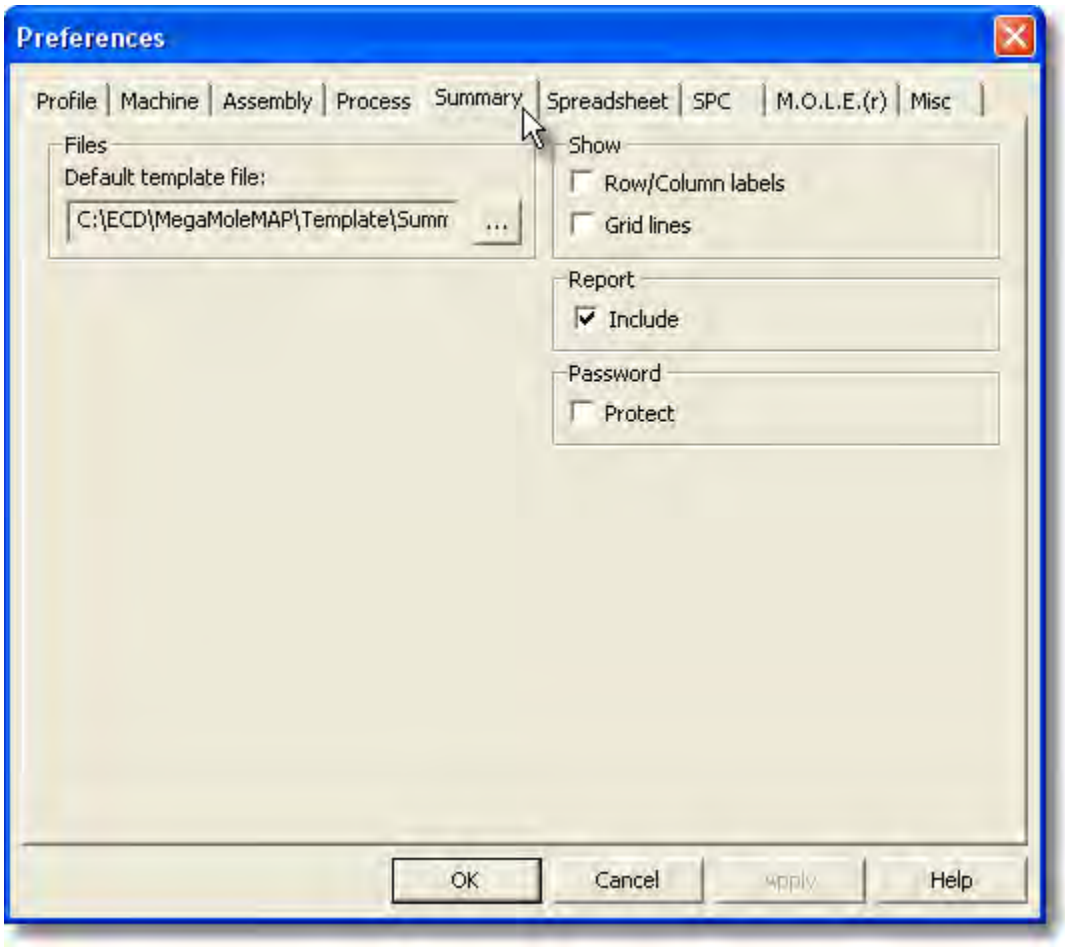
Report

Select the corresponding check box to include the Process settings when printing in Report format.

5.5.1.6.5. Summary

To access summary preferences:

1) On the ***File*** menu, click ***Preferences***, and then click the ***Summary*** tab.



Files

The user can decide which default Summary template they wish to use. If a user creates a new Summary template, it can save using the template commands. If the new template is to be used as the default, the new one can be specified in this text box. The specified template will now be loaded every time the program is started.

Show

The Summary Page Tab is built with cells that are organized into columns and rows. The software allows the user to show and hide the cell Row/Column labels and Grid lines. Selecting the corresponding check boxes to show or hide the labels and cells.

Report

Select the corresponding check box to include the Summary Page Tab when printing in Report format.

Password

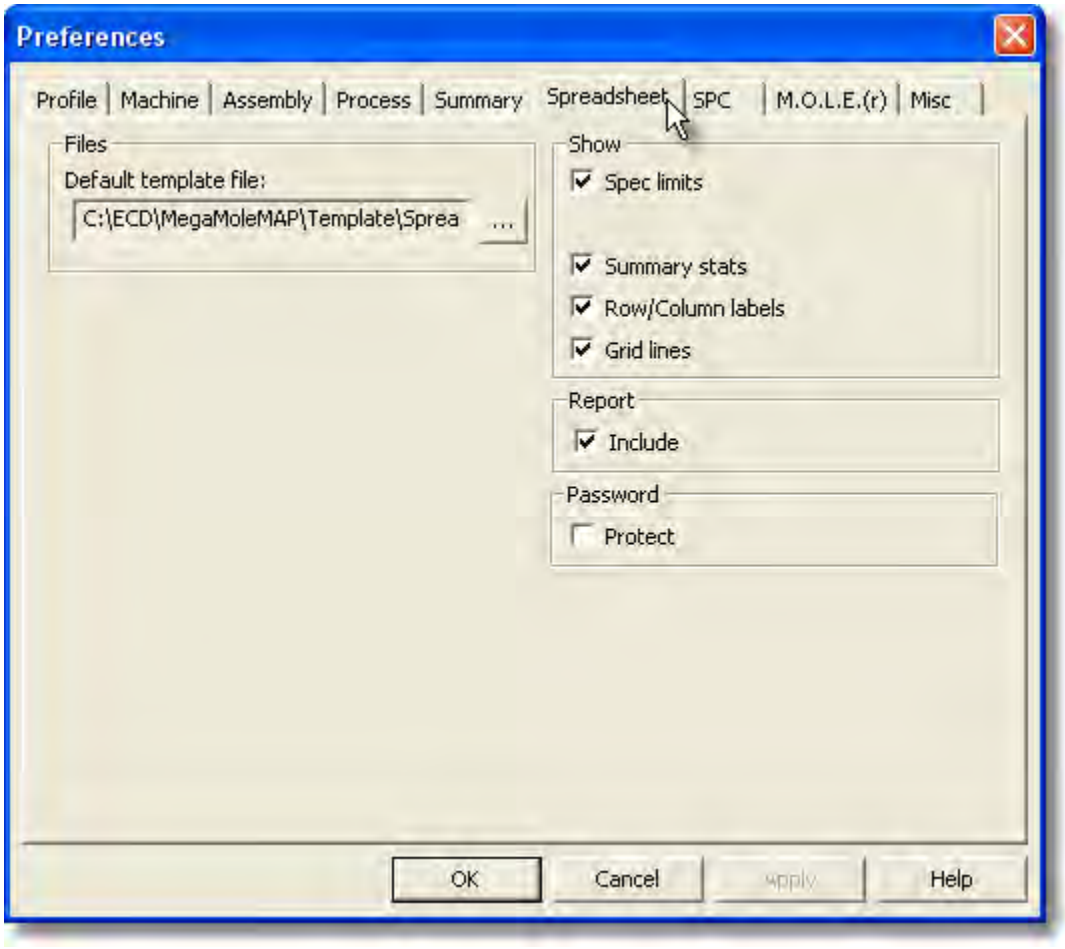
Select the corresponding check box to password protect the Summary Page Tab and preferences. If password protection has been selected, a dialog box appears prompting the user to enter the current password. The software will then need to be restarted to apply password protection settings.

If the default password has not been changed, the current password is **Admin**. Refer to topic ***Software>Menus>File>Preferences>Misc>Passwords*** for more information.

5.5.1.6.6. Spreadsheet

To access spreadsheet preferences:

1) On the ***File*** menu, click ***Preferences***, and then click the ***Spreadsheet*** tab.



Files

The user can decide which default Spreadsheet template they wish to use. If a user creates a new Spreadsheet template, it can save using the template commands. If the

new template is to be used as the default, the new one can be specified in this text box. The specified template will now be loaded every time the program is started.

Show

The Spreadsheet Page Tab is built with cells that are organized into columns and rows. The software allows the user to show and hide the cell Row/Column labels and Grid lines. Selecting the corresponding check boxes to show or hide the labels and cells.

Report

Select the corresponding check box to include the Spreadsheet Page Tab when printing in Report format.

Password

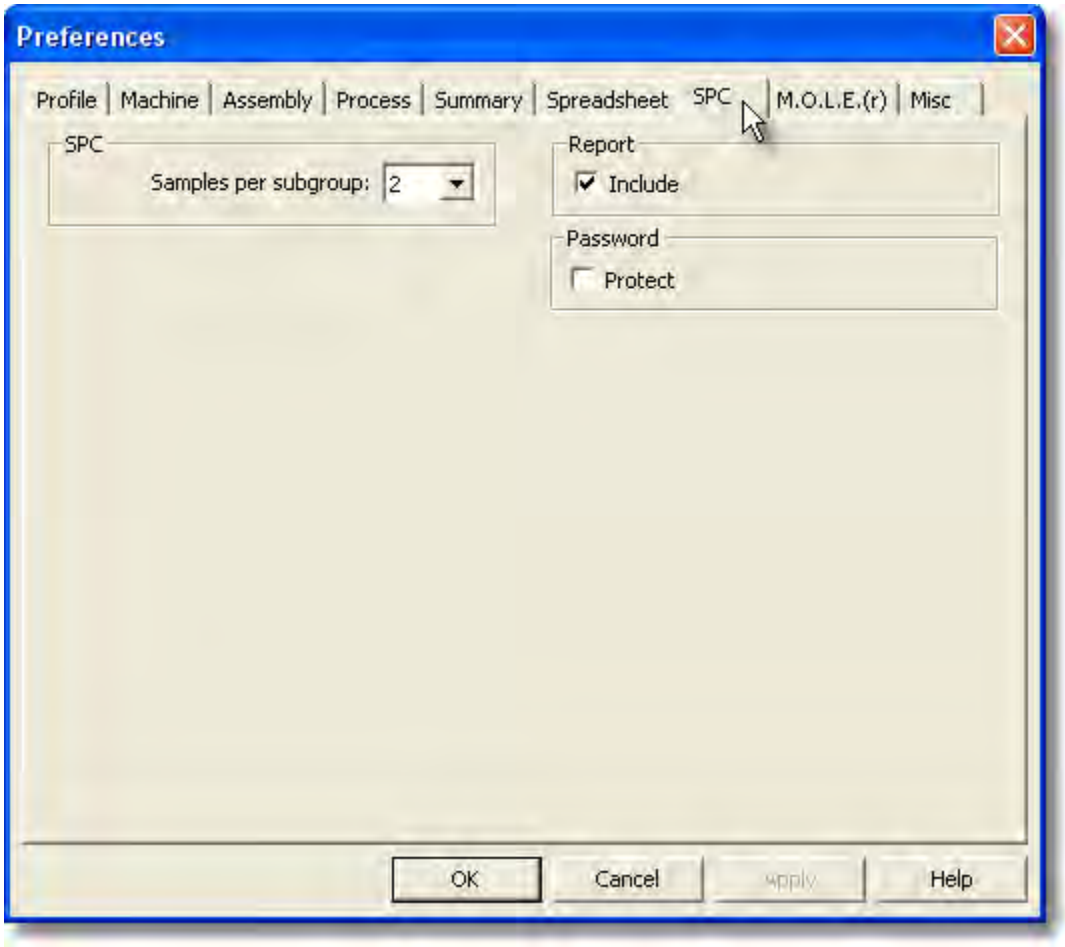
Select the corresponding check box to password protect the Spreadsheet Page Tab and preferences. If password protection has been selected, a dialog box appears prompting the user to enter the current password. The software will then need to be restarted to apply password protection settings.

If the default password has not been changed, the current password is **Admin**. Refer to topic ***Software>Menus>File>Preferences>Misc>Passwords*** for more information.

5.5.1.6.7. SPC

To access profile preferences:

1) On the ***File*** menu, click ***Preferences***, and then click the ***SPC*** tab.



SPC

The software utilizes the standard Moving Average/Moving Range Charting technique with a subgroup size of 2-6. The user can specify the samples per subgroup using the drop-down list. Refer to ***Appendix B*** for more information.

Report

Select the corresponding check box to include the SPC Page Tab when printing in Report format.

Password

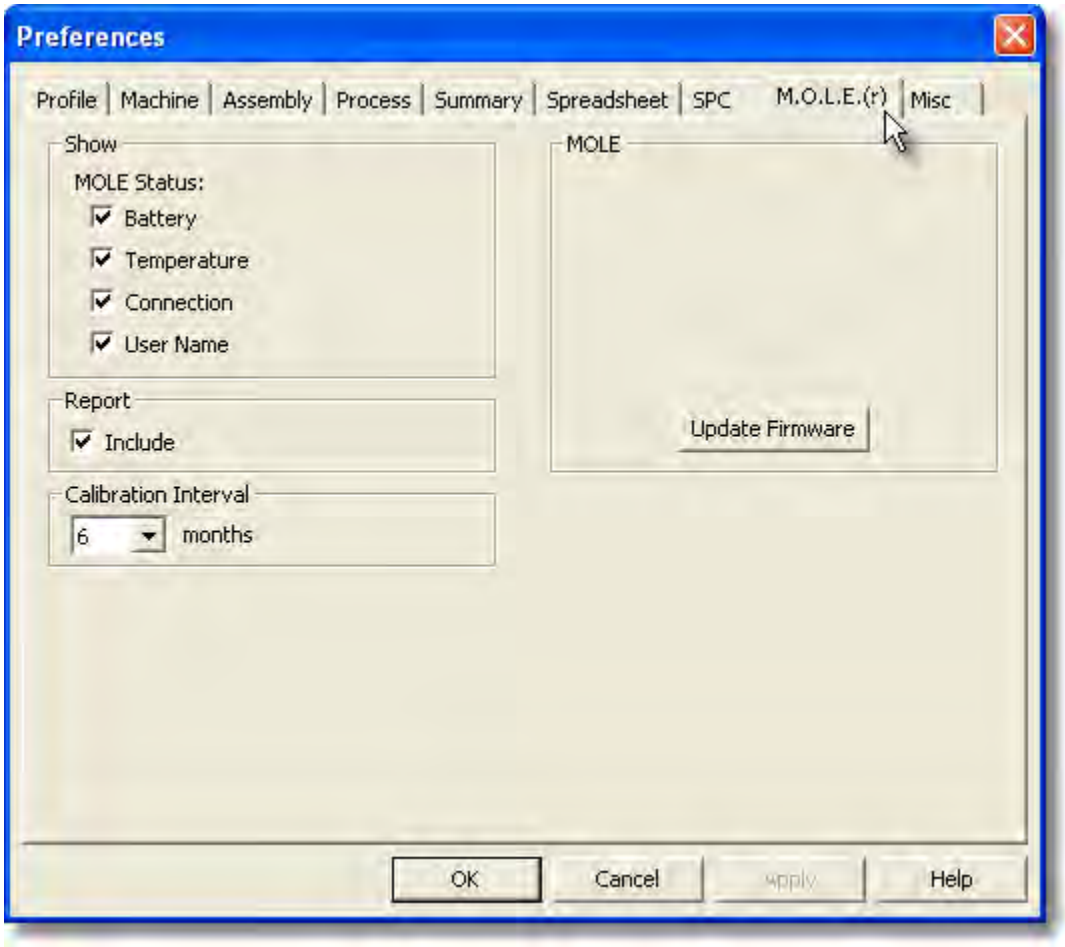
Select the corresponding check box to password protect the SPC Page Tab and preferences. If password protection has been selected, a dialog box appears prompting the user to enter the current password. The software will then need to be restarted to apply password protection settings.

If the default password has not been changed, the current password is **Admin**. Refer to topic ***Software>Menus>File>Preferences>Misc>Passwords*** for more information.

5.5.1.6.8. M.O.L.E.(r)

To access M.O.L.E. preferences:

1) On the ***File*** menu, click ***Preferences***, and then click the ***M.O.L.E.(r)*** tab.



Show

The Status bar located on the bottom of the software display can show the status of the M.O.L.E. Profiler Power Pack battery, Internal operating temperature, connected COM port. Select the corresponding check box to display these status indicators.

Report

Select the corresponding check box to include the M.O.L.E. information when printing in Report format.

Calibration Interval

When reporting the instrument status, the software can inform the user when the M.O.L.E. Profiler calibration has expired.

To set the calibration interval:

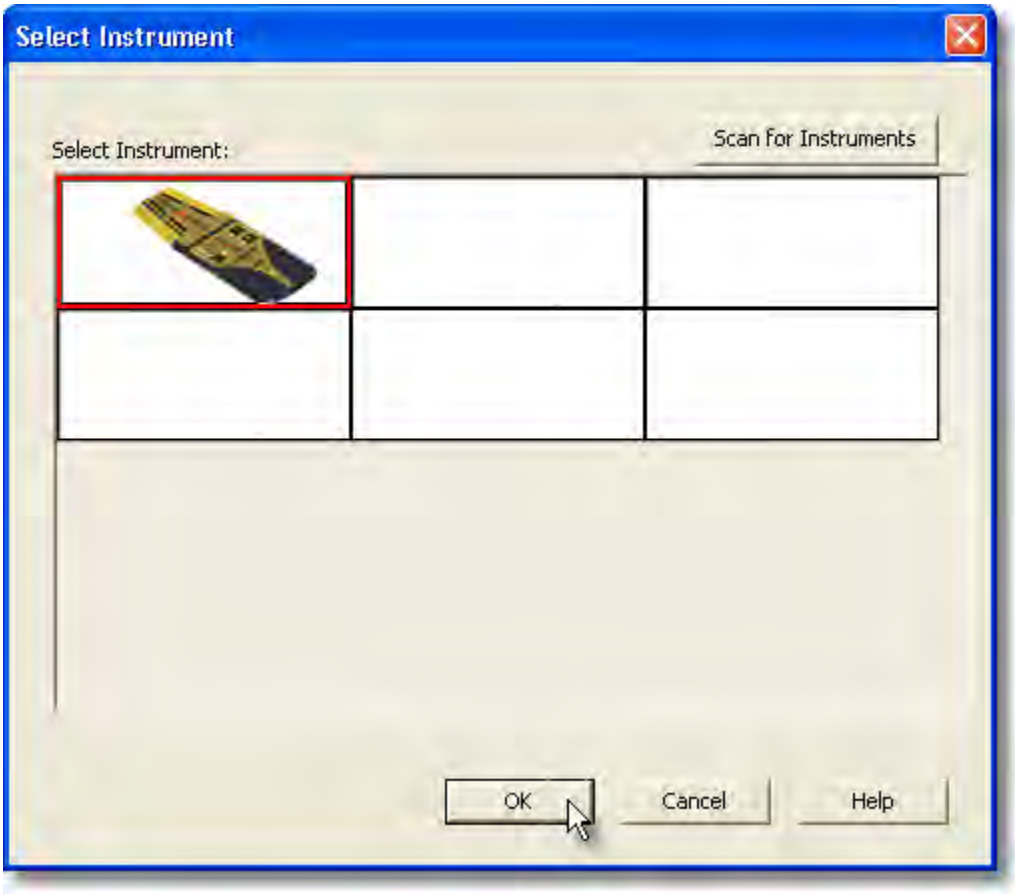
1) On the ***File*** menu, click ***Preferences***, and then click the ***M.O.L.E.(r)*** tab.
2) In the ***Calibration Interval*** section, select 6 or 12 months from the drop down box.
3) Select the ***Apply*** or ***OK*** command button to save.

Update Firmware

If a new version of the MEGAM.O.L.E.® Profiler firmware is released by ECD, the user can use the ***Update Firmware*** wizard to upgrade to the newest version.

To update MEGAM.O.L.E.® Profiler firmware:

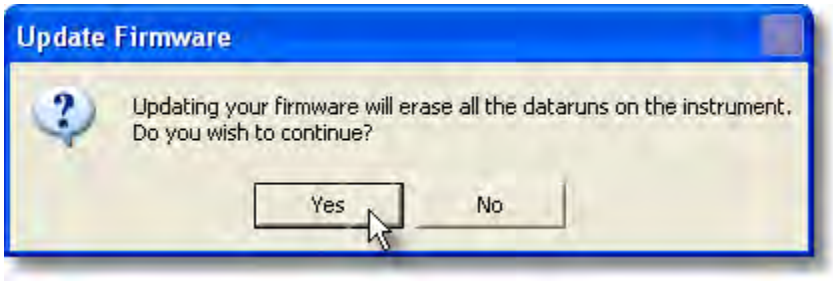
1) On the ***File*** menu, click ***Preferences***, and then click the ***M.O.L.E.(r)*** tab.
2) In the ***MOLE*** section, click the ***Update Firmware*** command button and the software automatically scans for a selected instrument. If there is no instrument selected, the ***Select Instrument*** dialog box appears.



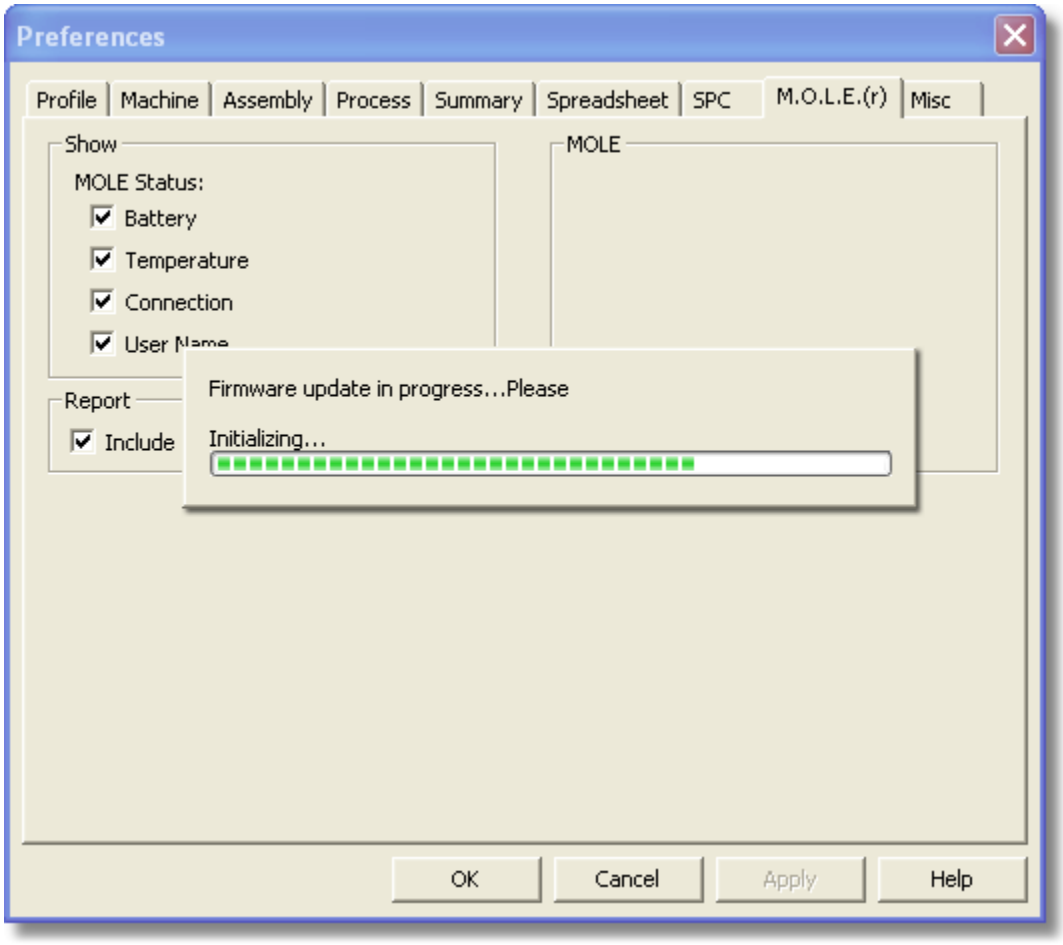
3) Select the ***OK*** command button.

Updating the MEGAM.O.L.E.® Profiler firmware erases any stored data runs. Make sure they have been downloaded prior to completing this process.

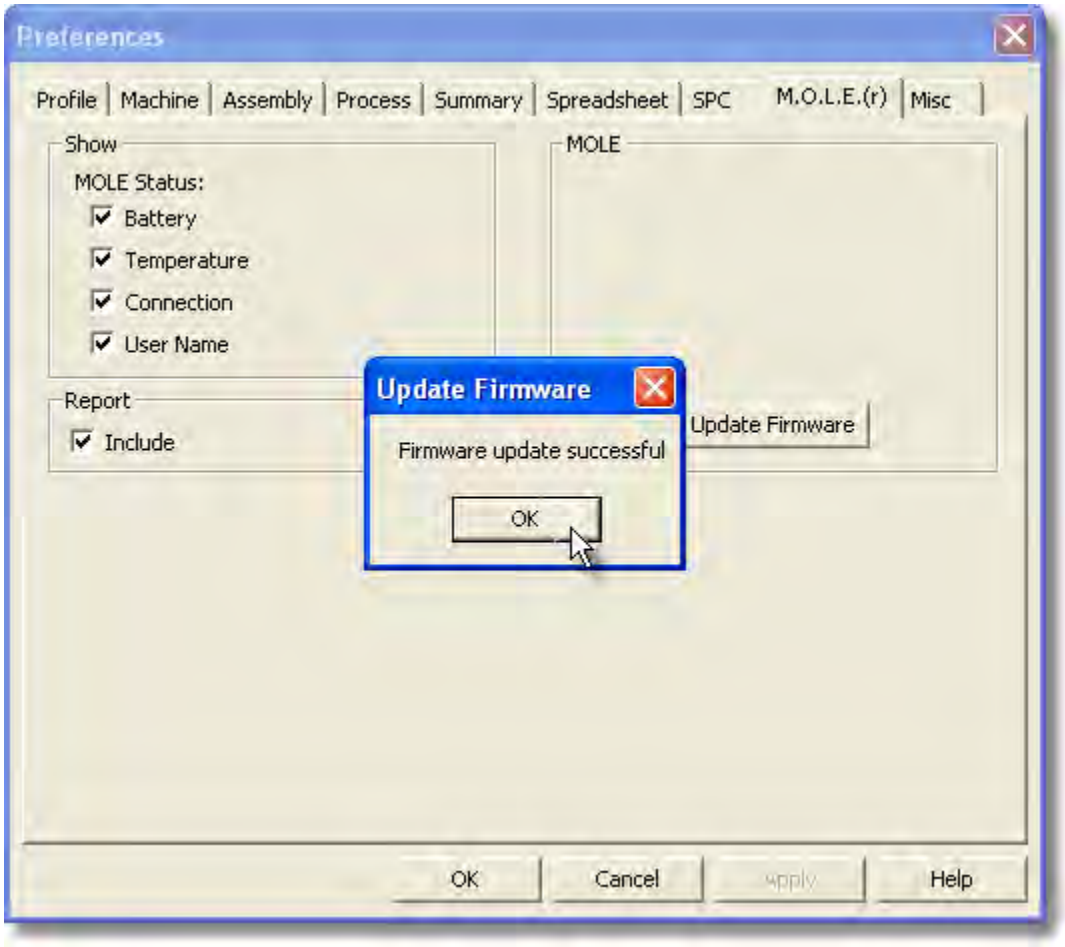
4) Click the ***Yes*** command button to proceed with the update or ***No*** to cancel.



5) Navigate to the file folder where the firmware file ***.BIN** is located.
6) Select the firmware file.
7) Click the ***Open*** command button to start updating the firmware.



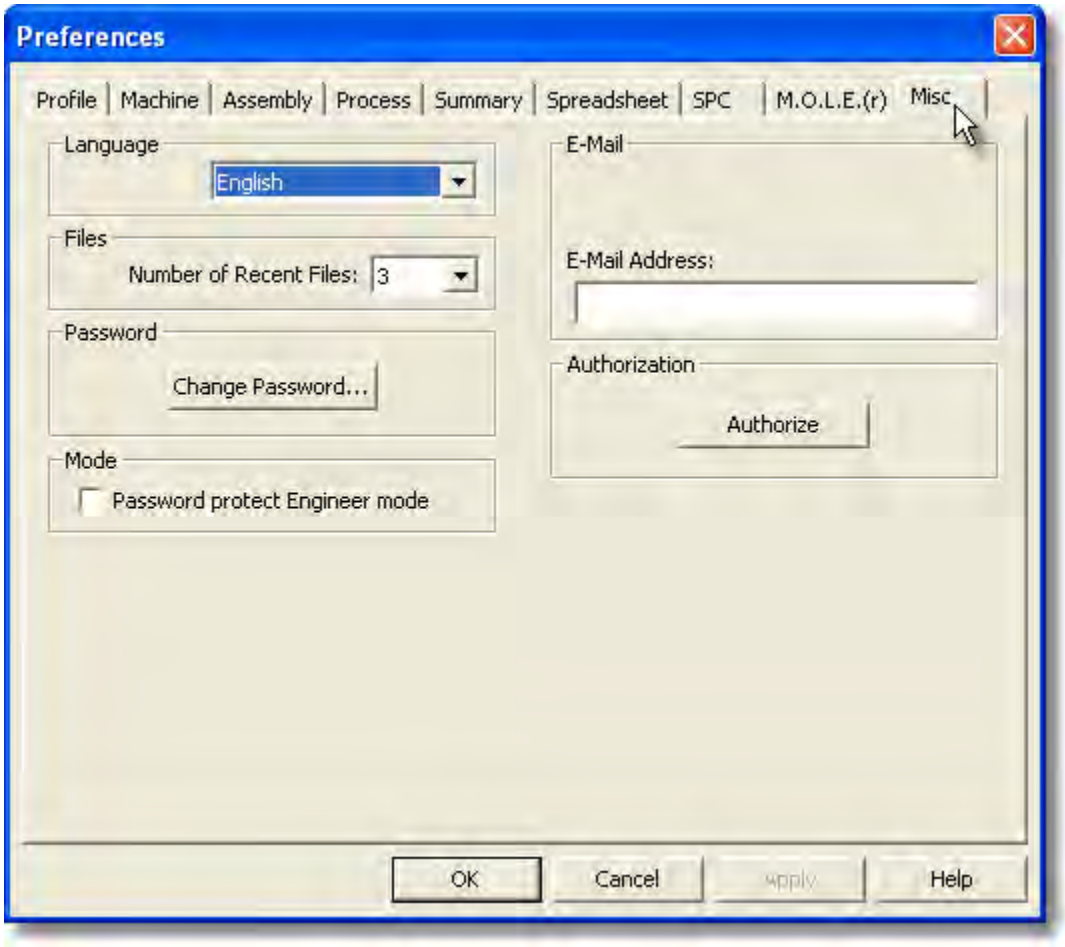
8) When the update firmware process is complete, select the ***OK*** command button.



5.5.1.6.9. Misc

<u>To access misc preferences:</u>

1) On the ***File*** menu, click ***Preferences***, and then click the ***Misc*** tab.



Language

This is where the user can change all of the menus and commands to a different language.

If the language is changed it will require the software to be restarted.

To select a different language:

1) On the ***File*** menu, click ***Preferences***, and then click the ***Misc*** tab.
2) Select a desired language from the ***Language*** drop-down box.
3) Restart the software program.

Files

The most recently open working directories are displayed at the bottom of the File menu. The user can select how many recent directories to display.

Password

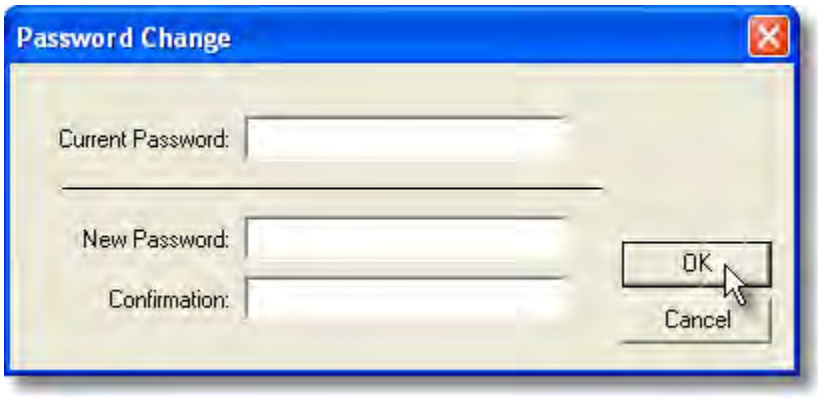
The software has a global password protection feature that uses case-sensitive text for securing access to a Page Tab, associated preference tab and Engineer mode. When password protection is used for tabs, the Page Tab will be highlighted in yellow and the

user will not be able to access the protected worksheet without proper password privileges. When protecting the Engineer mode, the user will not have access to engineer mode features.

If there are password protected features, data will not be affected when uploading from the M.O.L.E. profiler.

To change the password:

1) On the ***File*** menu, click ***Preferences***, and then click the ***Profile*** tab.
2) In the ***Password*** section, click the ***Change Password*** command button and the Password Change dialog box appears.



The software has a default password **Admin**. When the password is changed for the first time, **Admin** will need to be entered in the ***Current Password*** text box.

3) Enter current password in the ***Current*** Password text box.
4) Enter a new password in the ***New*** Password text box.

The software only accepts passwords with a minimum of 4 characters.

5) Enter the new password again in the ***Confirmation*** text box and then click the ***OK*** command button to accept or ***Cancel*** to not change the password.

Mode

Select the corresponding check box to password protect the Engineer Mode. If password protection has been selected, a dialog box appears prompting the user to enter the current password. The software will then need to be restarted to apply password protection settings.

If the default password has not been changed, the current password is **Admin**. Refer to topic ***Software>Menus>File>Preferences>Misc>Passwords*** for more information.

Email

The user can send or save a Screen image (**.BMP**) or Data Run (**.XMG**) to an email recipient. The user can set a default email address to have the software automatically populate the Email recipient text box when using the ***Send to*** command.

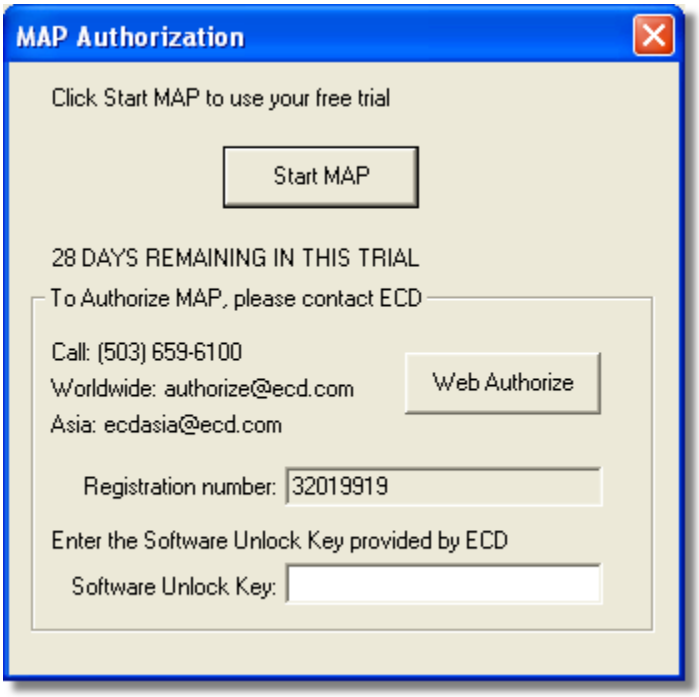
Authorization

The software is a fully functional 30-day trial version that can be authorized at any time. Once the trial period is over, the user cannot access the software until it is authorized.

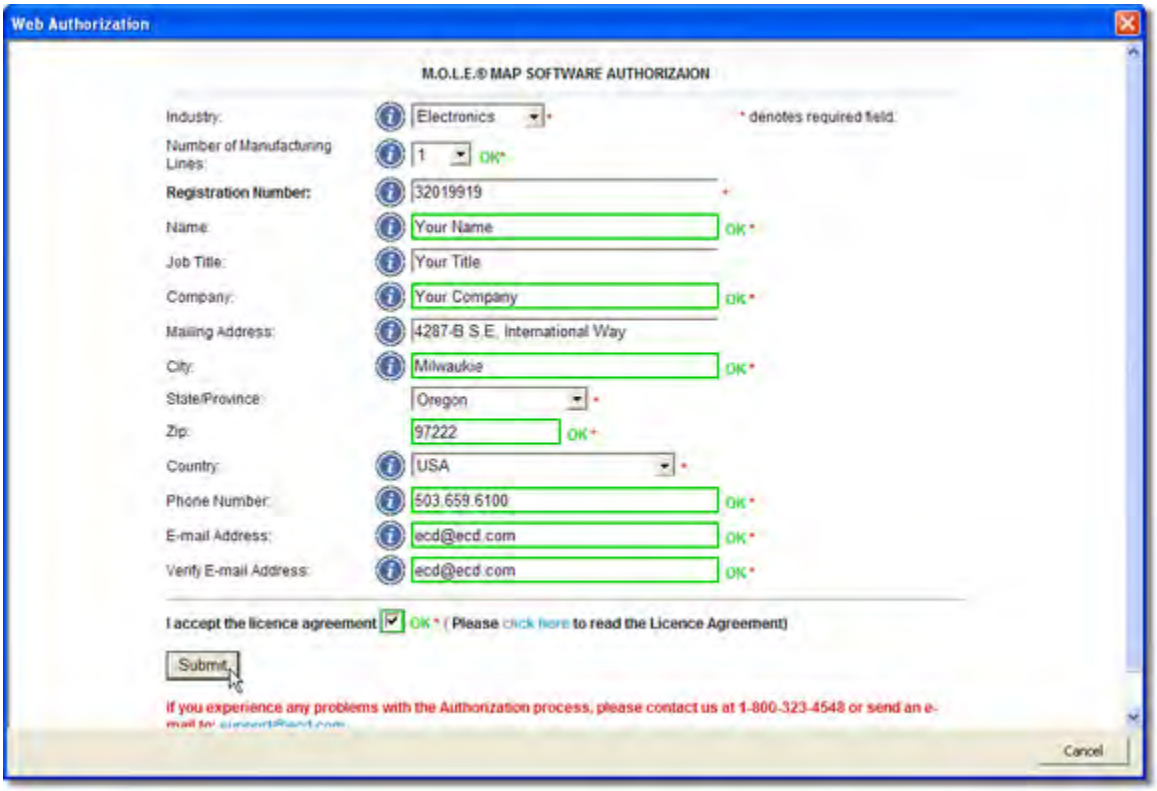
A ***Software Unlock Key*** can be obtained via the web or using the contact information supplied on the dialog box, contact ECD.

To Web Authorize:

1) On the ***File*** menu, click ***Preferences***, and then click the ***Misc*** tab.
2) In the ***Authorization*** section, click the Authorize command button and the Authorization dialog box appears.

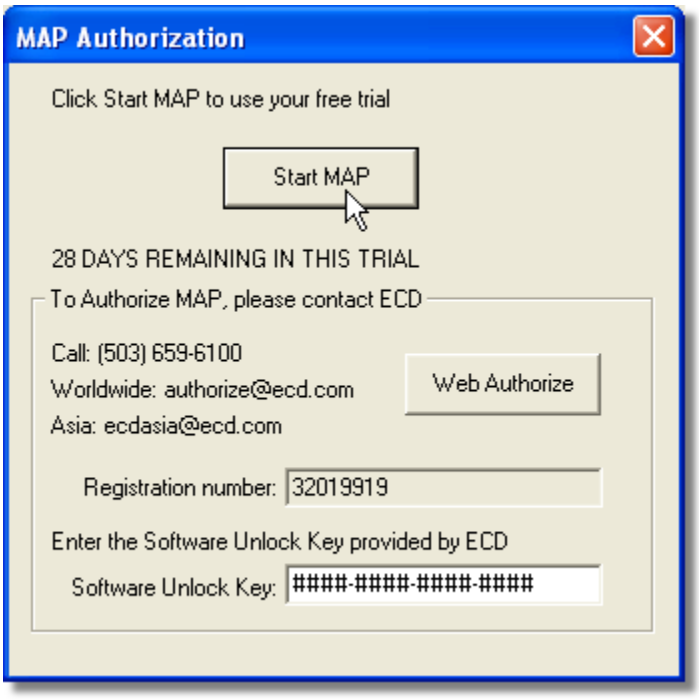


3) Enter the required information on the ***M.O.L.E.® MAP Software Authorization*** form.



4) When finished select the ***Submit*** button. A confirmation screen appears indicating that the Software Unlock Key has been sent to the email address provided in the form.

5) Enter the 16-digit ***Software Unlock Key*** and then the ***Start MAP*** command button to complete the software Authorization.



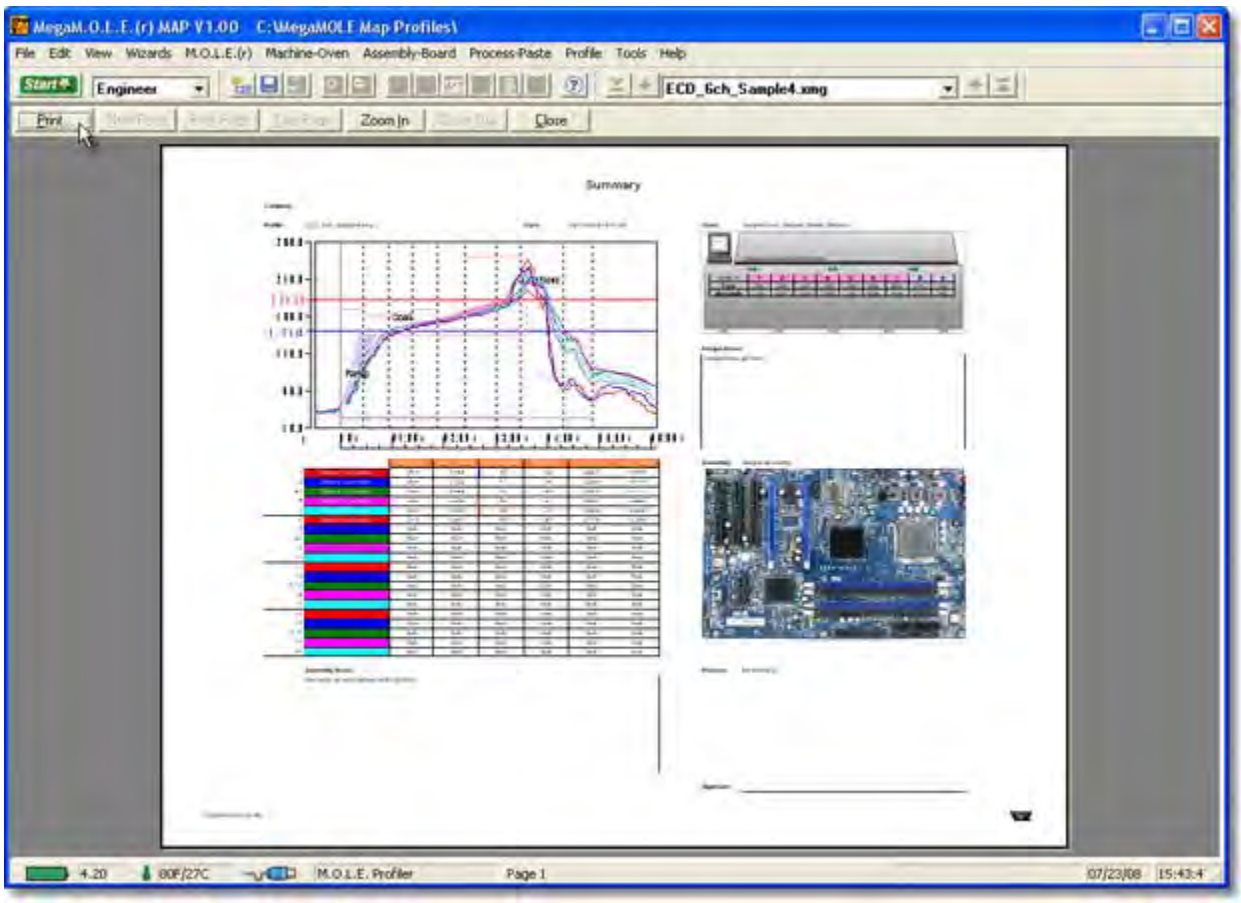
5.5.1.7. Print Preview

The Print Preview command shows a preview of the page(s) to be printed. This command is useful when confirming print options.

This is available in both Engineer & Verify Modes.

To view a print preview:

1) On the ***File*** menu, click ***Print Preview***.



2) Use the buttons on the toolbar to look over the page or make adjustments before printing.

5.5.1.8. Print

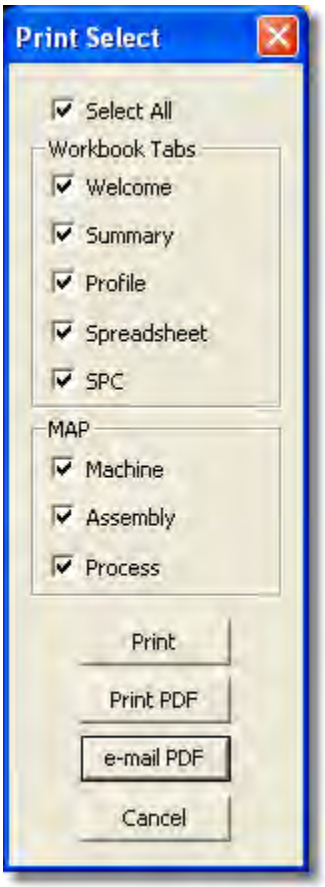
The Print command allows all of the individual Page Tabs and MAP information to be printed in a report format. The default Page Tabs in addition to MAP information to be included when printing can also be configured on the associated Preference tab. Refer to topic ***Software>Menus>File>Preferences*** for more information.

The options that appear on the Print dialog box will depend on the type of printer and the installed printer driver.

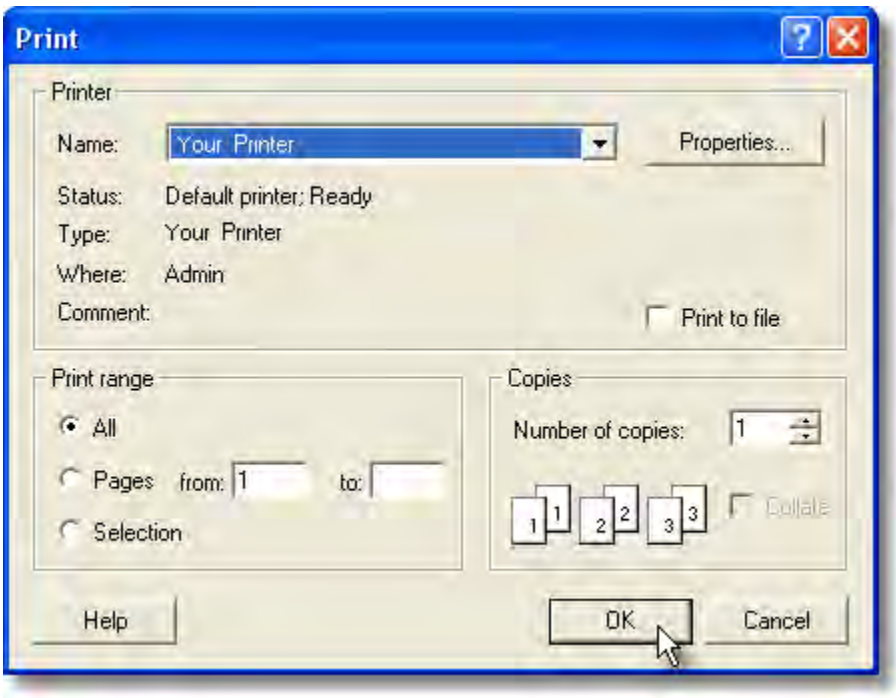
This is available when in Engineer Mode.

To print:

1) On the ***File*** menu, click ***Print***.



2) Select desired print options.
   - **Print:** Hardcopy print of selected Tabs and/or MAP information.



- **Print PDF:** Print a .PDF file of selected Tabs and/or MAP information using the MAP PDF Printer.

- **e-mail PDF**: Sends a .PDF file of selected Tabs and/or MAP information using the users default email program.

Until the e-mail is sent or the user cancels this process, the software will not be able to be accessed.

5.5.1.9. Send to

The Send to commands let the user send or save a Screen image (.BMP) or Data Run (.XMG) to an email recipient or file folder. This command is useful when the user would like to share profile data with other locations or when troubleshooting problems.

This is available in both Engineer & Verify Modes.

5.5.1.9.1. Screen Image

<u>To send a screen image:</u>

1) Launch an email program (i.e. Outlook, Firefox, Endora).

2) On the ***File*** menu, point to ***Send to Mail Recipients*** then select ***Screen Image*** to capture a bitmap (.BMP) image of the displayed Page Tab screen.
3) In the ***Send to*** dialog box select ***Email*** or ***File Folder***.
4) Enter an email address or navigate to a file folder.

When sending a file to multiple recipients, all email addresses must be separated by a semicolon **(;)**.

5) Click the ***OK*** command button to finish or ***Cancel*** to quit the command.

When sending files, the email program may display an message dialog that informs the user that it is sending the email.

5.5.1.9.2. Data Run

<u>To send a data run file:</u>

1) Launch an email program (i.e. Outlook, Firefox, Endora).
2) On the ***File*** menu, point to ***Send to Mail Recipients*** then select ***Data Run*** to send or save the currently selected data run (.XMG).
3) In the ***Send to*** dialog box select ***Email*** or ***File Folder***.
4) Enter an email address or navigate to a file folder.

When sending a file to multiple recipients, all email addresses must be separated by a semicolon **(;)**.

5) Click the ***OK*** command button to finish or ***Cancel*** to quit the command.

When sending files, the email program may display an message dialog that informs the user that it is sending the email.

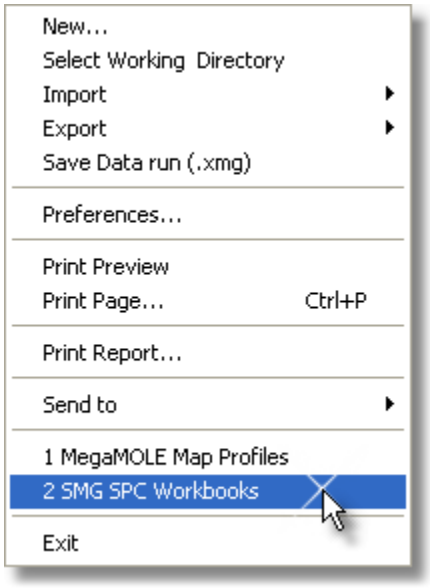
5.5.1.10. Recent Working Directory

The most recently open working directories are displayed at the bottom of the File menu.

This is available in both Engineer & Verify Modes.

To select a working directory:

1) On the ***File*** menu, click the name of the desired directory or press the appropriate number beside it.



5.5.1.11. Exit

The Exit command closes the software program.

When exiting the software, any changes made to the currently selected data run will automatically be saved.

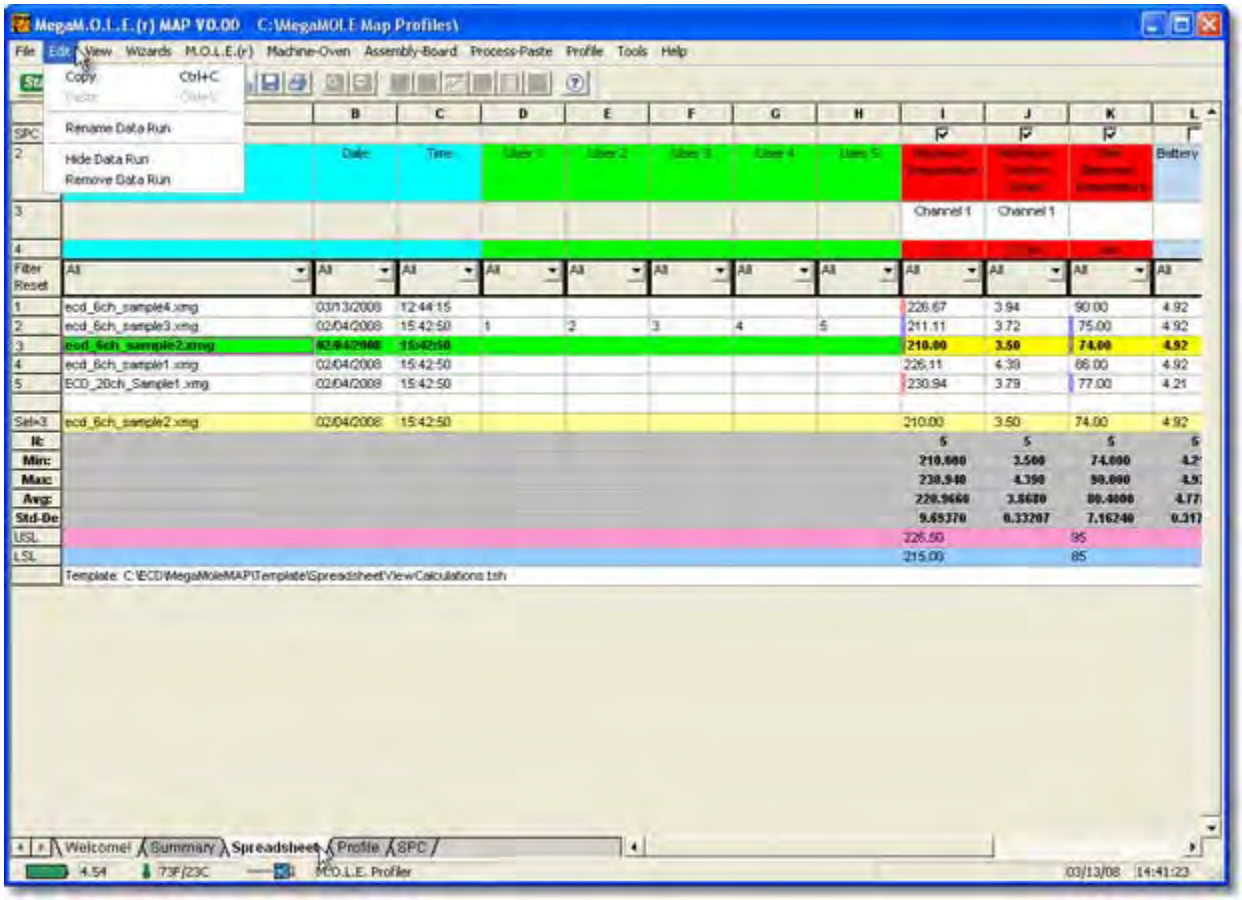
To exit the program:

1) On the ***File*** menu, click ***Exit*** to quit the program.

5.5.2. Edit Menu

The Edit menu commands enable the user manage the data run set displayed on the Spreadsheet to so the most beneficial data is assembled in the working directory.

This is available in both Engineer & Verify Modes.



5.5.2.1. Copy

<u>To copy data:</u>

1) Select the Spreadsheet Page Tab.
2) Highlight a Spreadsheet data run row or individual cell.
3) On the ***Edit*** menu, click ***Copy*** to copy the data in the selected Spreadsheet cells for pasting into other user definable cells or different programs.

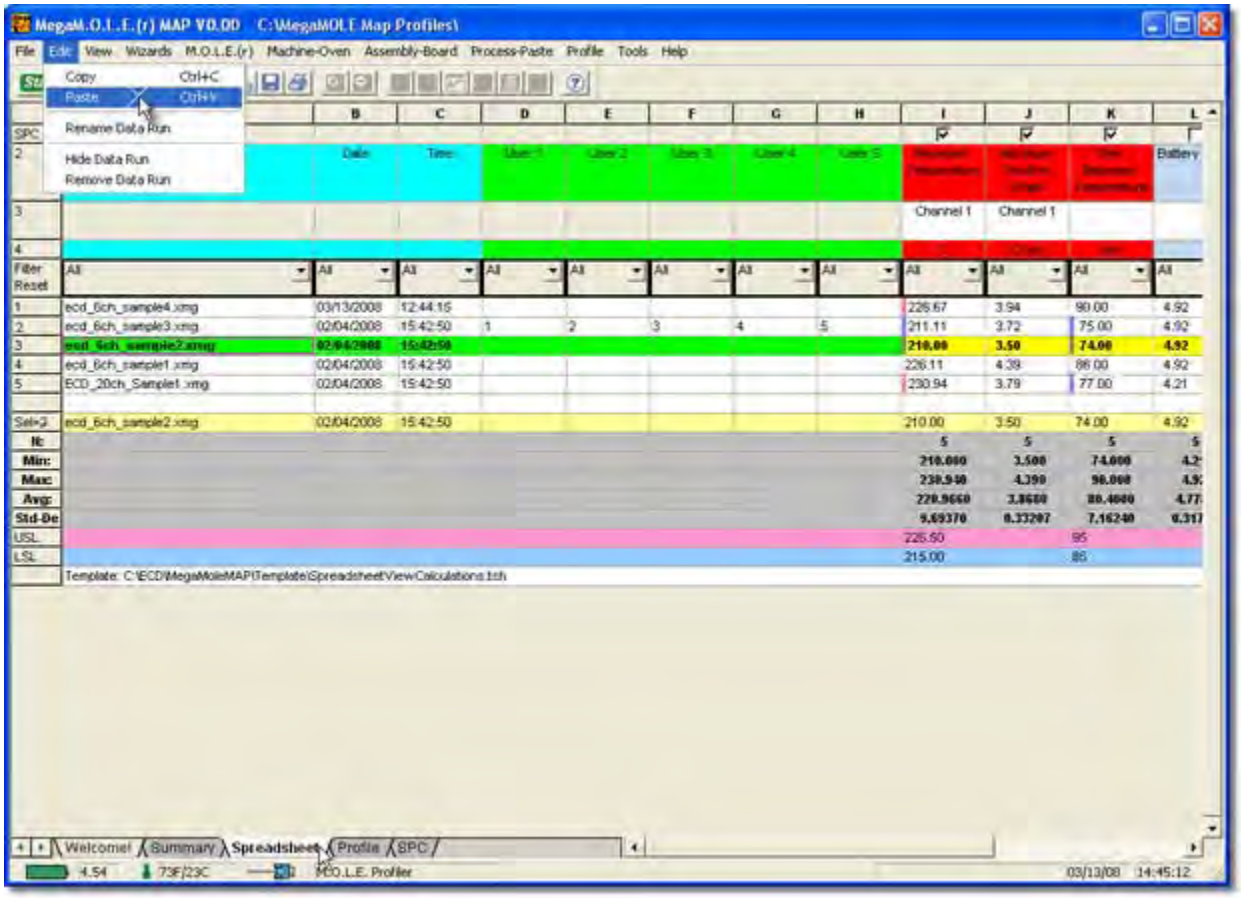
This command can also be used by pressing the shortcut keys [***CTRL +C***].

5.5.2.2. Paste

<u>To paste data:</u>

1) Select the Spreadsheet Page Tab.
2) Highlight a user definable cell.

User definable cells have label headers of User 1-5 and are colored green.



3) On the ***Edit*** menu, click ***Paste***, to paste the data in the selected Spreadsheet cells.

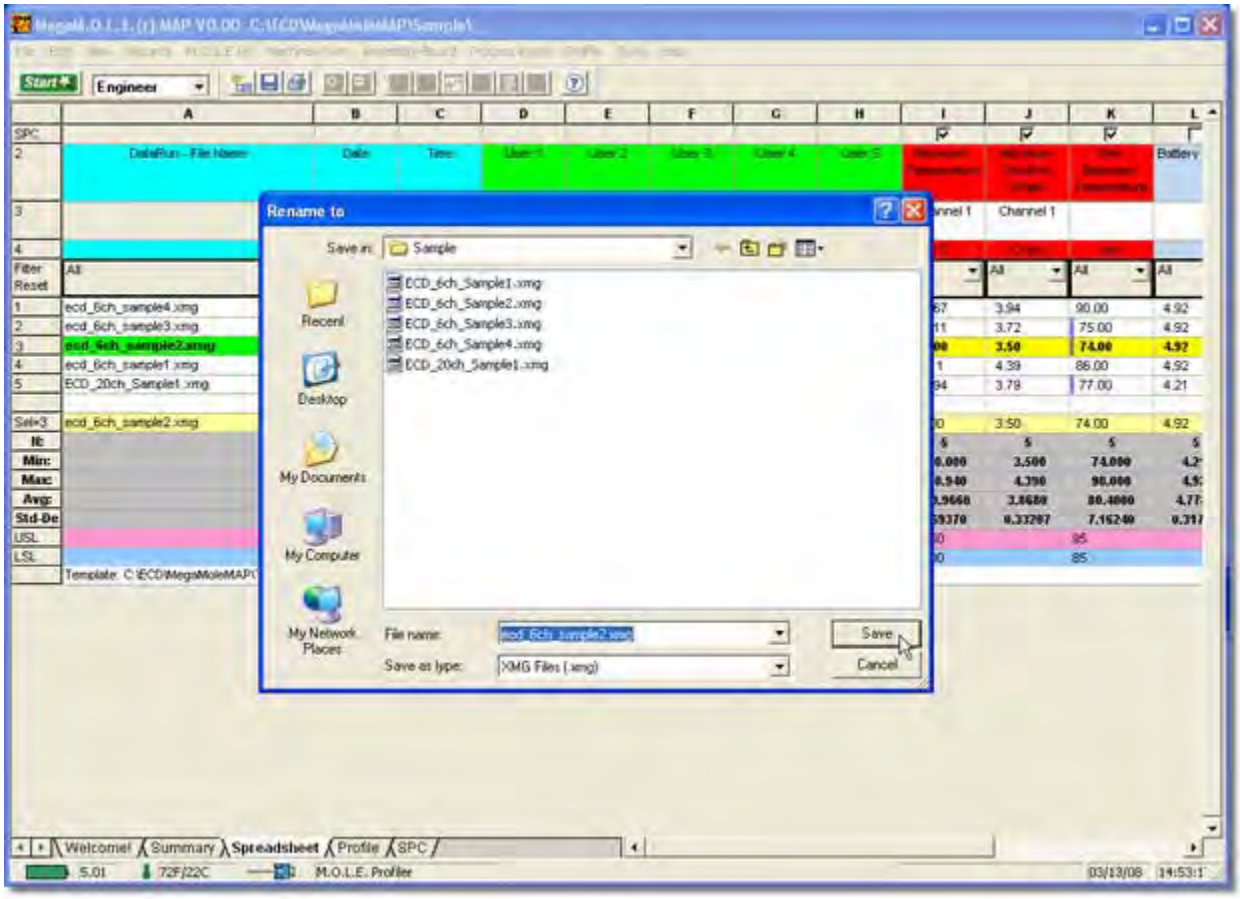
This command can also be used by pressing the shortcut keys [***CTRL +V***].

5.5.2.3. Rename Data Run

Since the software is a data run manager, the user can rename the data run files displayed on the Spreadsheet Page Tab.

<u>To rename a data run:</u>

1) Select the Spreadsheet Page Tab.
2) Highlight a Spreadsheet data run.
3) On the ***Edit*** menu, click ***Rename Data Run*** and the software prompts the user to specify a new data run file name.



4) Rename the data run file.
5) Click the ***Save*** command button to rename the file or ***Cancel*** to quit the command.

5.5.2.4. Hide Data Run

The Hide Data Run excludes a data run row without eliminating it completely from the working directory. This command is similar to the filter function, and is helpful when data runs may not be beneficial to the data run set statistics.

To hide a data run:

1) On the ***Edit*** menu, click ***Hide Row***.

The data run is now excluded from the data run set without eliminating it completely from the working directory.

To restore hidden data set row(s) click the Red ***Filter Reset*** button located on the Spreadsheet Page Tab. Refer to topic ***Software>Page Tabs>Spreadsheet>Filters*** for more information.

5.5.2.5. Remove Data Run

Since the software is a data run manager, the user can remove data runs open working directory displayed on the Spreadsheet Page Tab.

When a data run is removed the software automatically creates a backup (.BAK) file of the removed data run. To restore, navigate to the working directory, rename the (*.BAK) file extension to the M.O.L.E.® MAP software (.XMG) file extension.

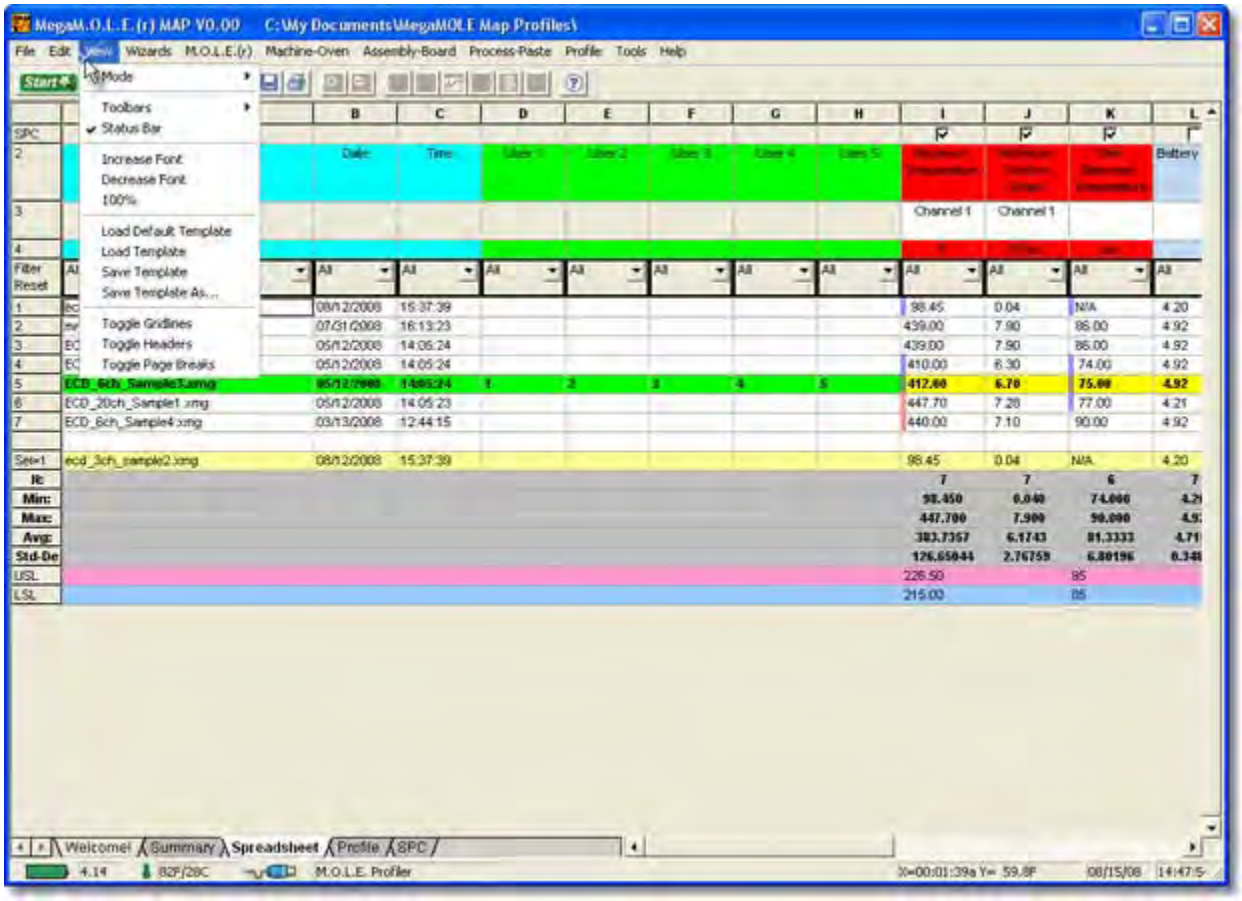
To remove a data run:

1) On the ***Edit*** menu, click ***Remove Data Run*** to remove a data run that is not wanted. This command is helpful when data has been collected and the user feels it is not beneficial to the data run set or is corrupted.

If more than one data run needs to be removed from the open working directory, it is recommended that the Microsoft® file management tools are used.

5.5.3. View Menu

The View menu commands enable the user to manipulate which areas are viewed on the standard Page Tabs and Templates.



5.5.3.1. Mode

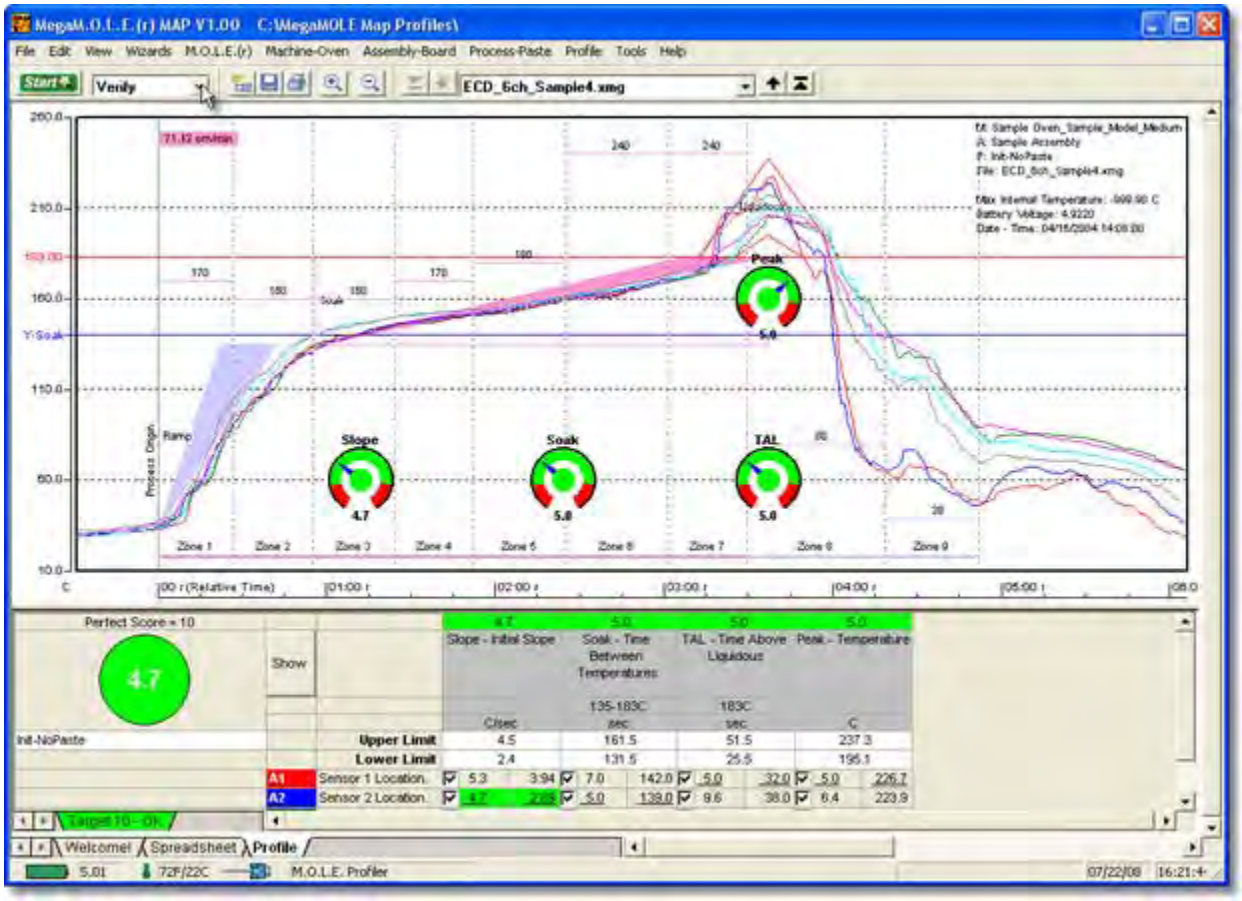
Modes are a set of page tabs, menus, toolbars, and shortcuts that are grouped and organized so that the user can work in a specific task-oriented environment.

When you use a mode, only the menus, toolbars, and shortcut commands that are relevant to it are displayed. The software has two Modes; Verify and Engineer. Engineer mode contains all of the M.O.L.E.® MAP software features and functions. When switching from Engineer to Verify mode, the amount of page tabs and toolbar items decrease leaving the user with the tools best suited to perform verify tasks.

This is available in both Engineer & Verify Modes.

To switch modes:

1) On the ***View*** menu, point to ***Modes*** then select the desired mode to switch to.



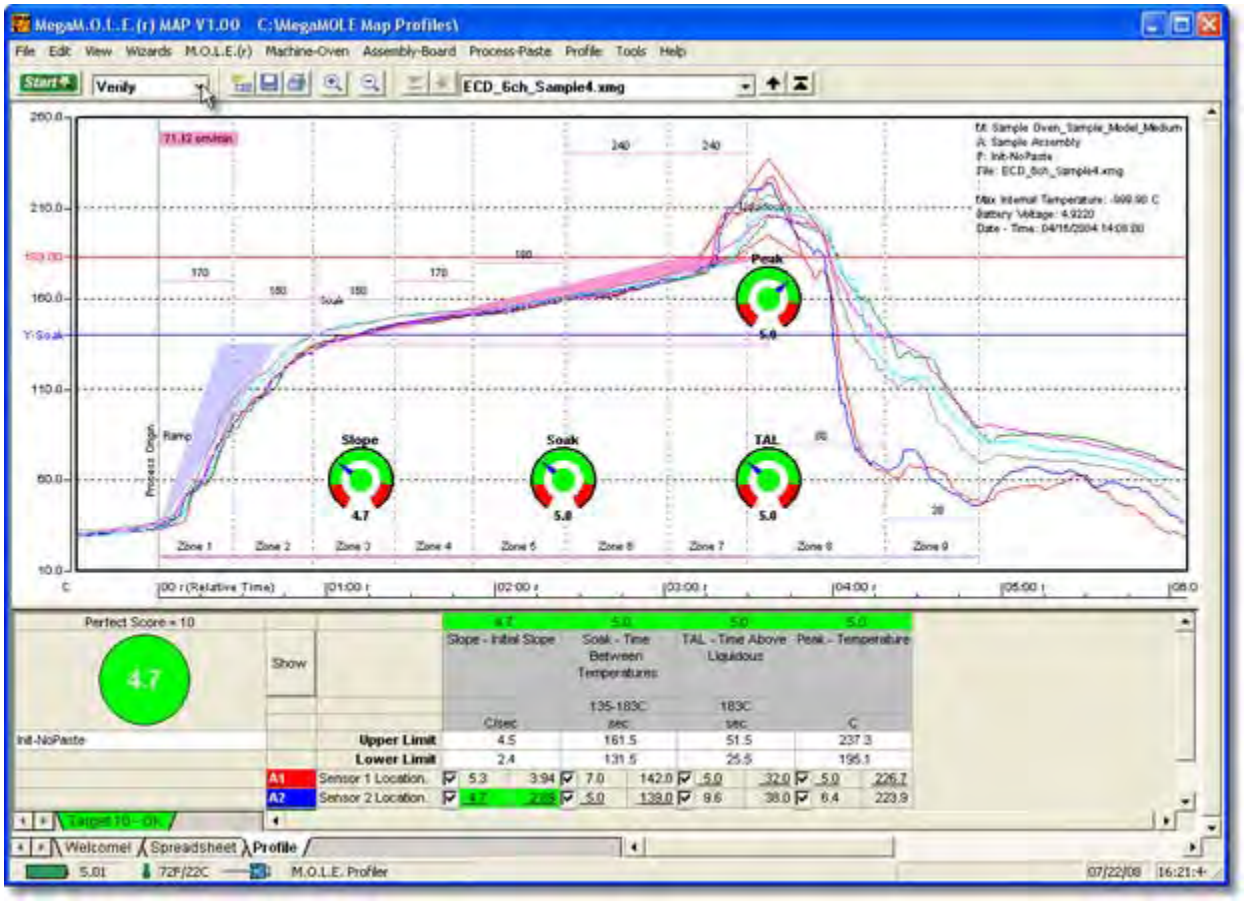
Modes can be accessed on the ***Toolbar*** by using the modes drop down box..

Engineer ▾	Mode drop down box

5.5.3.1.1. Verify

The full featured M.O.L.E.® MAP software, includes a simplified operating mode that provides customers what they need for everyday profile verification.

For a complete outline of page tabs, menus, toolbars, and shortcuts associated with the Verify mode, refer to **Appendix C**.

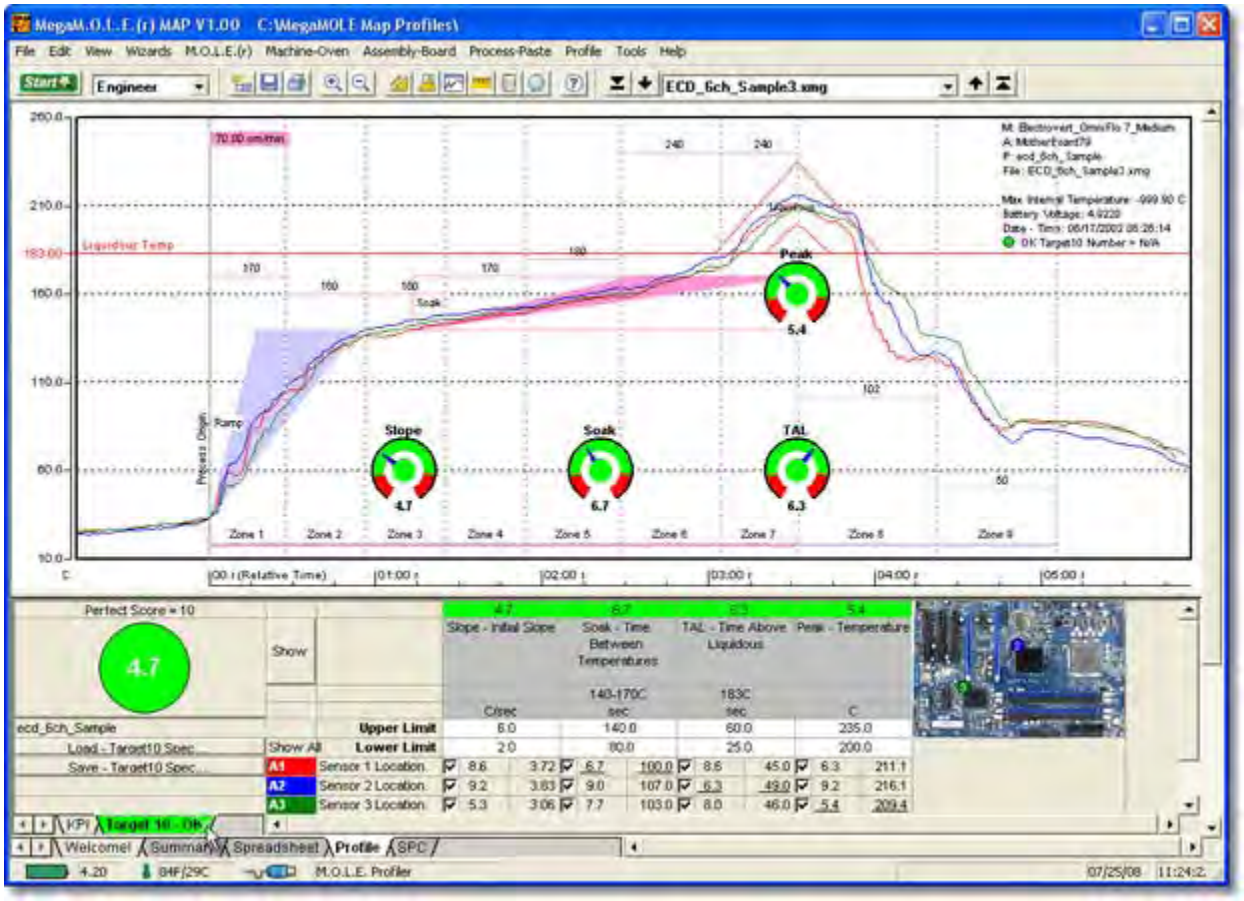


5.5.3.1.2. Engineer

Engineer mode contains all of the M.O.L.E.® MAP software features and functions. These options are typically used so a process Engineer can set up a M.O.L.E. Profiler for a data run, MAP information and Target-10 verification specifications.

> The ***Engineer mode*** has a password protection feature that uses case-sensitive text for securing access to it. When password protection is used, a user will not have access to engineer mode features without proper password privileges.
>
> The software has a default password **Admin**. If you would like to change it use the ***Change Password...*** feature located on the ***Misc*** tab of the ***Preferences*** property sheet. Refer to topic ***Software>Menus>File>Preferences>Misc*** for more information.

For a complete outline of page tabs, menus, toolbars, and shortcuts associated with the Engineer mode, refer to ***Appendix C***.



5.5.3.2. Toolbars

By default, the Standard and Navigate toolbars appear docked on a single row, showing the toolbar buttons that are used most often. When there is a check mark beside the toolbar command it indicates that that it is displayed.

The toolbars can be moved to other edges of the program window. To move, drag docked toolbar until the toolbar snaps into place on the desired edge.

This is available in both Engineer & Verify Modes.

To hide a toolbar:

1) On the ***View*** menu, point to ***Toolbar*** then select the desired toolbar to display or hide.

5.5.3.3. Status Bar

By default, the Status bar appears along the bottom of the program window. When there is a check mark beside the toolbar command it indicates that that it is displayed.

This is available in both Engineer & Verify Modes.

To display the status bar:

1) On the ***View*** menu, click ***Status bar*** to display or hide the Status bar.

5.5.3.4. Increase Font

The Increase Font command has the capability to zoom the current Page Tab in multiple times.

This is available in both Engineer & Verify Modes.

To Increase Font:

1) On the ***View*** menu, click ***Increase Font*** to make the current Page Tab view larger. When the maximum Increase Font level has been reached the command will be dimmed.

The Increase Font command can be accessed on all Page Tabs excluding the Profile Page Tab.

5.5.3.5. Decrease Font

The Decrease Font command has the capability to zoom the current Page Tab out multiple times.

This is available in both Engineer & Verify Modes.

To Decrease Font:

1) On the ***View*** menu, click ***Decrease Font*** to make the current Page Tab view smaller. When the maximum Decrease Font level has been reached the command will be dimmed.

The Decrease Font command can be accessed on all Page Tabs excluding the Profile Page Tab.

5.5.3.6. 100%

The Zoom 100% command restores the current Page Tab to the default view level.

This is available when in Engineer Mode.

To zoom 100%:

1) On the ***View*** menu, click ***100%*** to restore current Page Tab view to the default.

The 100% command can be accessed on all Page Tabs excluding the Profile Page Tab.

5.5.3.7. Load Default Template

Template data calculations are highly customizable. When a user has changed one, the user can use the ***Load Default Template*** to discard all modifications and restore the default template specified in ***Software>Menus>File>Preferences***.

Templates are automatically loaded every time the software is started and is used as the default template for every downloaded data run. Template files are specified on the ***Preferences*** property sheet. Refer to topic ***Software>Menus>File>Preferences*** for more information.

This is available when in Engineer Mode.

To load a default template:

1) On the ***View*** menu, click ***Load Default Template*** to load the default template.

This command can also be accessed by right-clicking over a template.

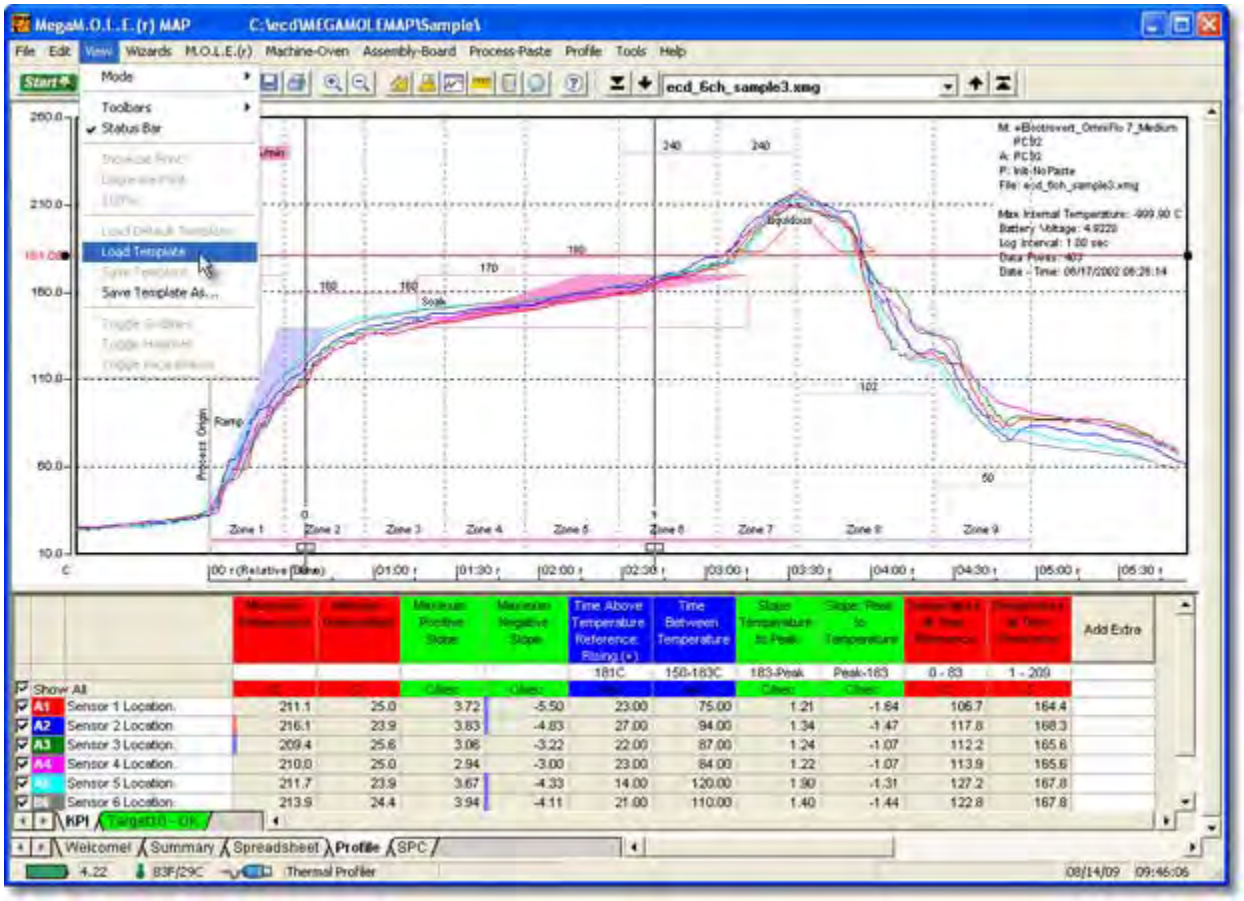
5.5.3.8. Load Template

Since the software allows the user to create different templates use the ***Load Template*** command to apply a template file to any data run in the working directory.

This is available when in Engineer Mode.

To load a template:

1) On the ***View*** menu, click ***Load Template***.



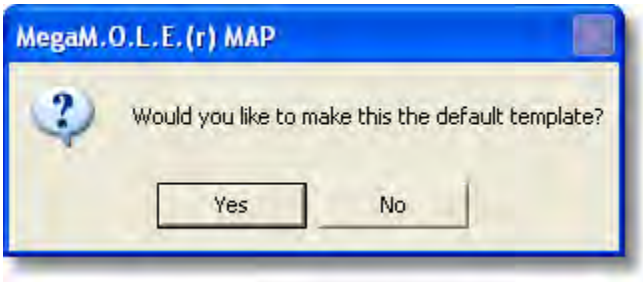
2) Navigate to the location where the template files are located. Depending on which page tab you are viewing, the software only displays the template file type for that tab.

- Summary Template File (*.TSU)
- Spreadsheet Template File (*.TSH)
- Data Table Template File (*.TPF)

When loading templates the software opens to the default **Templates** folder of the M.O.L.E.® MAP Software file structure. You can change this setting using the ***Preferences*** property sheet. Refer to topic ***Software>Menus>File>Preferences*** for more information.

3) Click the ***Open*** command button to select the template file or ***Cancel*** to quit the command.

4) After the template file has been selected, the software prompts the user to decide if they would like to set the selected template file as the new default template which is applied to all future data runs downloaded from a M.O.L.E. Profiler.



5) Click the ***Yes*** command button to use at the new default template for ***No*** to apply it to the current data run only keeping the current default template.

This command can also be accessed by right-clicking over a template.

5.5.3.9. Save Template

When a template data calculation has been changed or a new one has been added, the user can save the calculations to the template saved with the currently displayed data run.

This is available when in Engineer Mode.

To save a template:

1) On the ***View*** menu, click ***Save Template*** to save the displayed data run template.

This command can also be accessed by right-clicking over a template data calculation.

5.5.3.10. Save Template As...

When a template data calculation has been changed or a new one has been added, the user can save the calculations to a new template file. This is useful when the user would like to customize a template leaving the default template the same. The user can apply this new template to other data run files by using the ***Load Template*** command.

This is available when in Engineer Mode.

To save a template as:

1) On the ***View*** menu, click ***Save Template As*** and the ***Save Data Calculation Template*** dialog box appears.

2) Specify a new file name.
3) Click the ***Save*** command button to save the new template file or ***Cancel*** to quit the command.

This command can also be accessed by right-clicking over a template.

5.5.3.11. Toggle Gridlines

The Summary and Spreadsheet Page Tabs are built with cells that are organized into columns and rows. The software allows the user to show and hide the cell gridlines as needed. This command is particularly helpful when customizing the Summary Page Tab template.

This is available when in Engineer Mode.

To toggle gridlines:

1) On the ***View*** menu, click ***Toggle Gridlines*** to show or hide cell gridlines.

This command can also be accessed by right-clicking over the Summary or Spreadsheet templates.

5.5.3.12. Toggle Headers

The Summary and Spreadsheet Page Tabs are built with cells that are organized into columns and rows. These columns and rows include row headings which are numbers that appear on the left of each row, and column headings which are the letters that appear at the top of each column.

This is available when in Engineer Mode.

To toggle headers:

1) On the ***View*** menu, click ***Toggle Headers*** to show or hide column and row headers.

This command can also be accessed by right-clicking over the Summary or Spreadsheet templates.

5.5.3.13. Toggle Page Breaks

As data calculations get added to the Spreadsheet Page Tab, it may increase the amount of pages when printing. The software includes a preview of where page breaks occur.

This is available when in Engineer Mode.

To toggle page breaks:

1) On the ***View*** menu, click ***Toggle Page Breaks*** to show or hide the page break lines.

This command can also be accessed by right-clicking over the Spreadsheet template.

5.5.4. Wizards Menu

M.O.L.E.® MAP software wizards help guide the user through the most common multi-step tasks.

5.5.4.1. Get Started

This command activates the Get Started dialog box for access to the New (Start) command.

To activate the Get Started dialog box:

1) On the ***Wizards*** menu, click ***Get Started*** and a dialog box appears with the New (Start) command button.

5.5.4.2. Fresh Start

The ***Fresh Start*** workflow is a wizard that starts a new profile (data run) by entering Machine (oven), Assembly (board) and Process (Paste) information.

This is available when in Engineer Mode.

The Fresh Start workflow:

1) Connect the M.O.L.E. Profiler to the computer. Refer to ***Basics>Setup>Communications Setup*** for more information.
2) On the ***File*** menu, cllick ***New***. A message box appears with the five workflow wizard options.

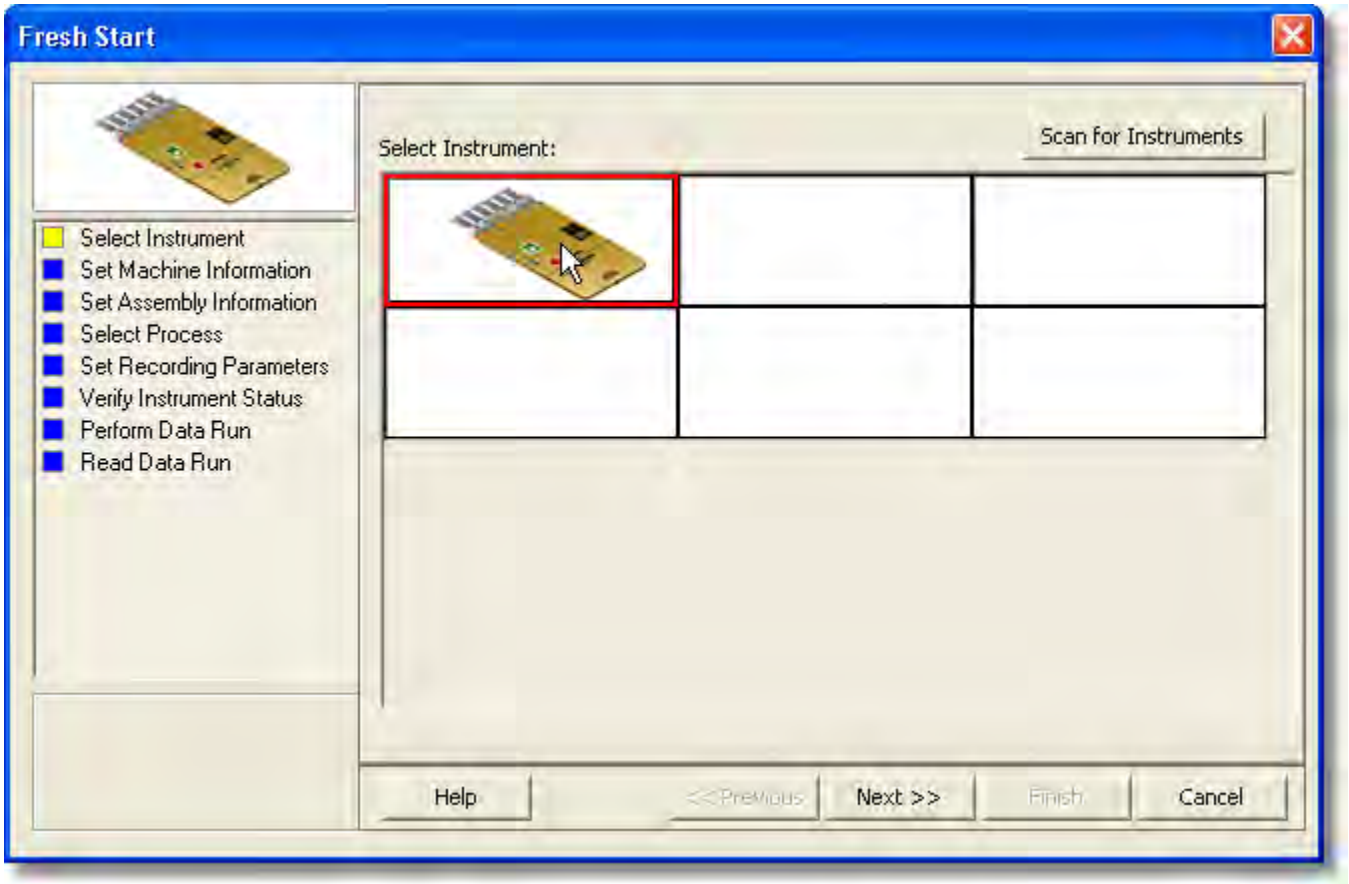
3) On the ***Start*** dialog box, click the ***Fresh Start*** command button and the workflow wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

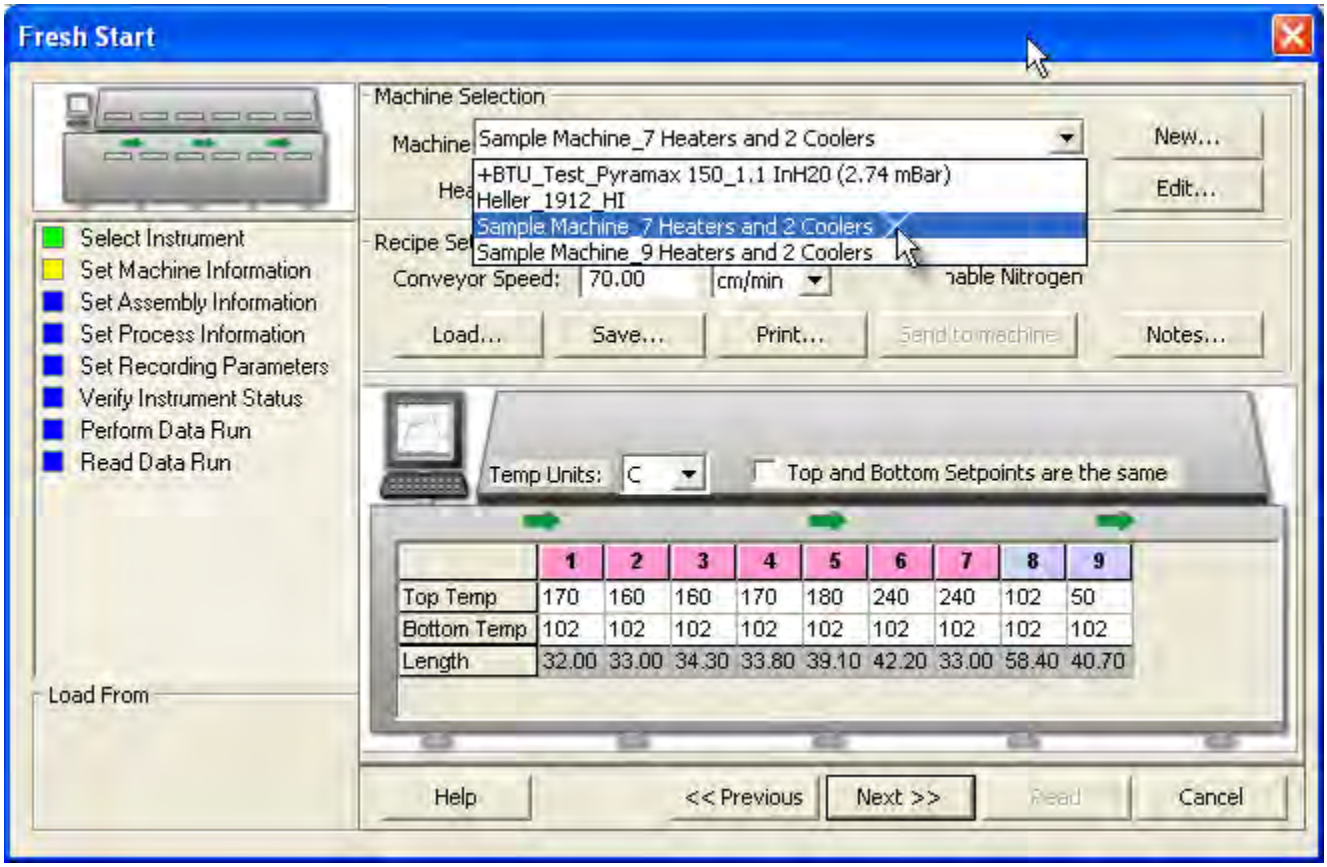
Current Completed Remaining

4) Select the desired instrument from the dialog box to make active. If a M.O.L.E. Profiler has already been selected during a different process, the software automatically selects the M.O.L.E. Profiler connected to the COM port previously used.

If the software does not detect a M.O.L.E. Profiler, using the communication cable connect it to the computer and click the ***Scan for Instruments*** command button to search again. M.O.L.E.® MAP software allows multiple instruments to be connected to a computer at one time. Selecting the ***Scan for Instruments*** command button will detect all instruments and display them in the dialog box. If no instrument is detected the software displays all of the Demonstration thermal profilers to select from.

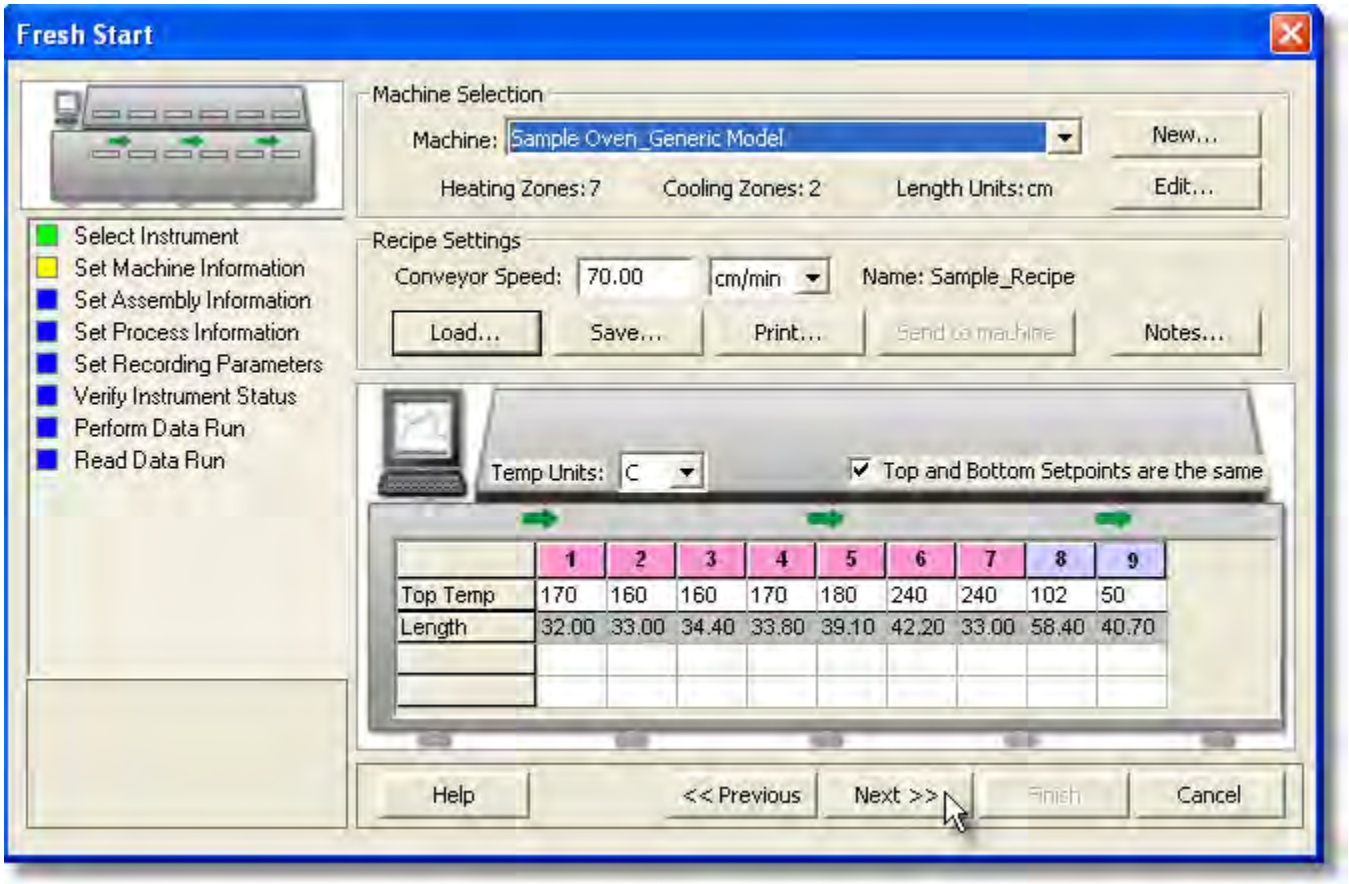


5) Click the ***Next*** command button.
6) Select a machine from the Machine drop down list. If the machine does not appear in the list click the ***New*** command button to create a new machine. Refer to topic ***Software>Menus>Machine>Create new Machine*** for more information.



7) Set the machine recipe settings such as Conveyor Speed, Zone Temperatures and Temperature units.

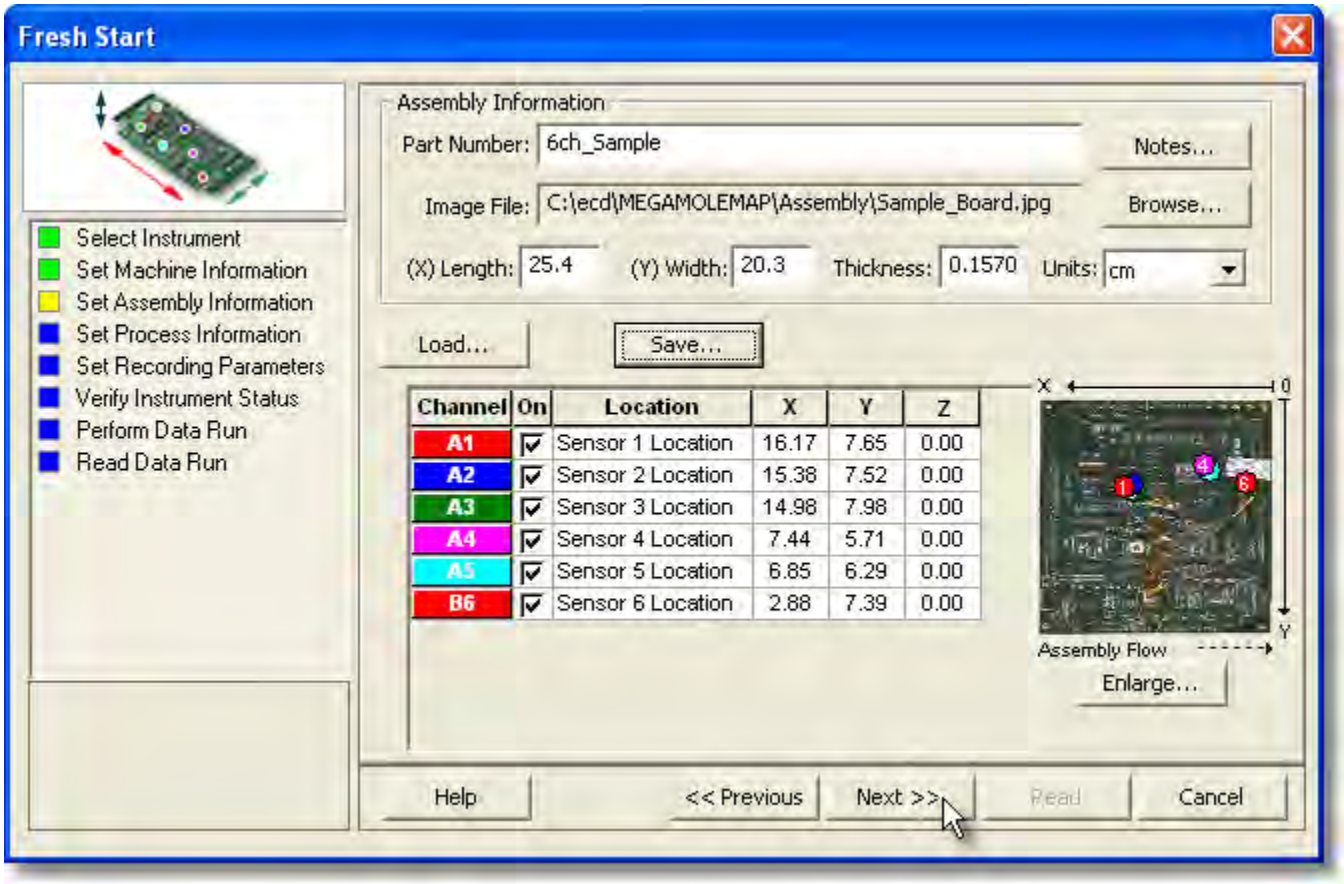
The software includes features to save and load machine recipe setting files. These files are helpful to quickly load machine information and to ensure they are always the same.



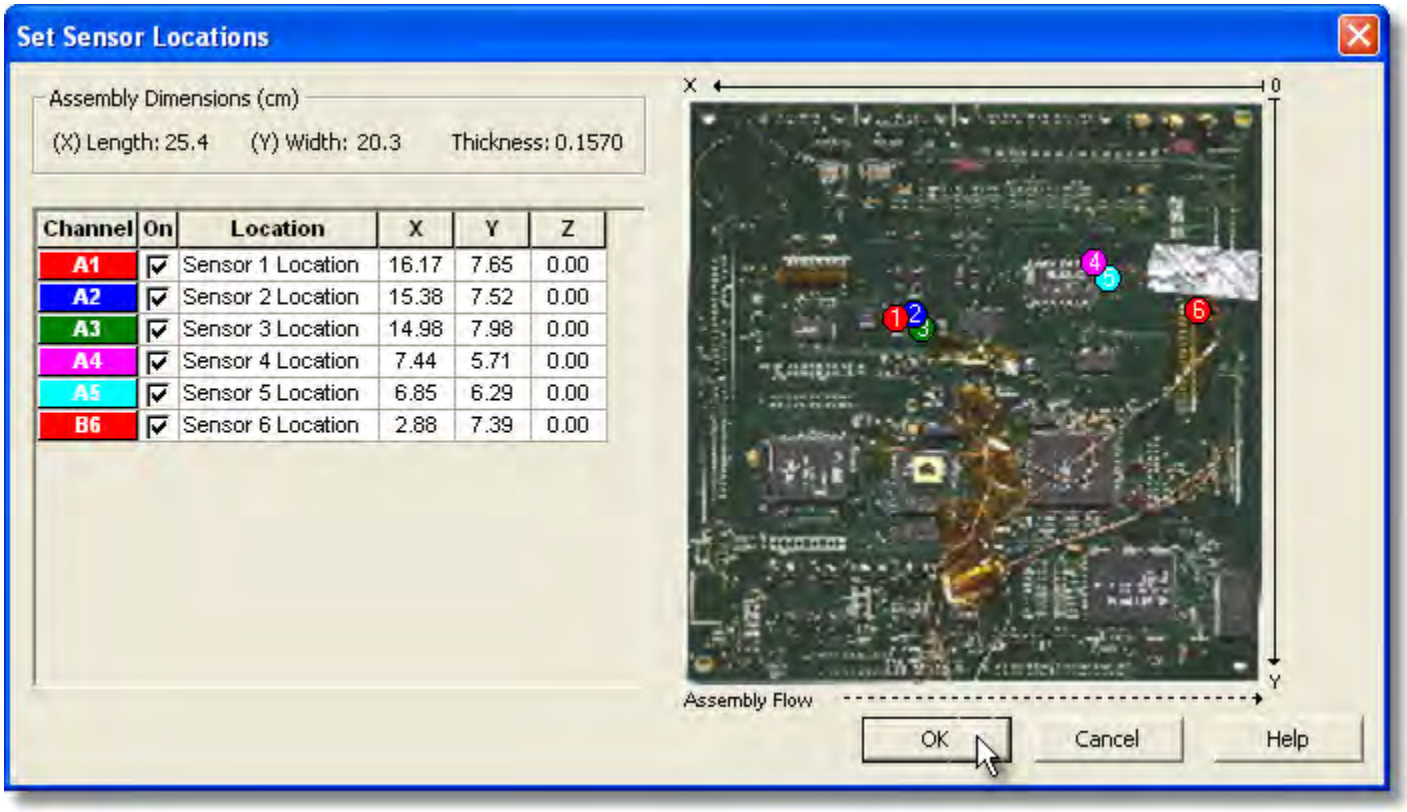
8) Click the ***Next*** command button.

If no value is specified for the conveyor speed or the default oven temperature values, the software will remind the user to set them.

9) Set the assembly information such as part number, board size, sensor locations and a product image.



If the user specifies a product image, clicking the Enlarge command button displays the Set Sensor Locations dialog box where the user can specify the locations of each sensor. To move sensor locations, drag the sensor markers to the approximate location where the sensors are attached.



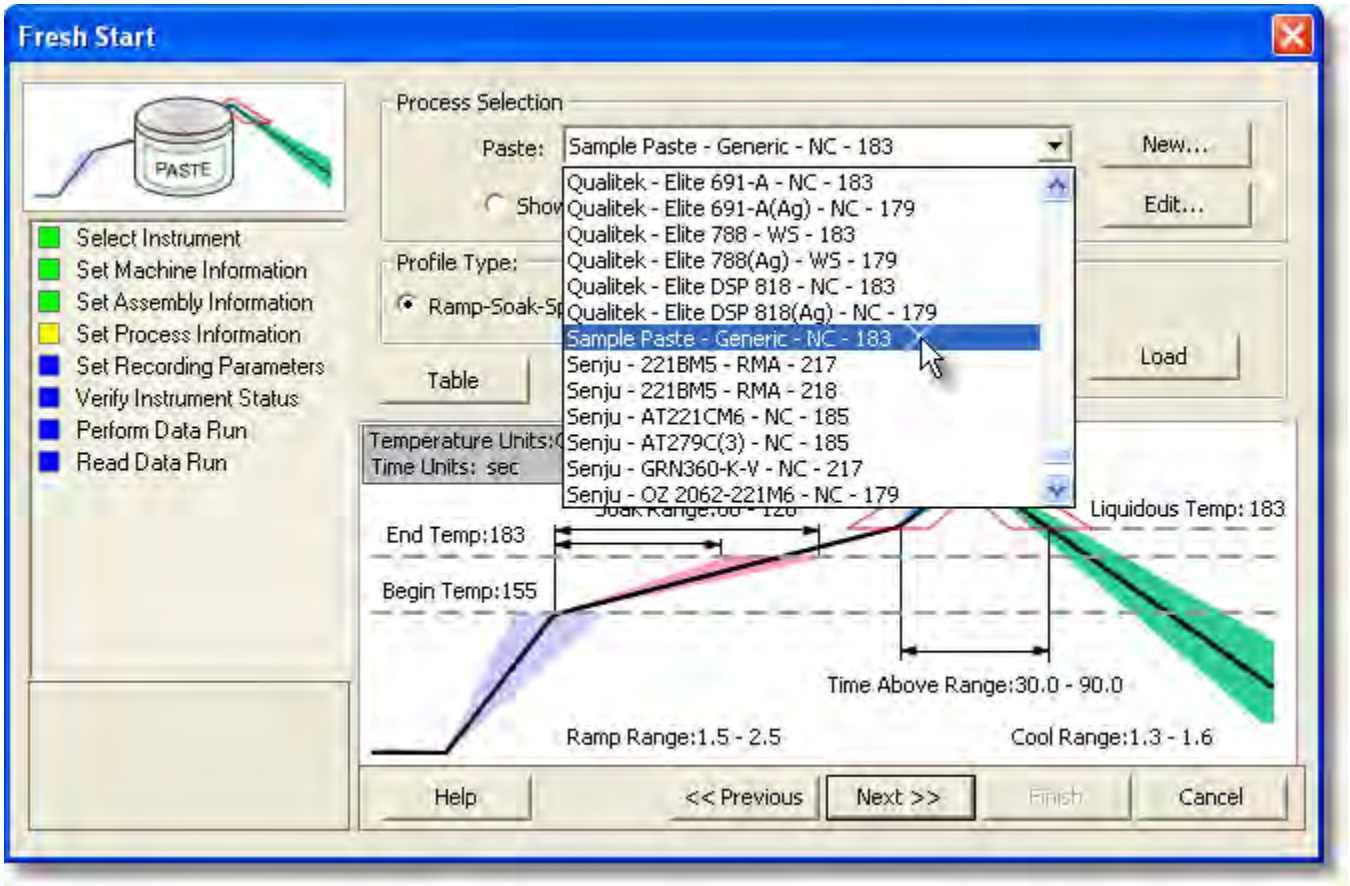
10) When finished, click the ***OK*** command button to accept or ***Cancel*** to return without making any changes.

11) Click the ***Next*** command button.

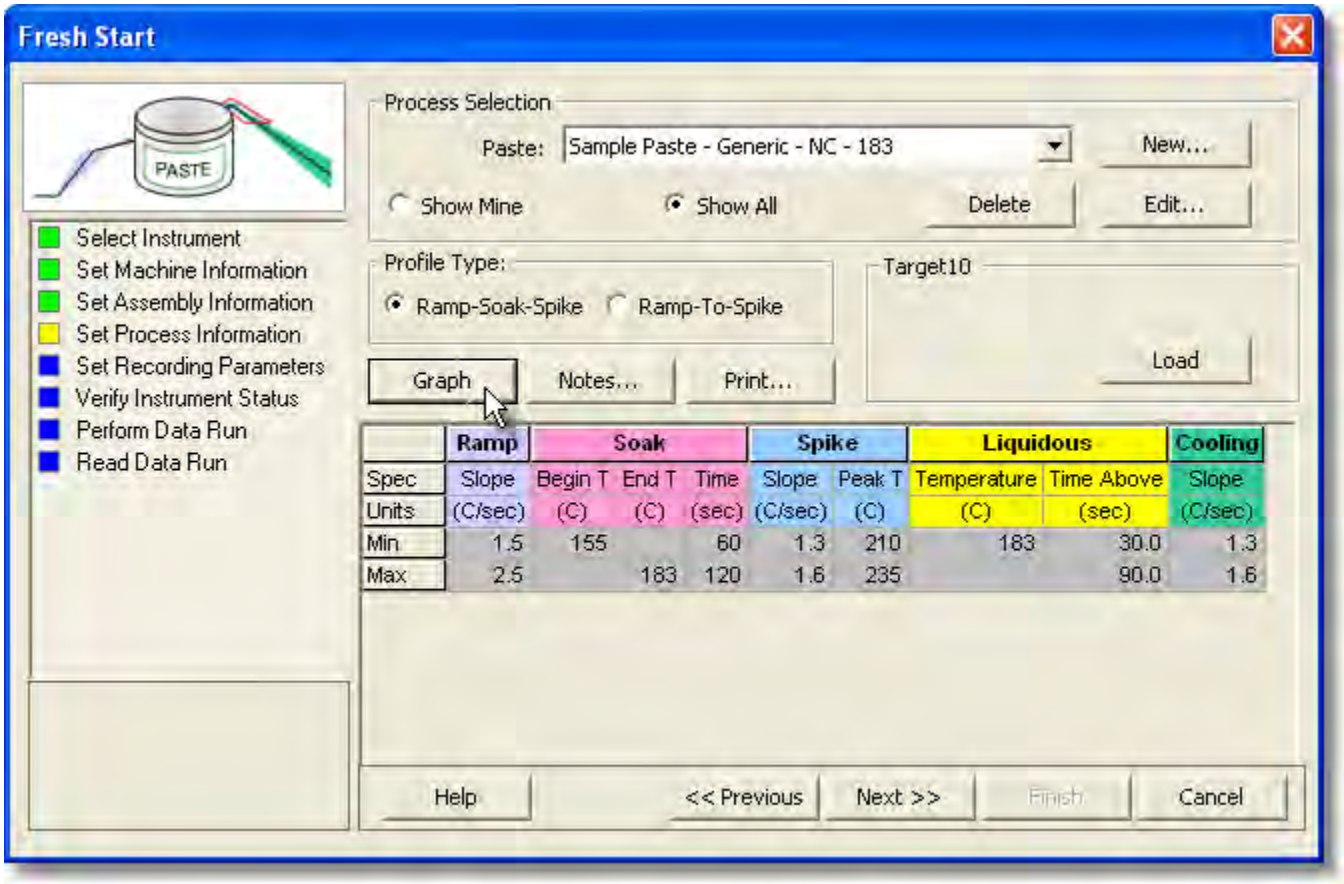
12) Select your process specification. Select a ***Paste*** from the database or previously created ***Target 10 Specification***. If your Paste does not appear in the database list click the ***New*** command button to create a new one. Refer to topic ***Software>Menus>Process>Create new Paste*** for more information.

13) Choose the ***Profile Type*** (Ramp-Soak-Spike or Ramp-to-Spike). Ramp-Soak-Spike profile types are the only type allowed to be edited.

When the user selects a paste from the database, they can use the radio buttons below the drop down box to filter and display only the user created pastes from paste database.

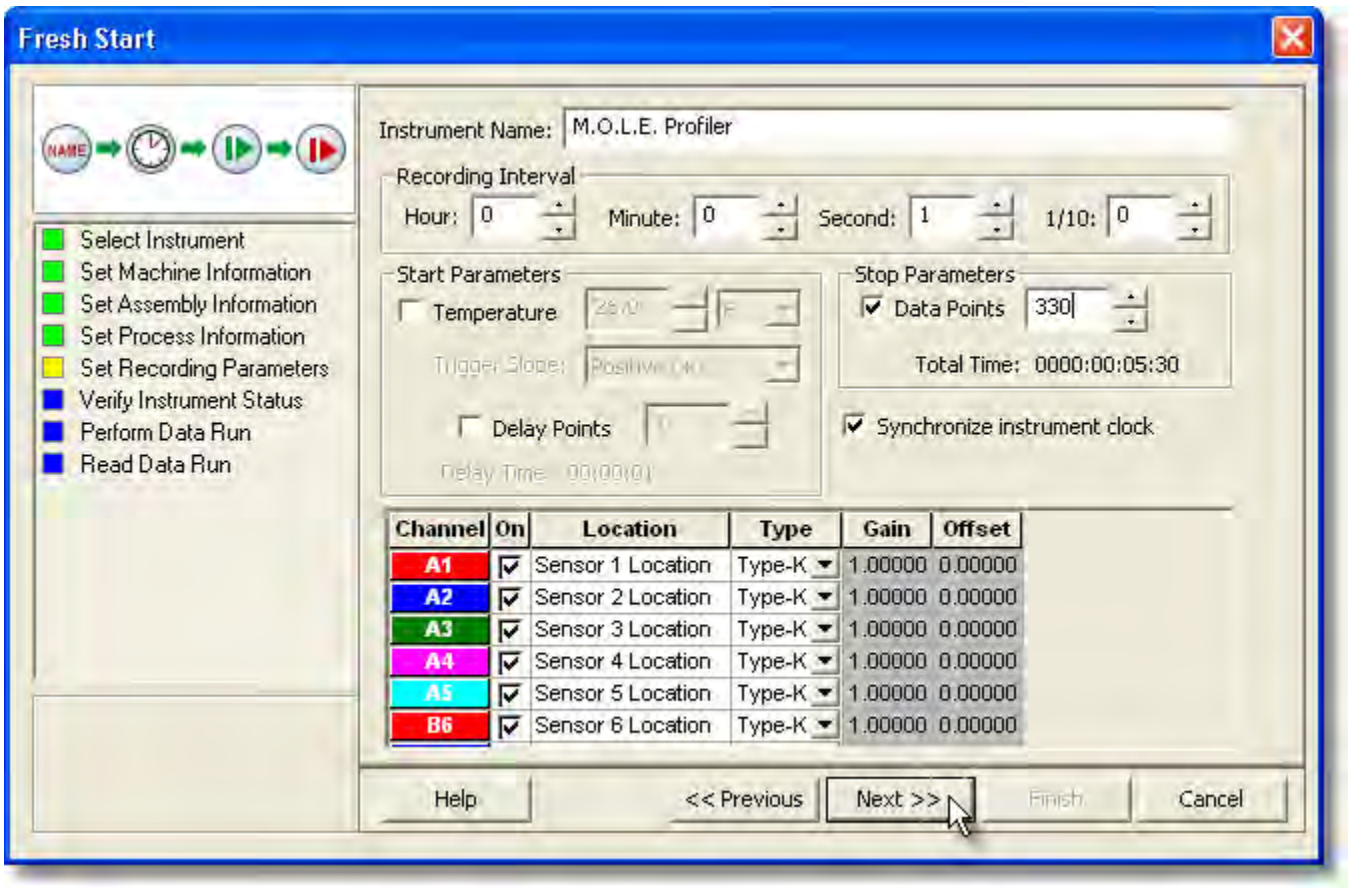


Once a paste is selected the specifications are displayed on the graph. The software also allows paste specification data to be viewed in a table view by clicking the Table command button.



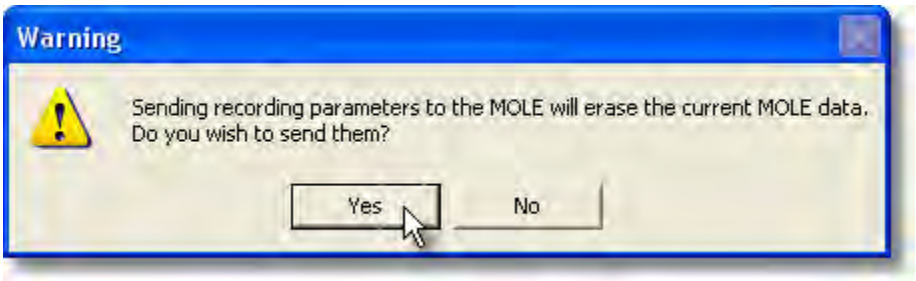
14) Click the ***Next*** command button

15) Set Recording Parameters such as the instrument name, recording interval, start parameters and stop parameters. This step is where the user can also turn a sensor channel **ON** or **OFF**, set the sensor location description and sensor type. Refer to section ***Software>Menus>MOLE>Set Recording Parameters*** for detailed information for each setting.



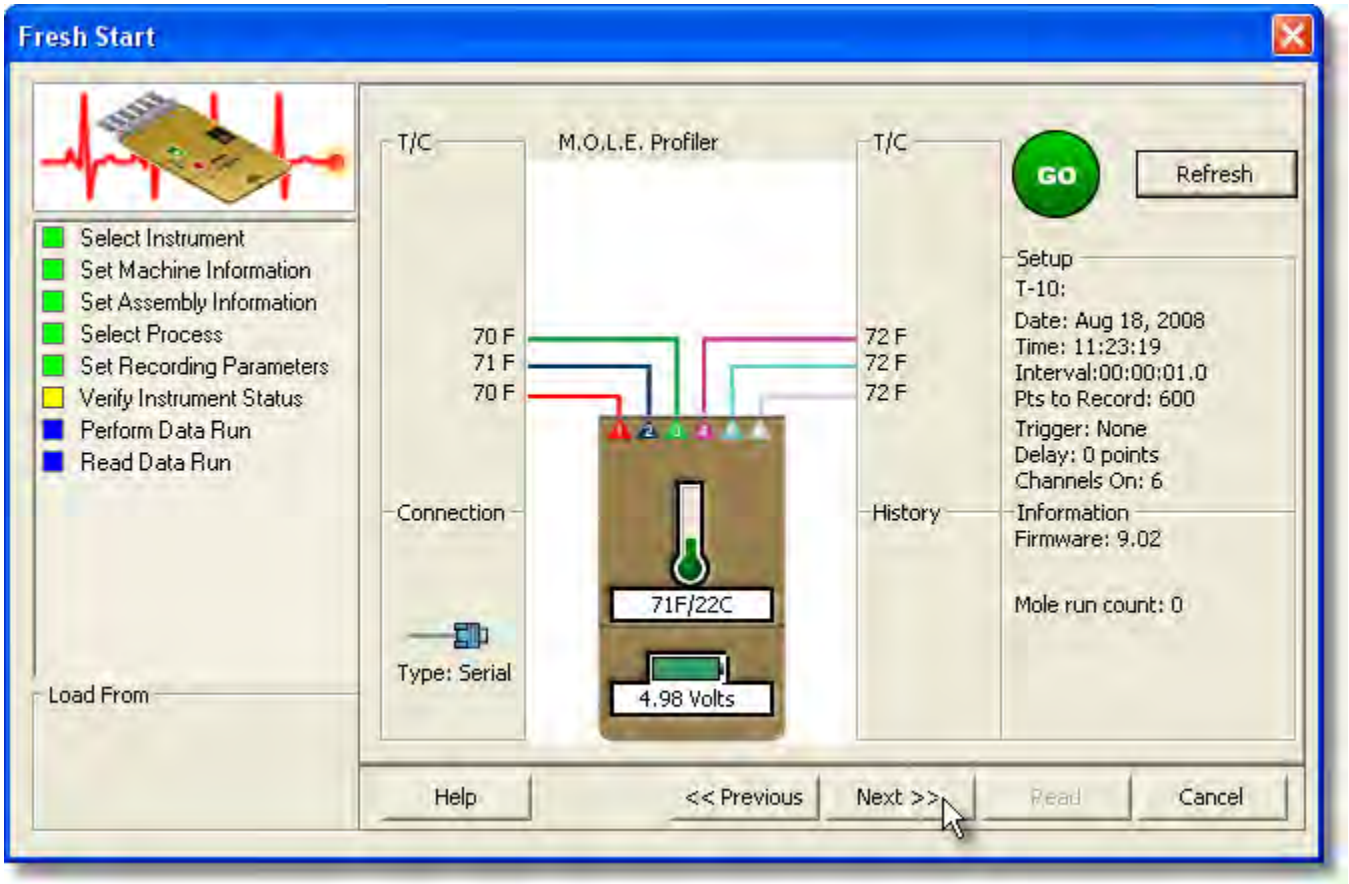
16) Click the ***Next*** command button.

If the currently selected M.O.L.E. Profiler is a SuperM.O.L.E.® Gold, sending recording parameters will erase the data currently stored in the M.O.L.E. Profiler. The software will warn the user with a message box.



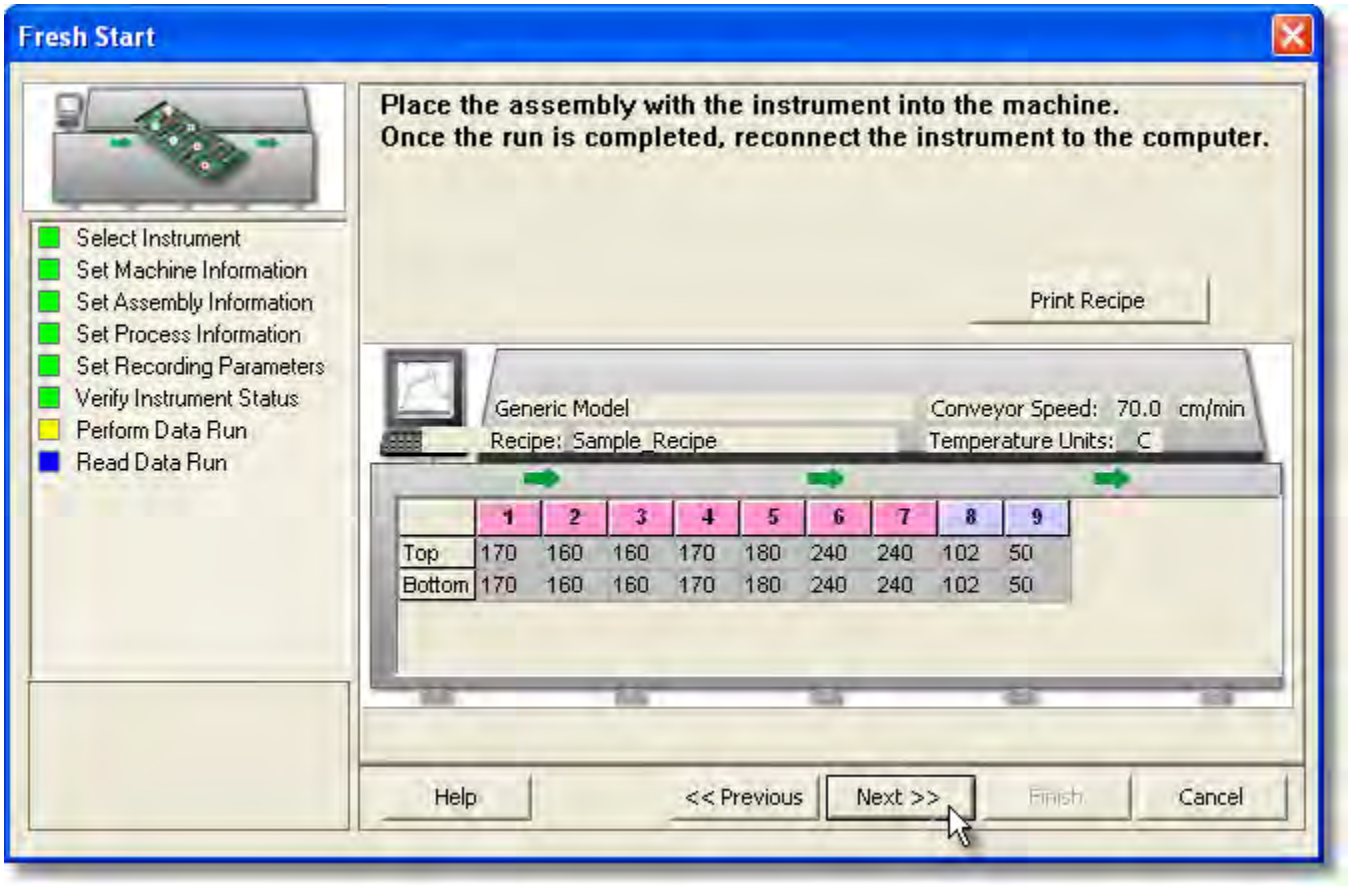
17) Verify the instrument status. This dialog box displays the health of the M.O.L.E. Profiler such as battery charge, internal temperature, thermocouple temperatures.

If everything is ***OK***, the dialog box displays a **GREEN** sign. If there are any items that may prevent the user from collecting good data, they are highlighted and a **RED** sign is displayed.



18) Click the ***Next*** command button.

19) Review the oven settings and click the ***Next*** command button to continue.

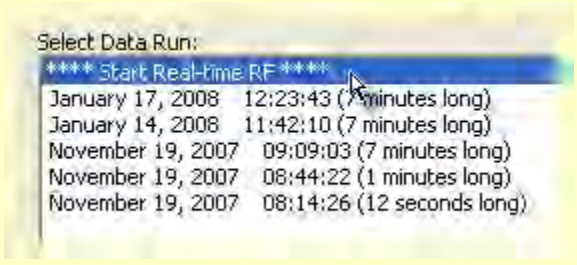


20) Pass the thermally protected M.O.L.E. Profiler and test product through the process. Refer to topic ***Basics>Operation>Step 2 - Data Collection*** for more information.

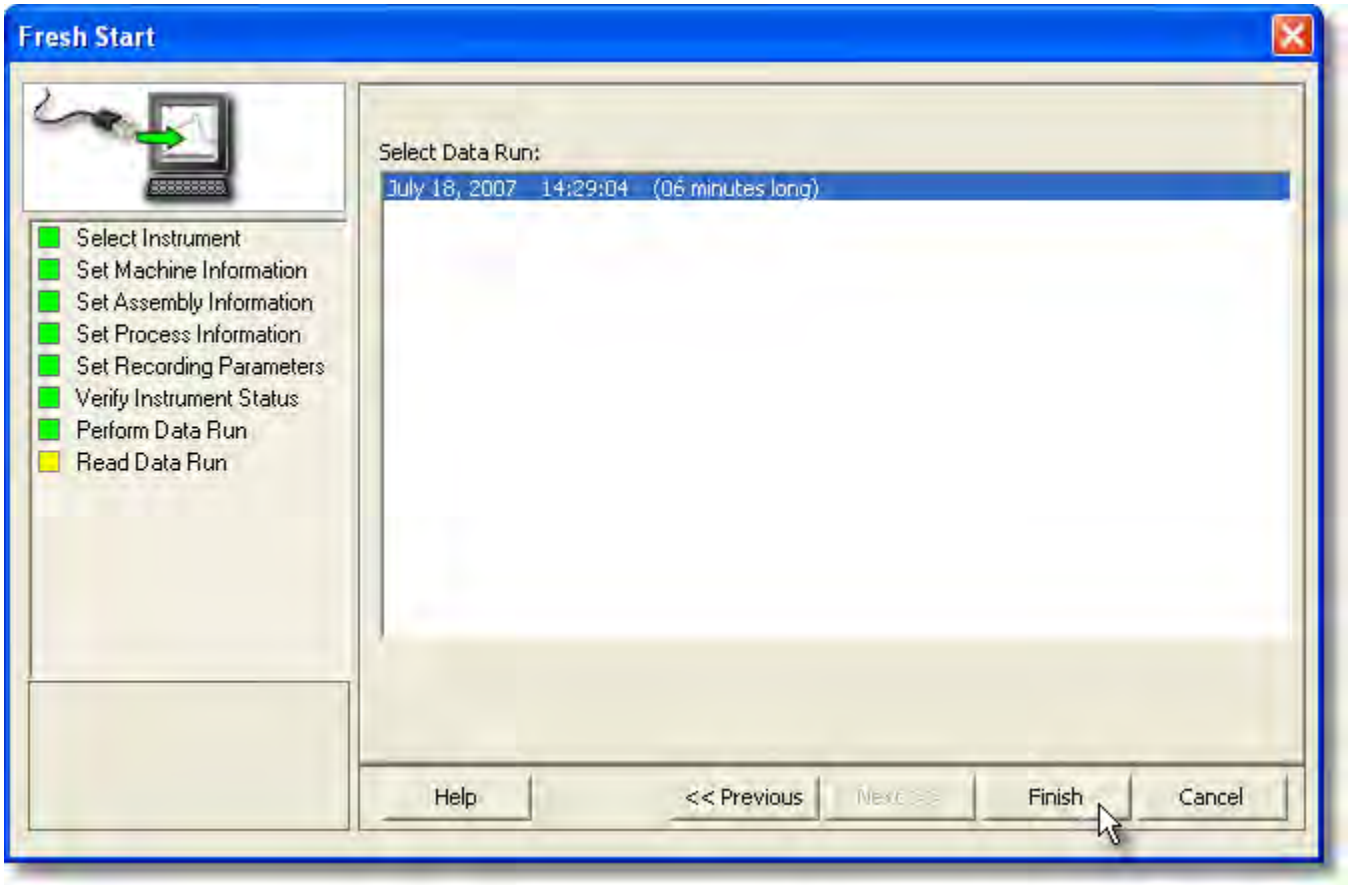
If the M.O.L.E. Profiler already contains a data run or if the selected M.O.L.E. Profiler is wireless RF, click the ***Next*** command button to proceed to the next step.

21) Select the desired data run and then click the ***Finish*** command button to complete the wizard and read the data run from the M.O.L.E. Profiler.

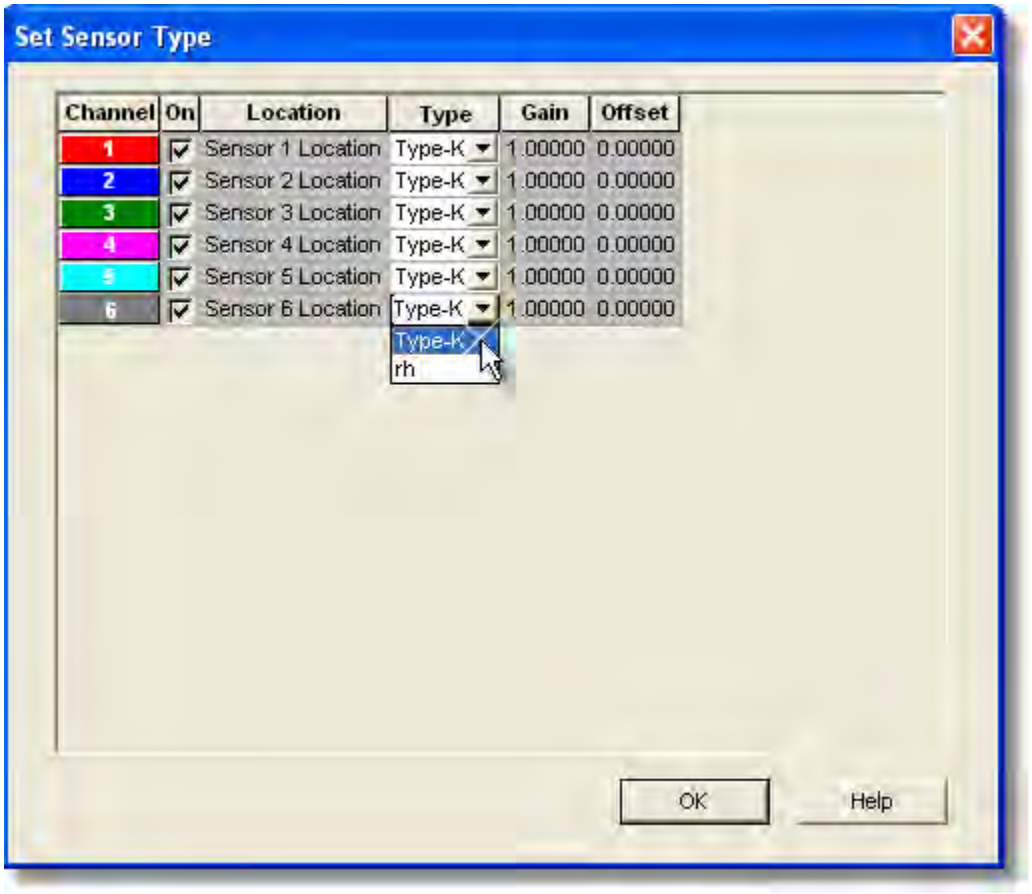
If the user has selected to use a Wireless RF option, select ***Start real-time RF*** on the top of the data run list and then the ***Finish*** command button to display the RF Control dialog.



This step of the wizard allows the user to remove a selected data run from the M.O.L.E. Profiler by either selecting the ***Delete After Reading*** check box or selecting the ***Delete*** command button and removing it before downloading. This feature is not available for the SuperM.O.L.E.® Gold Thermal Profiler as it does not have the ability to store more than one data run.

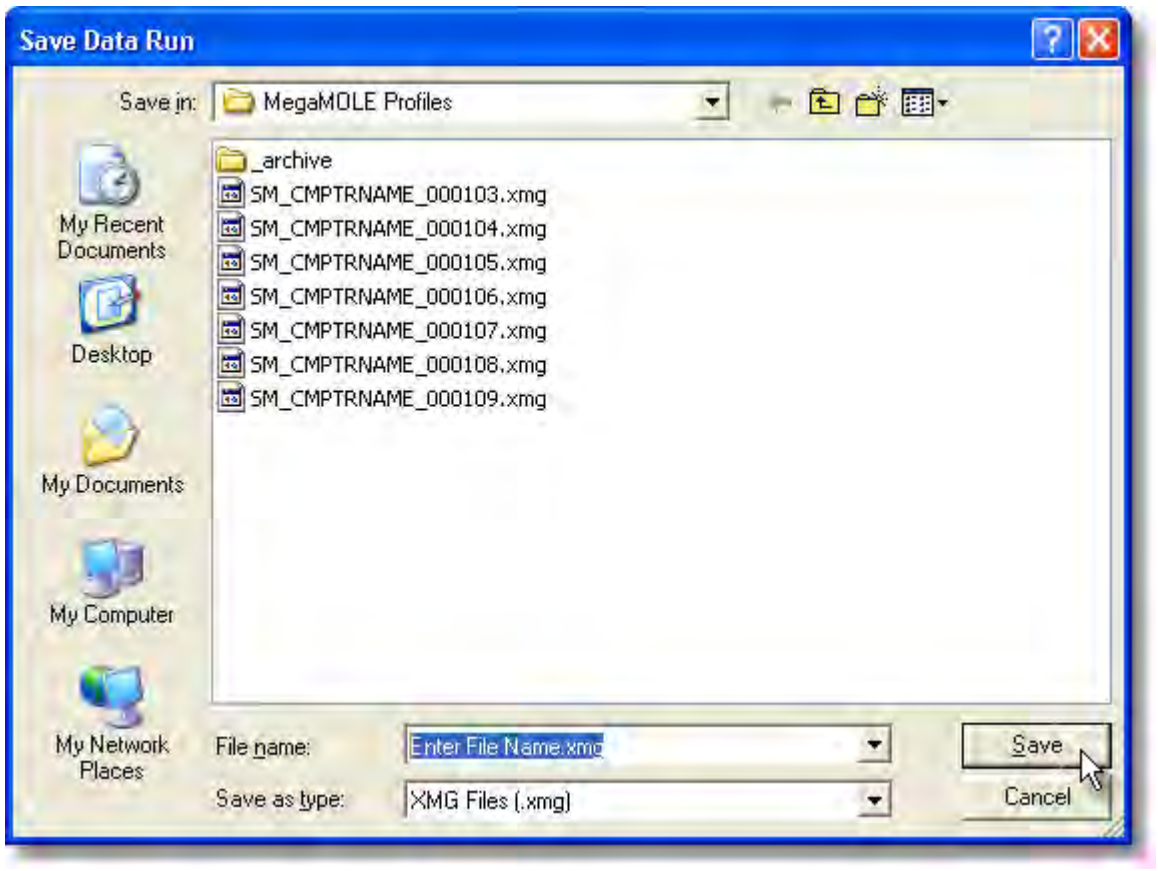


- Prior to reading the data run, the software prompts the user to select the sensor type for the active channels. When finished select the ***OK*** command button to proceed.



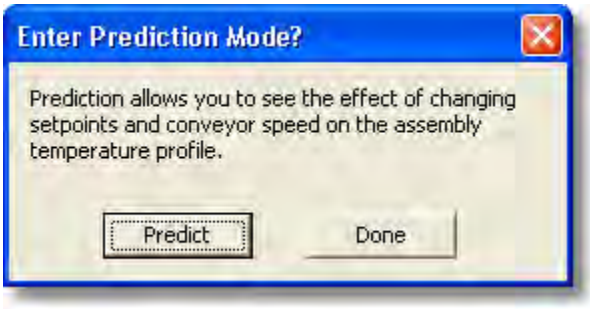
22) When the data run has been downloaded, the software prompts the user to specify a new file name (*.XMG).

When saving a data run (***.XMG**) to a different file directory other than the current Working directory, the software automatically sets the new file directory as the current Working Directory. This process does not delete any data run files in the previously set Working directory and can be quickly accessed using the ***Recent Working Directory*** command on the ***File*** menu.



23) When finished, click the ***Save*** command button.

24) The software then prompts the user if they want to enter Prediction mode. Entering prediction mode enables the user to change a zone temperature value or the conveyor speed and predict the outcome of that change. Refer to topic ***Software>Menus>Tools>Prediction*** for more information.



25) Click the ***Predict*** command button to enter Prediction mode or ***Done*** to complete the process .

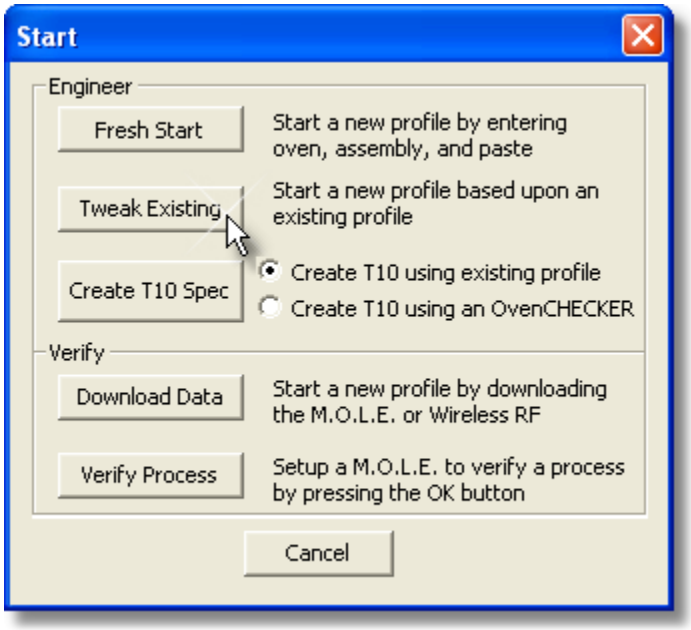
5.5.4.3. Tweak Existing

The ***Tweak Existing*** workflow is a wizard that starts a new profile (data run) using the established Machine (oven), Assembly (board) and Process (Paste) information from an existing profile.

This is available when in Engineer Mode.

The Tweak Existing workflow:

1) Connect the M.O.L.E. Profiler to the computer. Refer to ***Basics>Setup>Communications Setup*** for more information.
2) On the ***File*** menu, click ***New***. A message box appears with the five workflow wizard options.

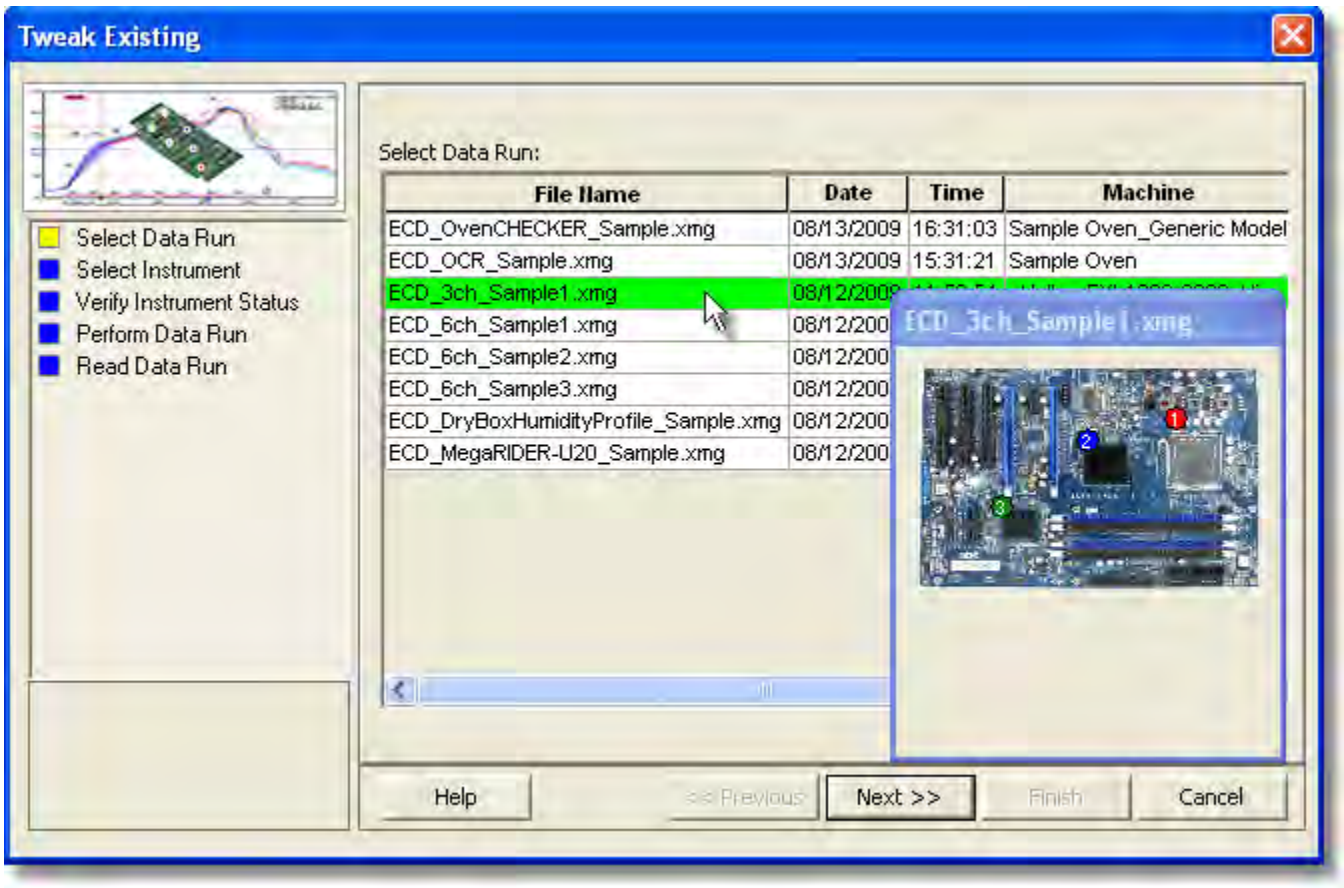


3) On the ***Start*** dialog box, click the ***Tweak Existing*** command button and the workflow wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

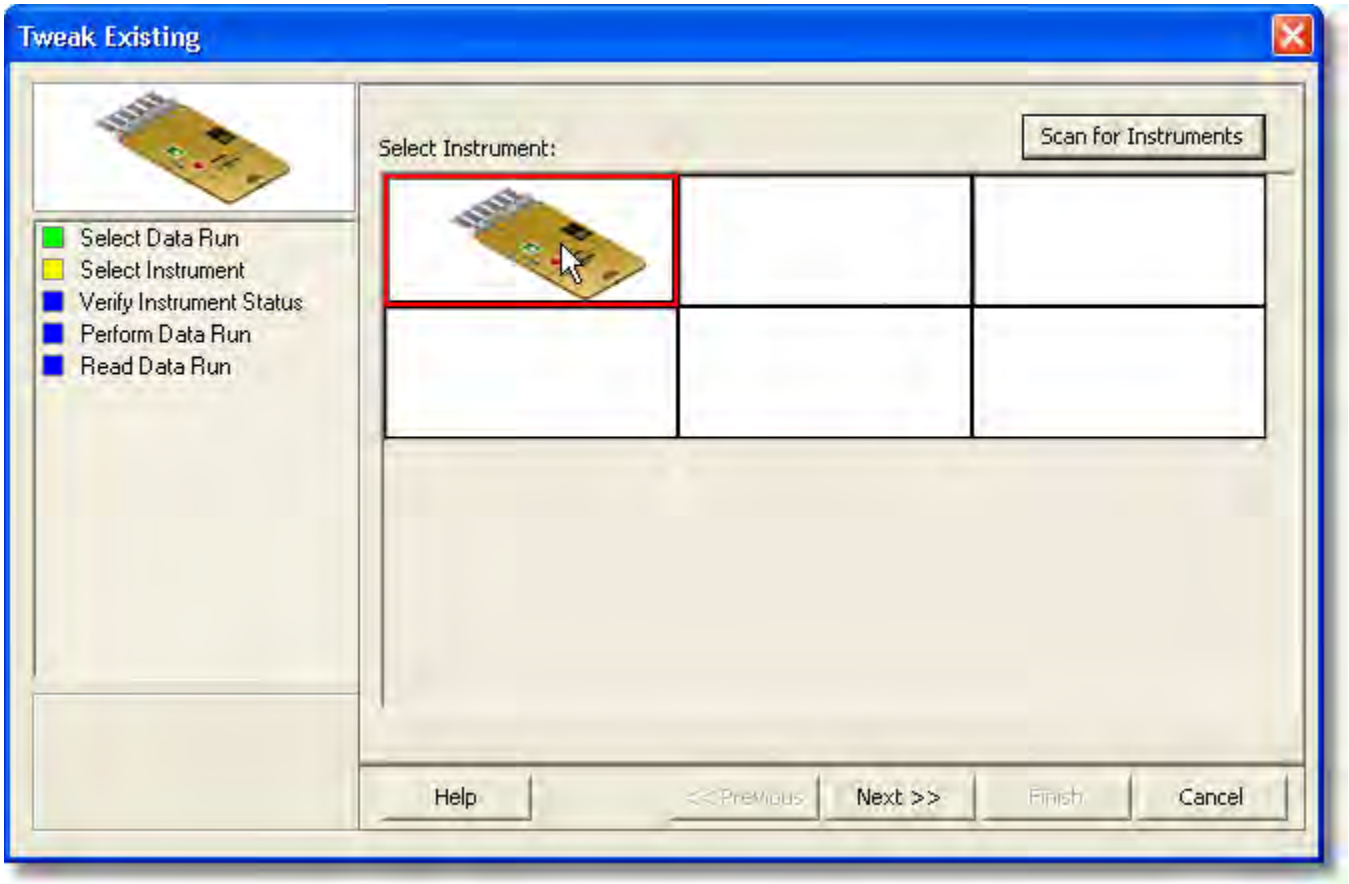
Current Completed Remaining

4) Select an existing data run. The software lists the data runs from the currently open working directory and and automatically highlights the currently selected data run on the Spreadsheet page tab. The user can select any data run displayed on the list.

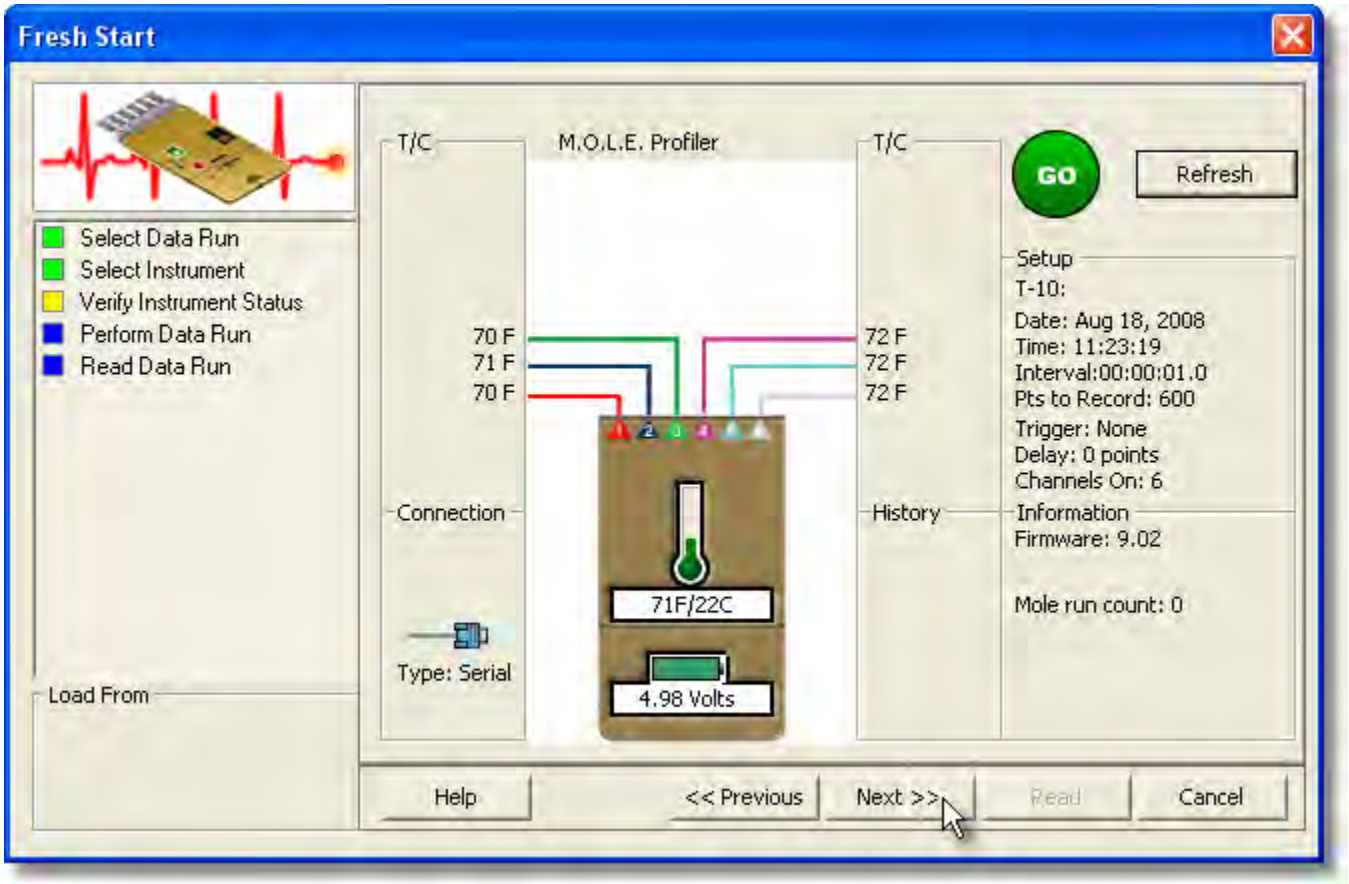


5) Click the ***Next*** command button.
6) Select the desired instrument from the dialog box to make active. If a M.O.L.E. Profiler has already been selected during a different process, the software automatically selects the M.O.L.E. Profiler connected to the COM port previously used.

If the software does not detect a M.O.L.E. Profiler, using the communication cable connect it to the computer and click the ***Scan for Instruments*** command button to search again. M.O.L.E.® MAP software allows multiple instruments to be connected to a computer at one time. Selecting the ***Scan for Instruments*** command button will detect all instruments and display them in the dialog box. If no instrument is detected the software displays all of the Demonstration thermal profilers to select from.

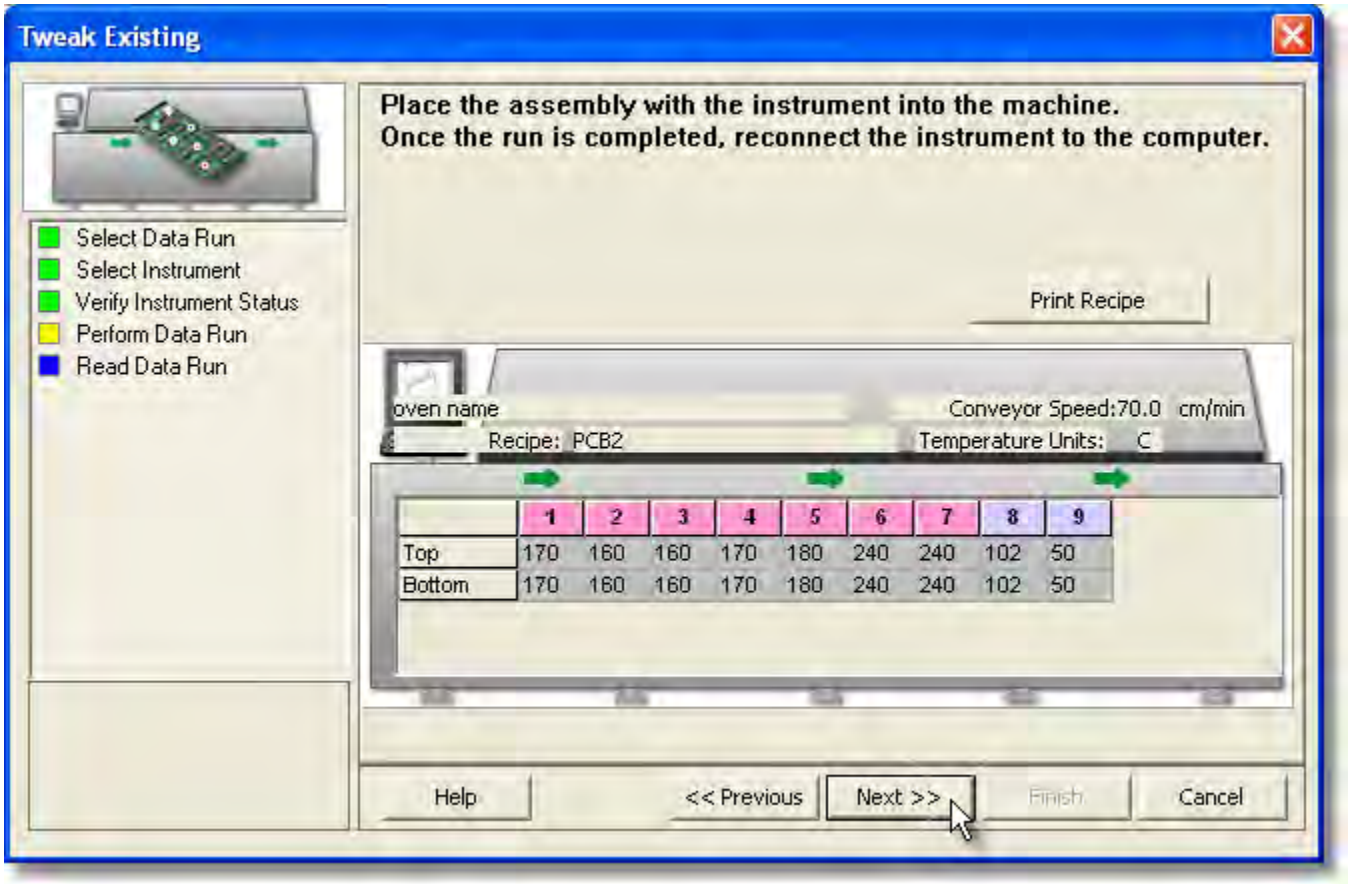


7) Click the ***Next*** command button.
8) Verify the instrument status. This dialog box displays the health of the M.O.L.E. Profiler such as battery charge, internal temperature, thermocouple temperatures. If the user selects the ***Show Critical*** command button the dialog box will only display items that will prevent the user from completing a successful data run.



9) Click the ***Next*** command button.

10) Review the oven settings and click the ***Next*** command button to continue..

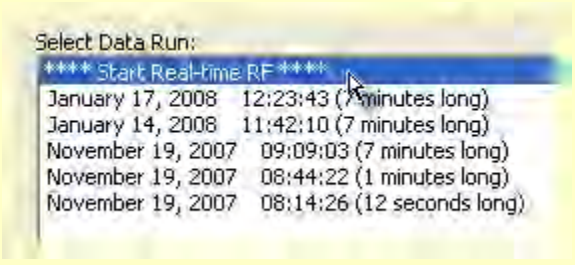


11) Pass the thermally protected M.O.L.E. Profiler and test product through the process. Refer to topic ***Basics>Operation>Step 2 - Data Collection*** for more information.

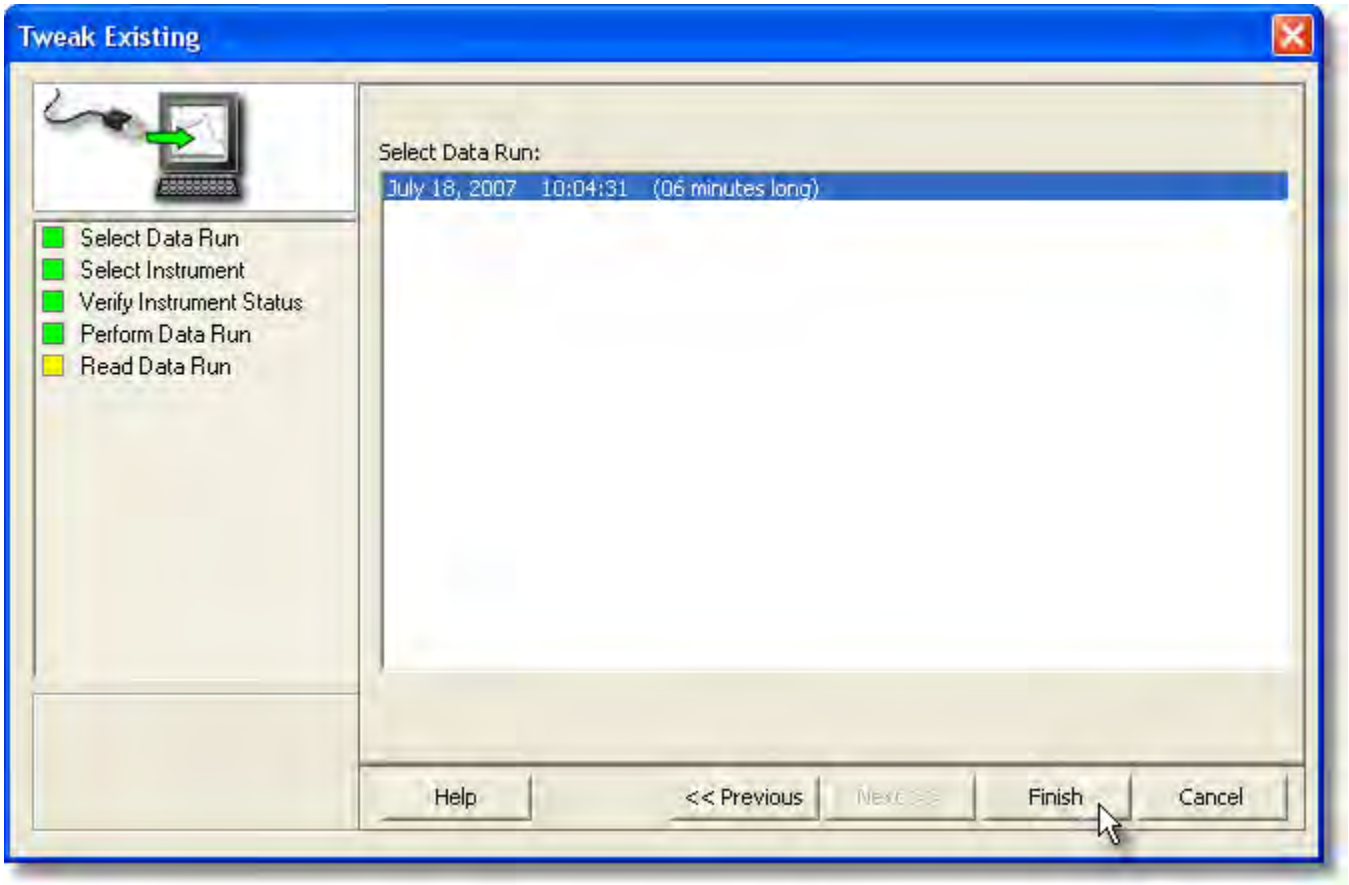
If the M.O.L.E. Profiler already contains a data run or if the the selected M.O.L.E. Profiler is wireless RF, click the ***Next*** command button to proceed to the next step.

12) Select the desired data run and then click the ***Finish*** command button to complete the wizard and read the data run from the M.O.L.E. Profiler.

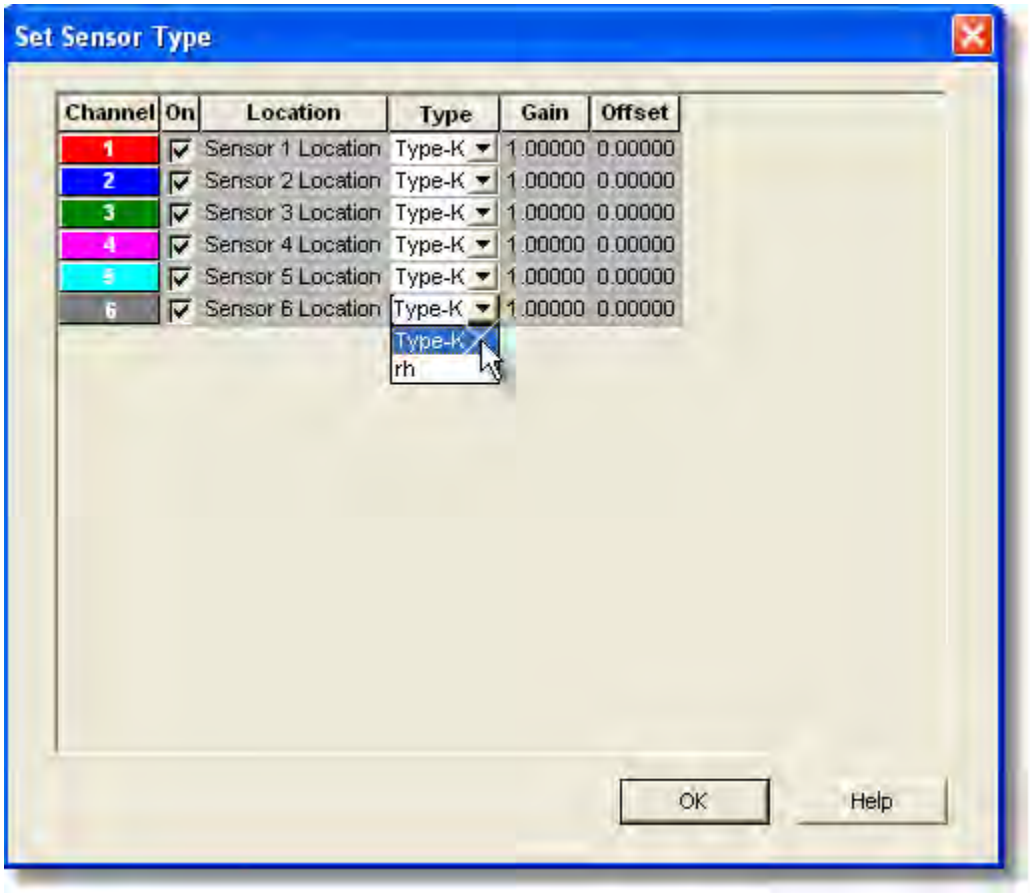
If the user has selected to use a Wireless RF option, select ***Start real-time RF*** on the top of the data run list and then the ***Finish*** command button to display the RF Control dialog.



This step of the wizard allows the user to remove a selected data run from the M.O.L.E. Profiler by either selecting the ***Delete After Reading*** check box or selecting the ***Delete*** command button and removing it before downloading. This feature is not available for the SuperM.O.L.E.® Gold Thermal Profiler as it does not have the ability to store more than one data run.

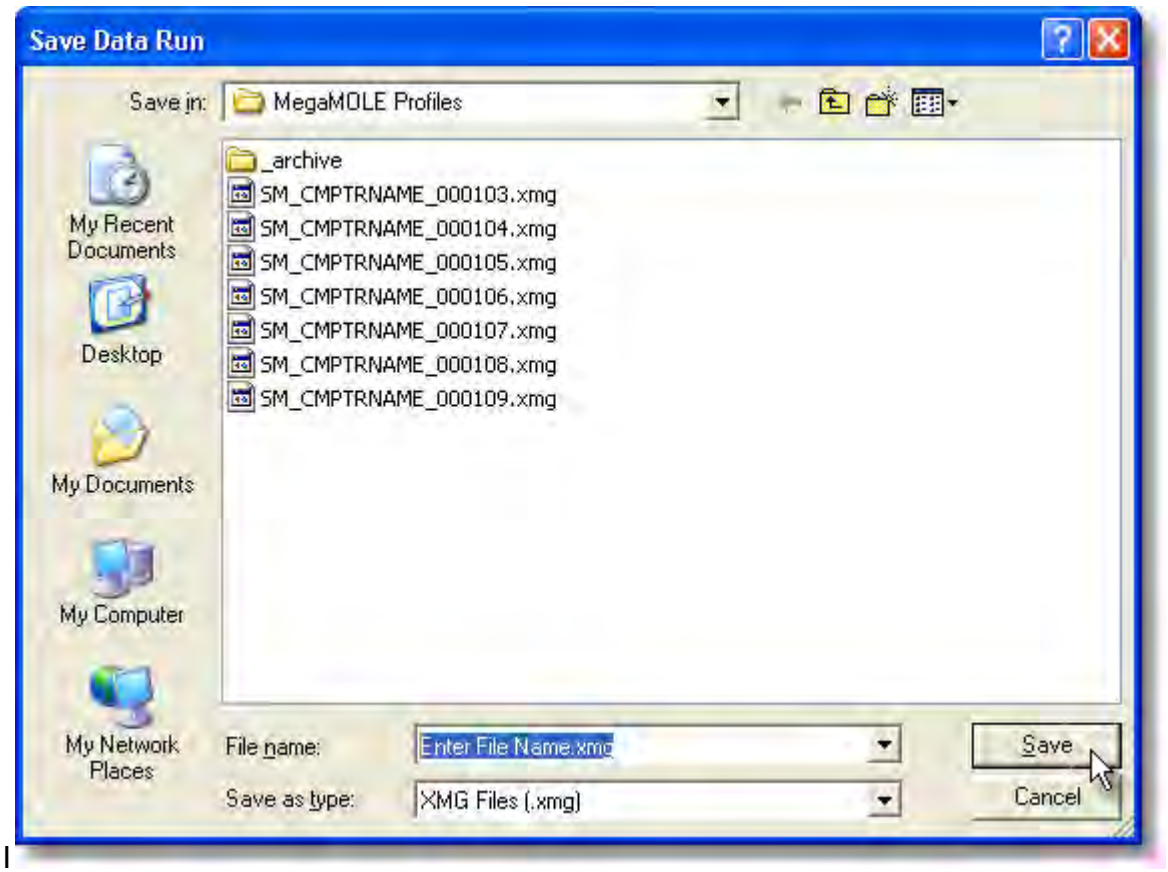


- Prior to reading the data run, the software prompts the user to select the sensor type for the active channels. When finished select the ***OK*** command button to proceed.



13) When the data run has been downloaded, the software prompts the user to specify a new file name (*.XMG).

When saving a data run (***.XMG**) to a different file directory other than the current Working directory, the software automatically sets the new file directory as the current Working Directory. This process does not delete any data run files in the previously set Working directory and can be quickly accessed using the ***Recent Working Directory*** command on the ***File*** menu.



14) When finished, click the ***Save*** command button to complete the process.

5.5.4.4. Create Target 10 Specification

The ***Create Target 10 Specification*** is a wizard that helps the user create a Target 10 Specification using an existing profile (data run) or OvenCHECKER™. The Target 10 specification can then be used to verify a process or machine performance.

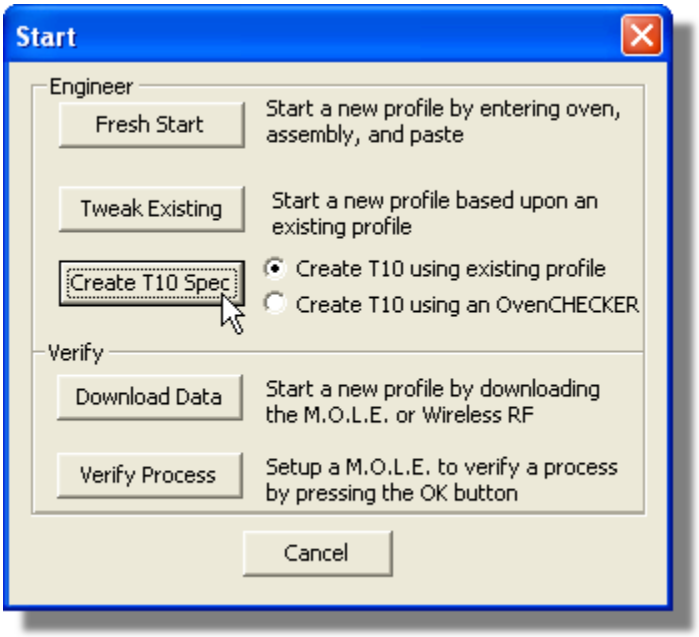
5.5.4.4.1. Existing Profile

The ***Create Target 10 Specification - Existing Profile*** is a wizard that helps the user create a specification from an existing data run profile to be used when verifying a process.

This is available when in Engineer Mode.

Create Target 10 Specification workflow:

1) On the ***File*** menu, click ***New***. A message box appears with the five workflow wizard options.

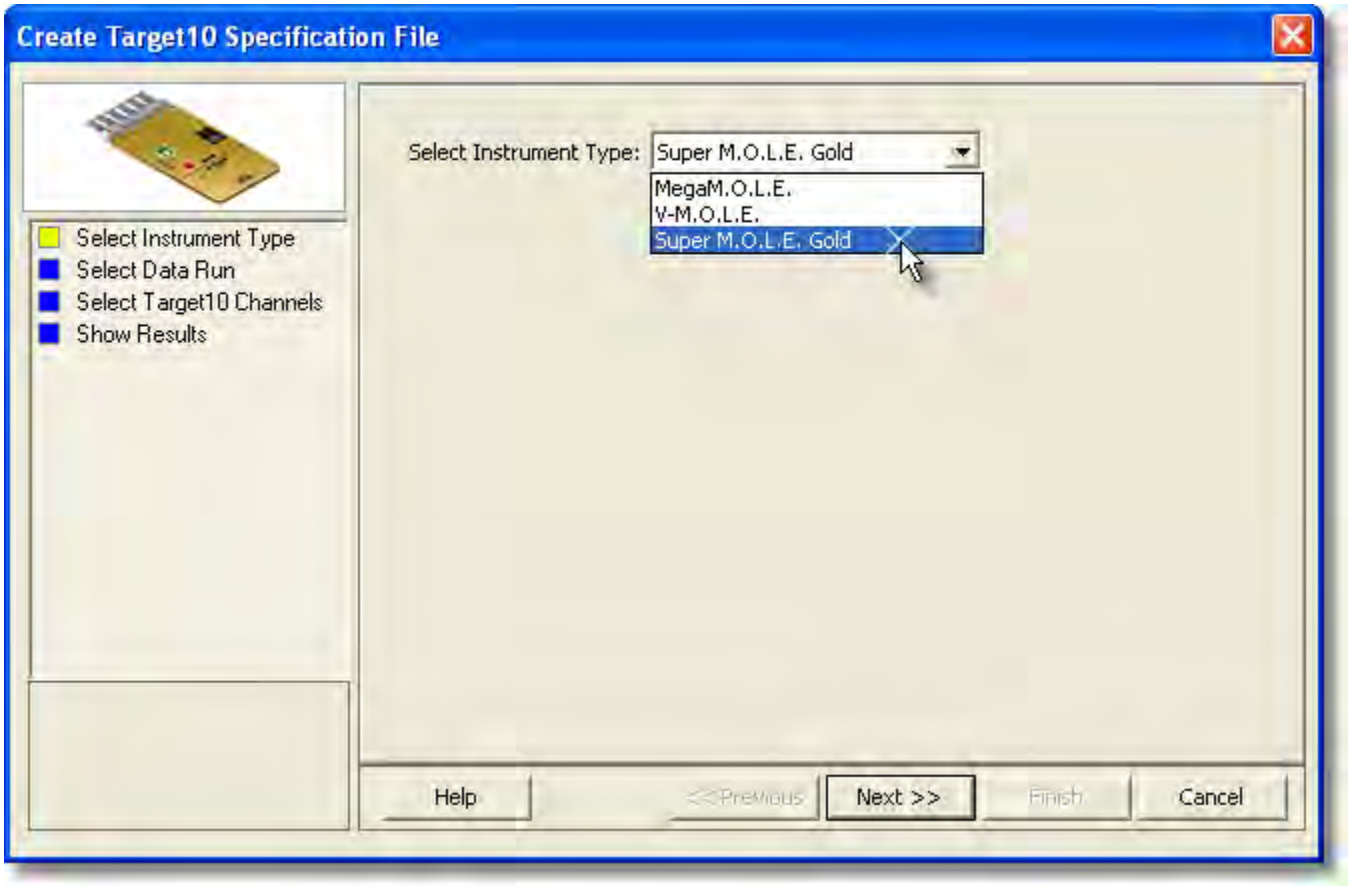


2) On the ***Start*** dialog box, click the ***Create T10 using an existing profile*** option, then click the ***Create T-10 Spec*** command button and the workflow wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

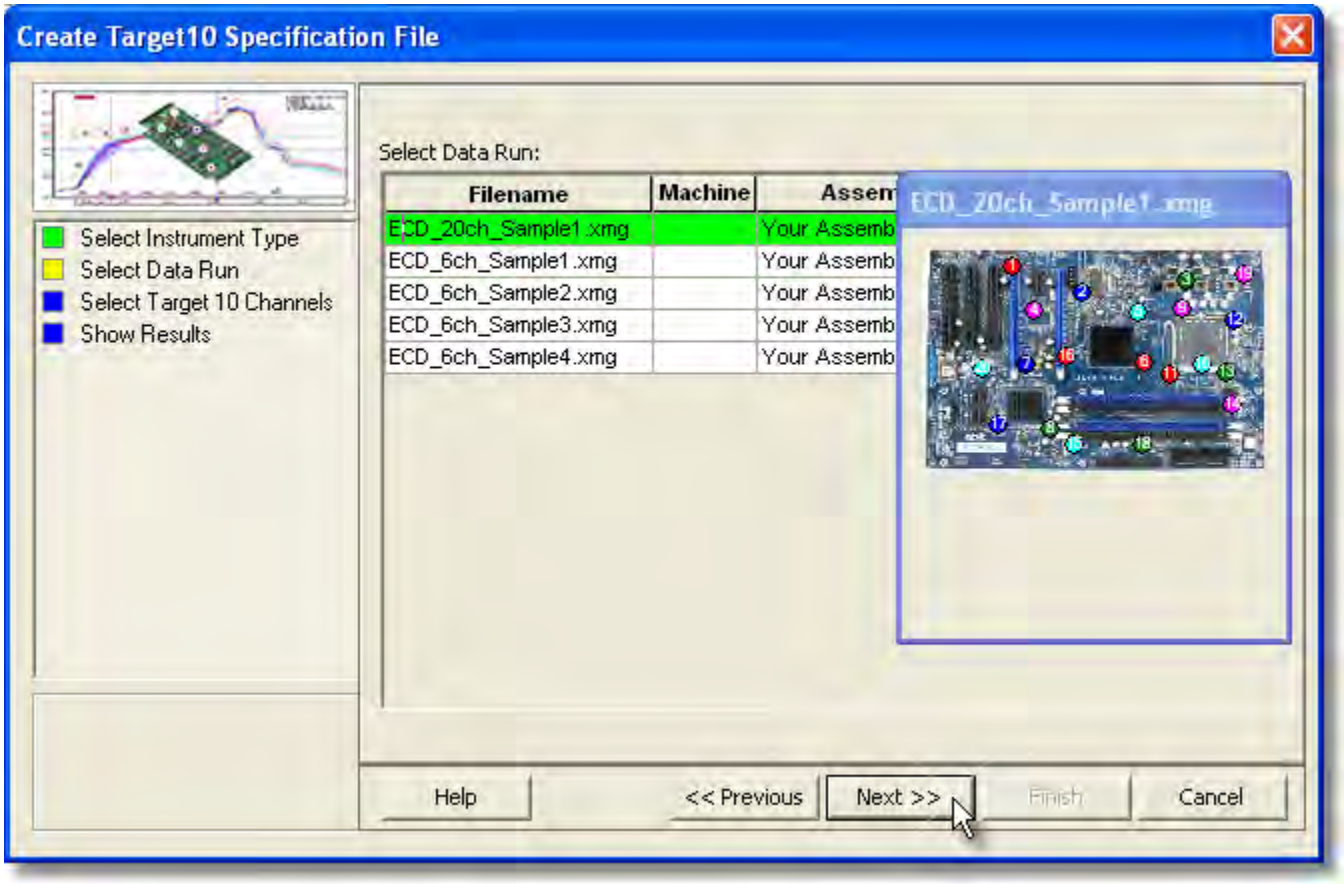
Current Completed Remaining

3) Select the instrument type that will be used to verify the process.



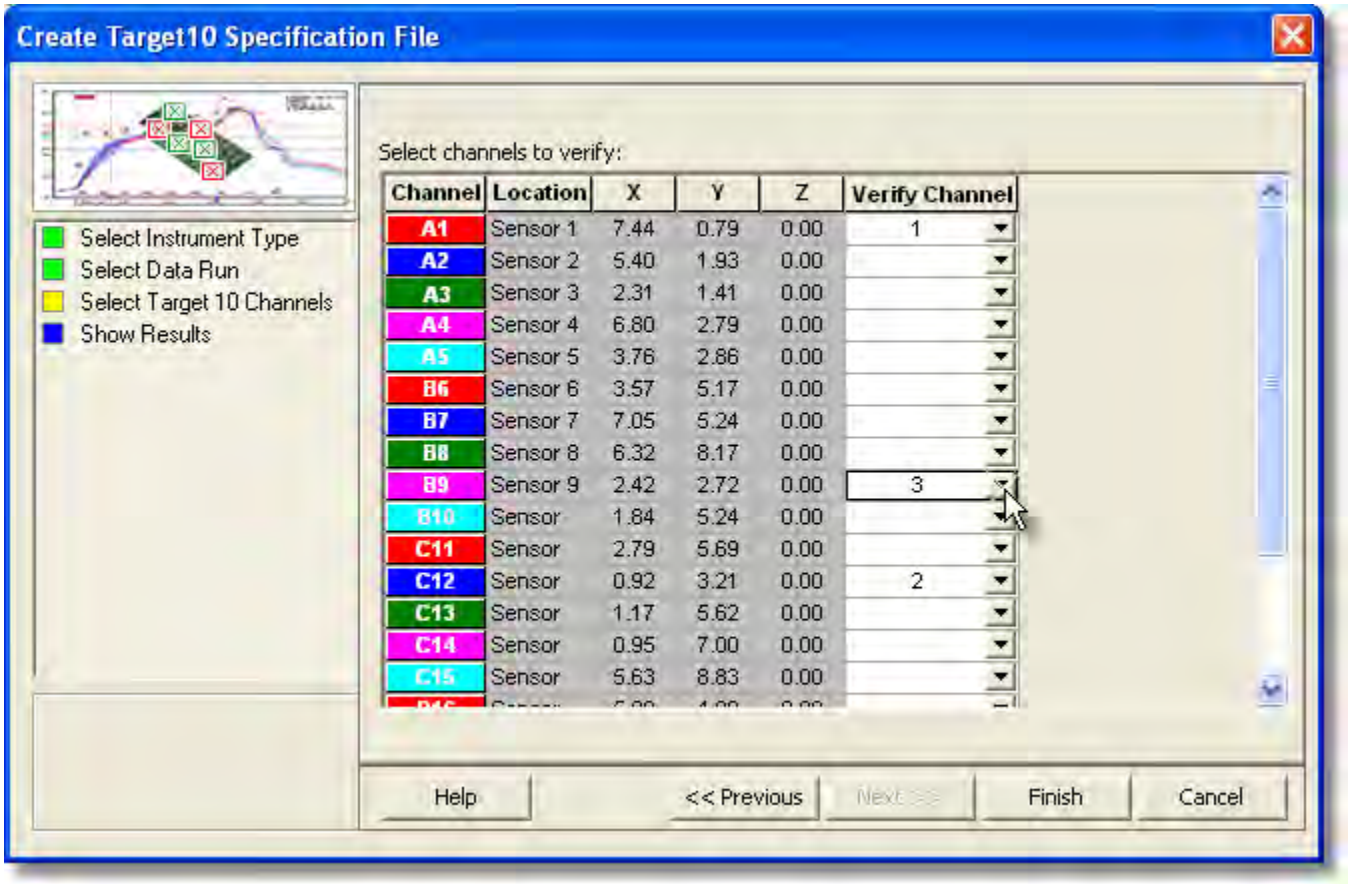
4) Click the ***Next*** command button.
5) Select a data run. This is the data run that is known to be good and the user wishes to confirm the process is reproducing faithfully using the verify process.

If the selected data run was created using a recording interval other than 1.0 second, the Slope calculation will not be included in the Target10 Specification.

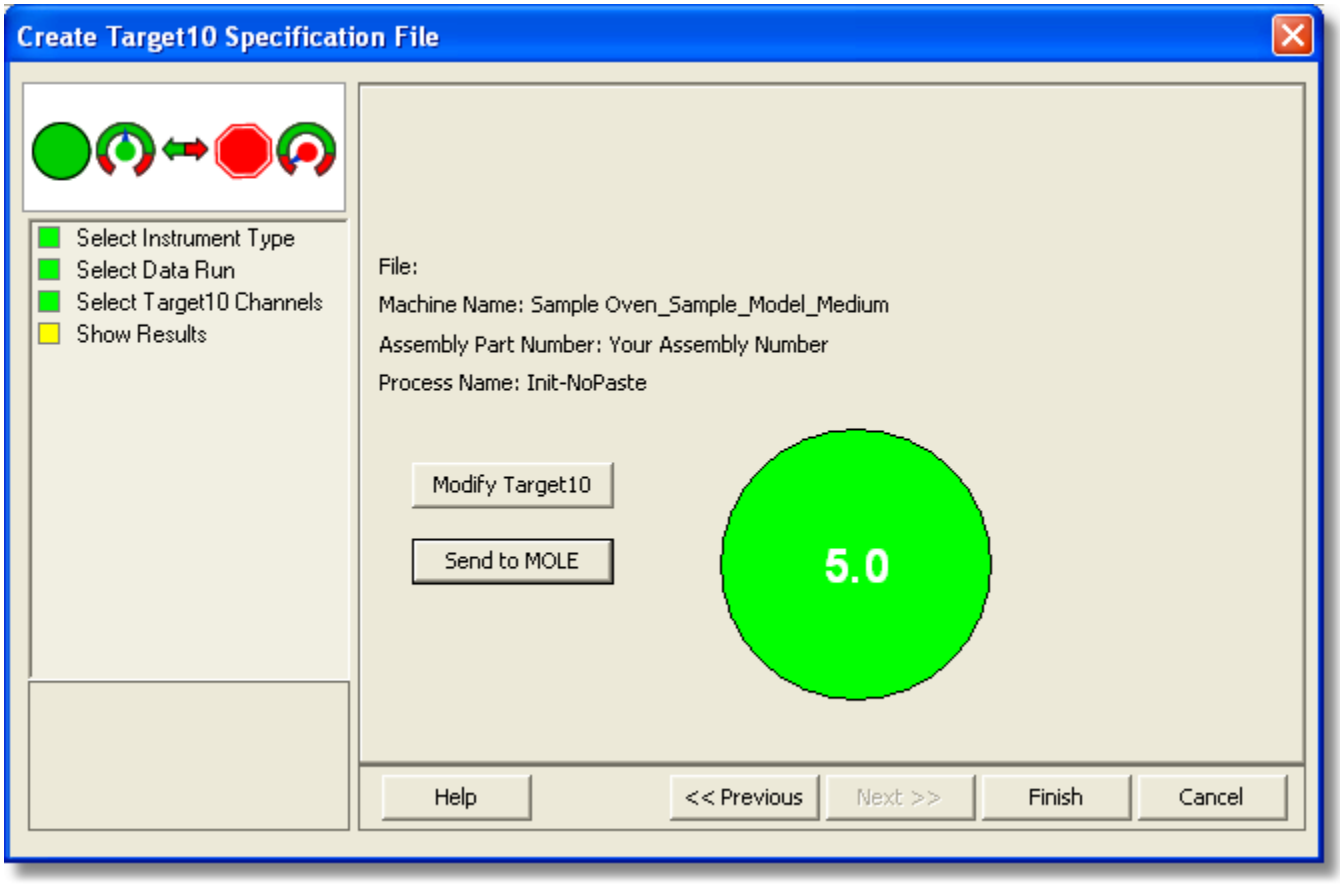


This list displays the data runs from the currently open working directory.

6) Click the ***Next*** command button.
7) Map the desired channels from selected data run to channels of the M.O.L.E. Profiler. These typically are the most important channels that best represent the process being verified.

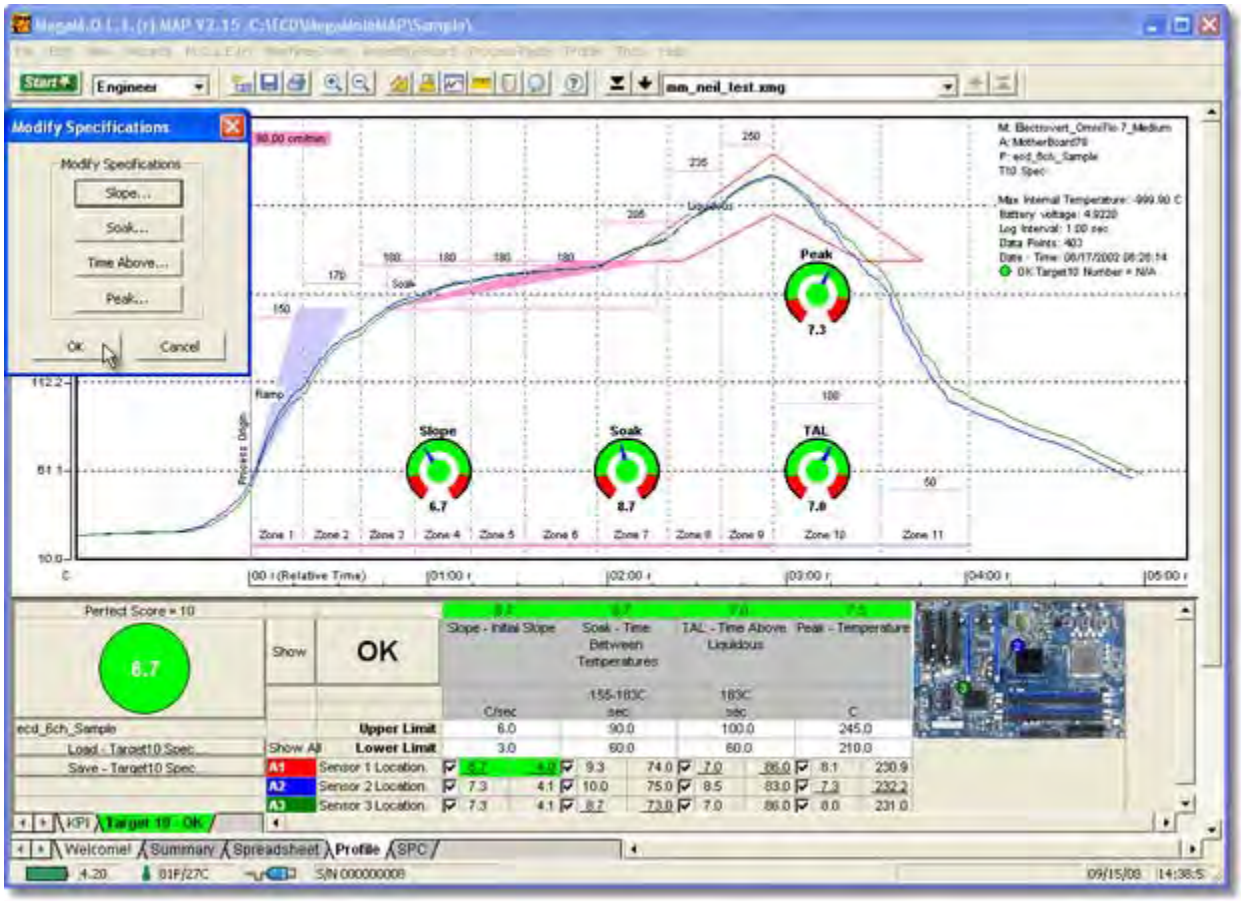


8) Click the ***Next*** command button.
9) Once the channels are mapped, review the results of the Target 10 specification. The user can then decide if they wish to send these to the M.O.L.E. profiler or make final modifications to the Slope, Soak, Time Above and/or Peak parameter.

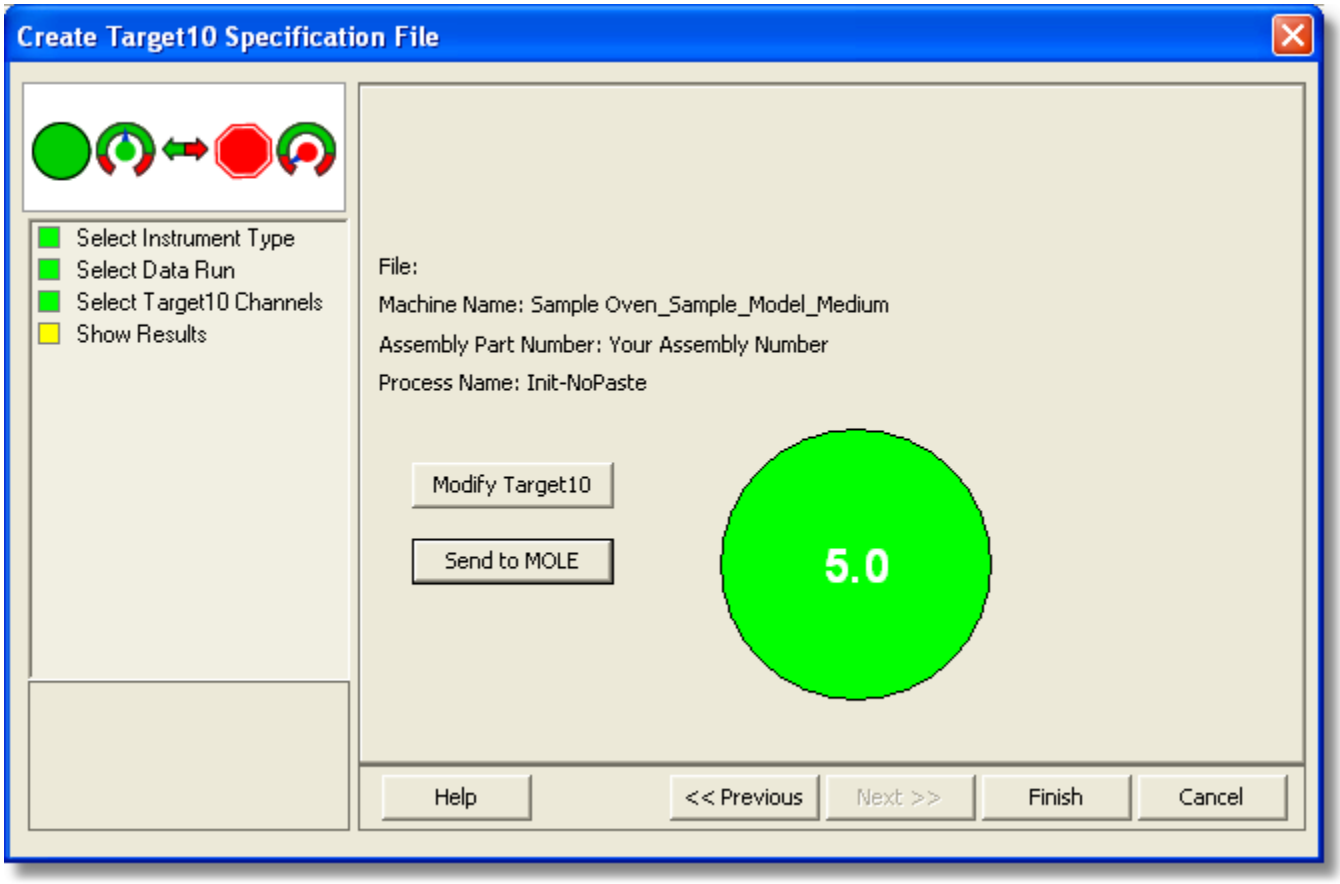


10) If the user decides to make modifications, click the ***Modify Target10*** command button and the the Target 10-OK tab is displayed. Make the desired modifications to the Slope, Soak, Time Above and/or Peak parameter specifications.

If any of the parameter specifications are changed the ***OK*** button will inform the user by displaying (***OKModified***).

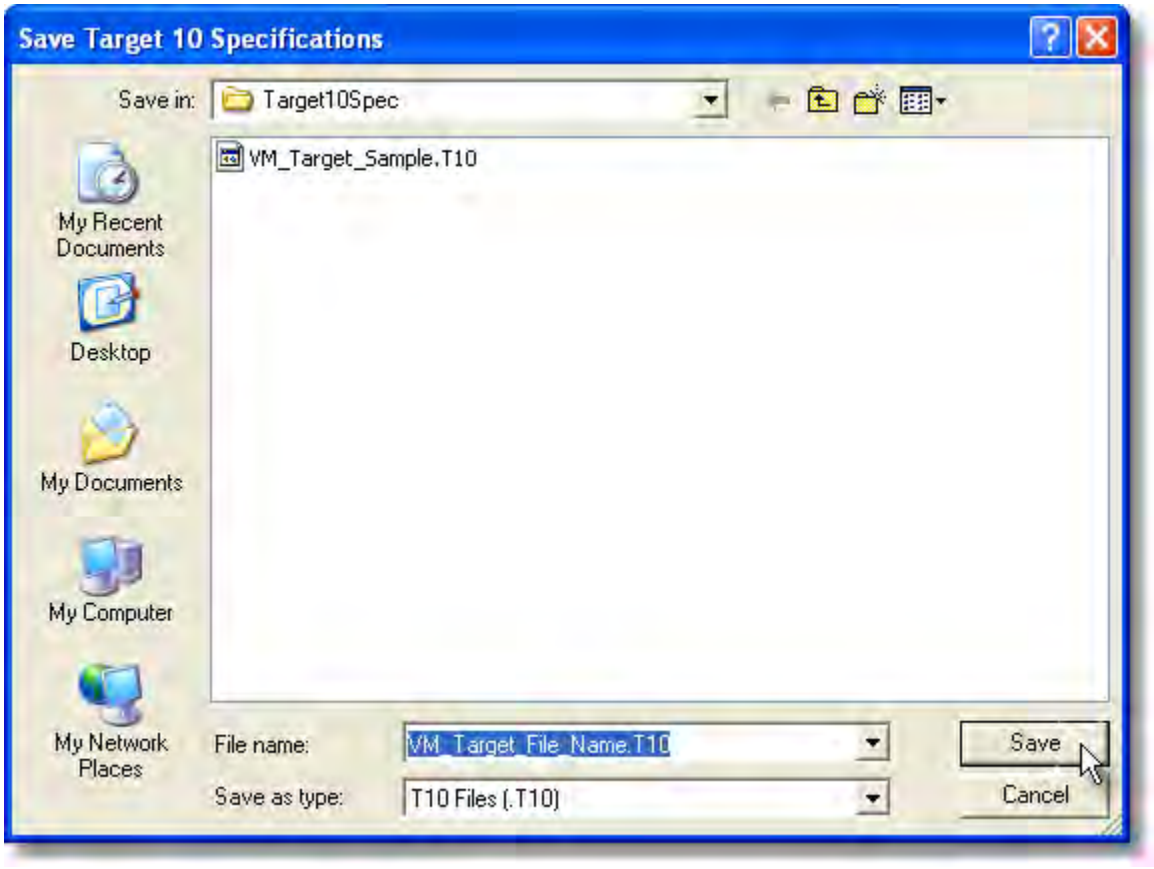


11) Click the ***OK*** command button to accept the modified specifications or ***Cancel*** to discard them and return to the workflow wizard.



12) If the user either decides to send the Target10 to the M.O.L.E. profiler or complete the wizard by clicking the ***Finish*** command button, the software prompts the user to save the Target 10 file (***.T10**).

Only the MEGAM.O.L.E.® and V-M.O.L.E.® can have the Target 10 sent to them. When using the SuperM.O.L.E.® Gold the Target 10 will only be able to be saved as a file.



13) When finished naming the file, click the ***Save*** command button to complete the workflow wizard.

This Target 10 Specification can now be used when Verifying a process. Refer to topic ***Menus and Tool Commands>File Menu>Wizards Menu>Verify Process*** for more information.

5.5.4.4.2. OvenCHECKER

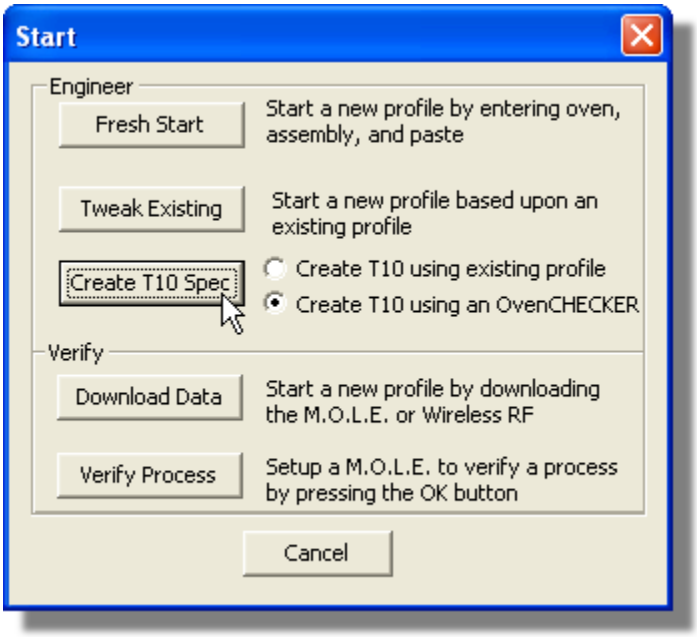
The ***Create Target 10 Specification - OvenCHECKER*** is a wizard that helps the user create a Target 10 Specification using an OvenCHECKER™ data run that can be used to verify that your machine performance is the same in the future. To use this wizard, it requires the OvenCHECKER™ Oven Verification System which is powered by the V-M.O.L.E.® profiler. Refer to topic ***Optional Accessories>Products>OvenCHECKER™*** for more information.

This is available when in Engineer Mode.

Create Target 10 Specification workflow:

1) Connect the M.O.L.E. Profiler to the computer. Refer to ***Basics>Setup>Communications Setup*** for more information.

2) On the ***File*** menu, cllick ***New***. A message box appears with the five workflow wizard options.



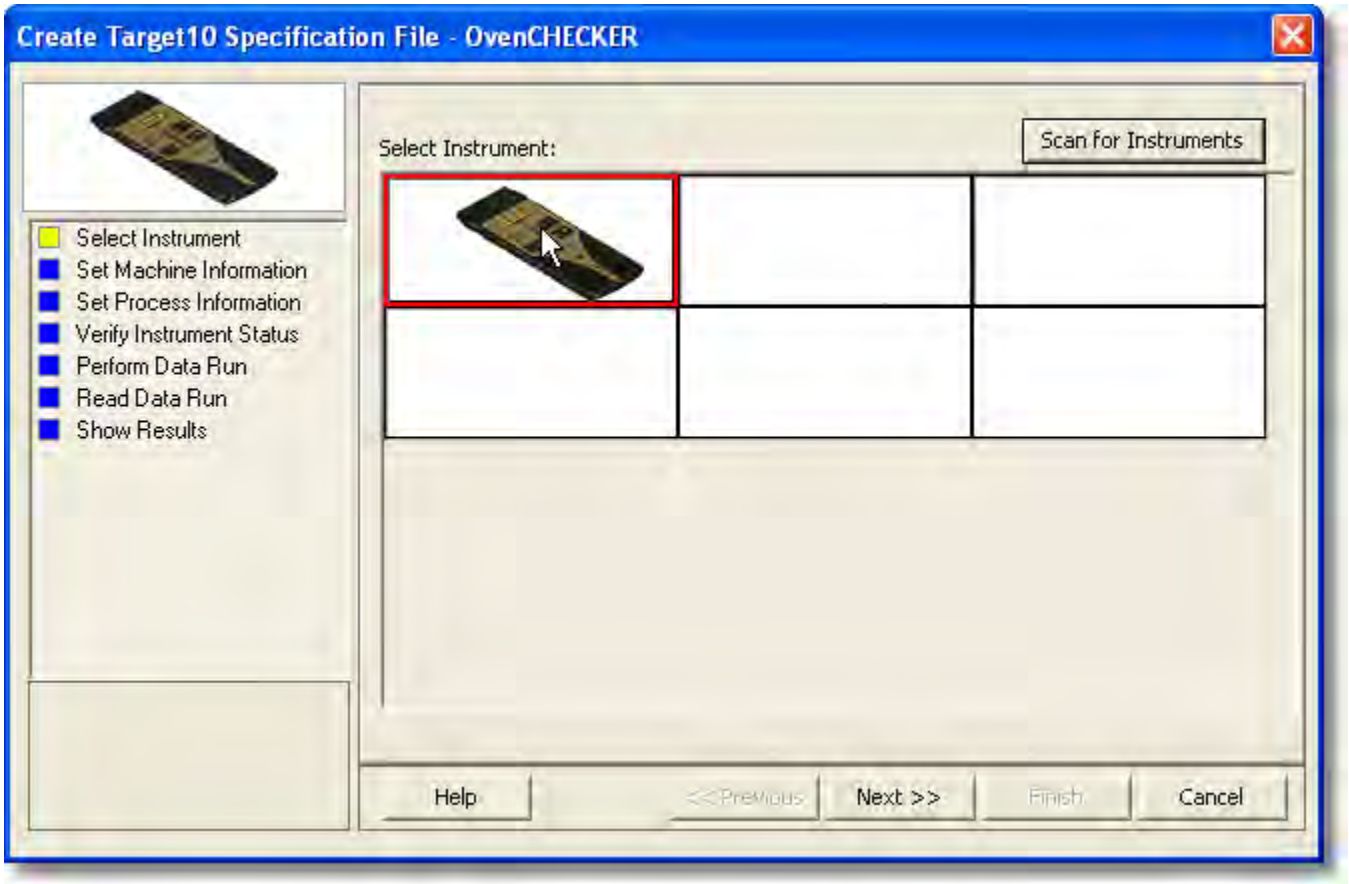
3) On the ***Start*** dialog box, click the ***Create T10 using an OvenCHECKER*** option, then click the ***Create T-10 Spec*** command button and the workflow wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

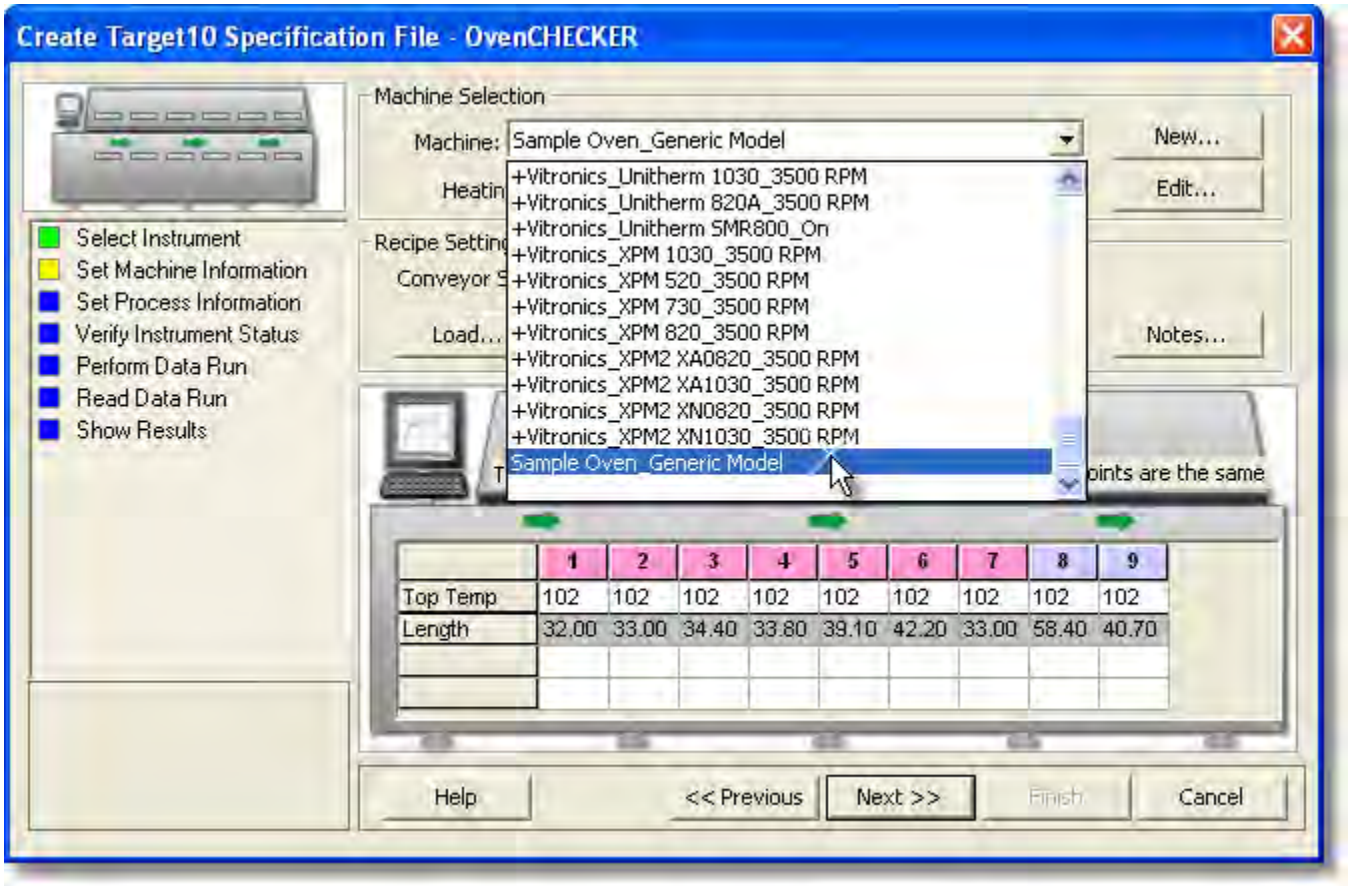
Current Completed Remaining

4) Select the desired instrument from the dialog box to make active. If a V-M.O.L.E.® Profiler has already been selected during a different process, the software automatically selects the COM port previously used.

If the software does not detect a M.O.L.E. Profiler, using the communication cable connect it to the computer and click the ***Scan for Instruments*** command button to search again. M.O.L.E.® MAP software allows multiple instruments to be connected to a computer at one time. Selecting the ***Scan for Instruments*** command button will detect all instruments and display them in the dialog box. If no instrument is detected the software displays all of the Demonstration thermal profilers to select from.

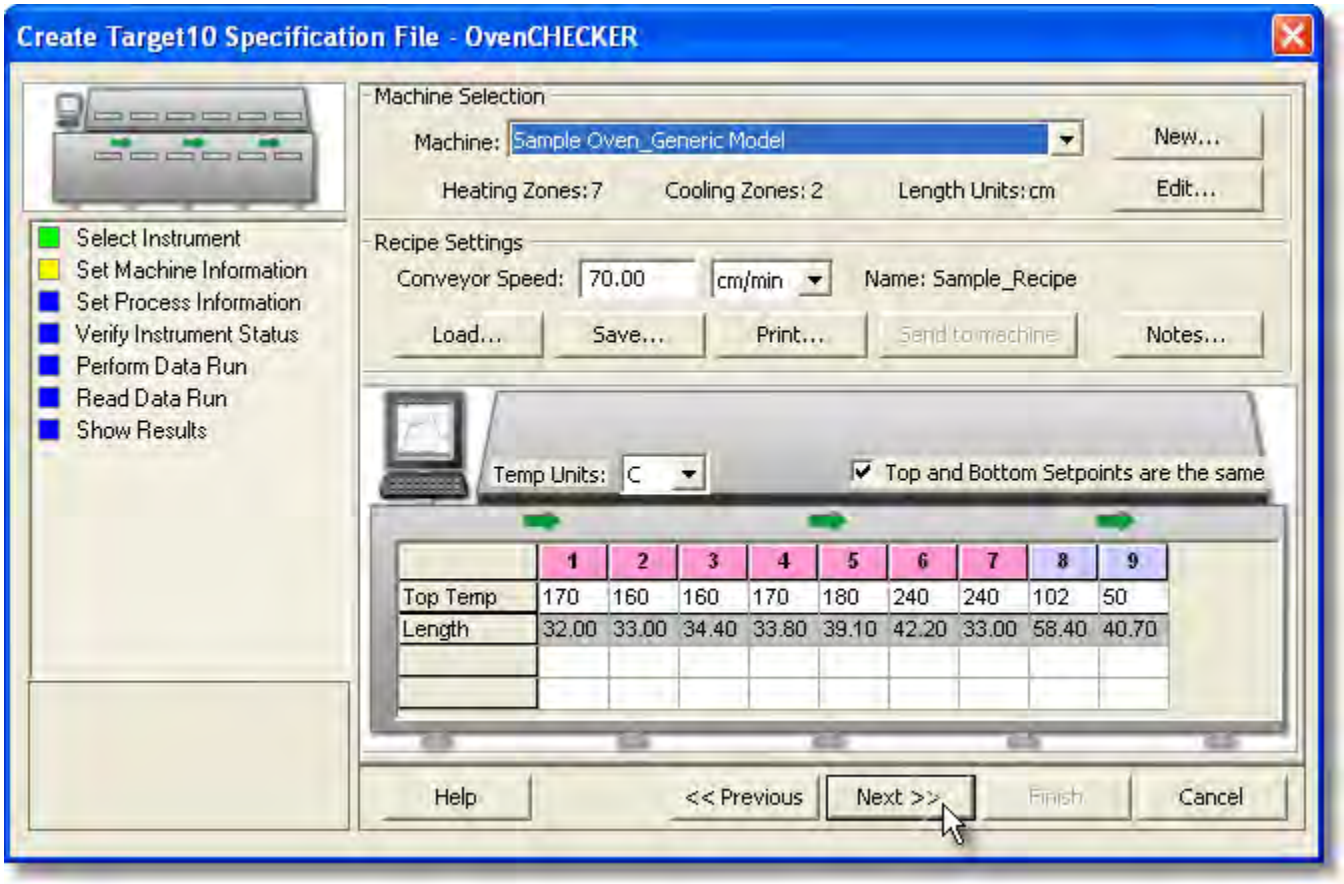


5) Click the ***Next*** command button.
6) Select a machine from the Machine drop down list. If the machine does not appear in the list click the ***New*** command button to create a new machine. Refer to topic ***Software>Menus>Machine>Create new Machine*** for more information.



7) Set the machine recipe settings such as Conveyor Speed, Zone Temperatures and Temperature units.

The software includes features to save and load machine recipe setting files. These files are helpful to quickly load machine information and to ensure they are always the same.



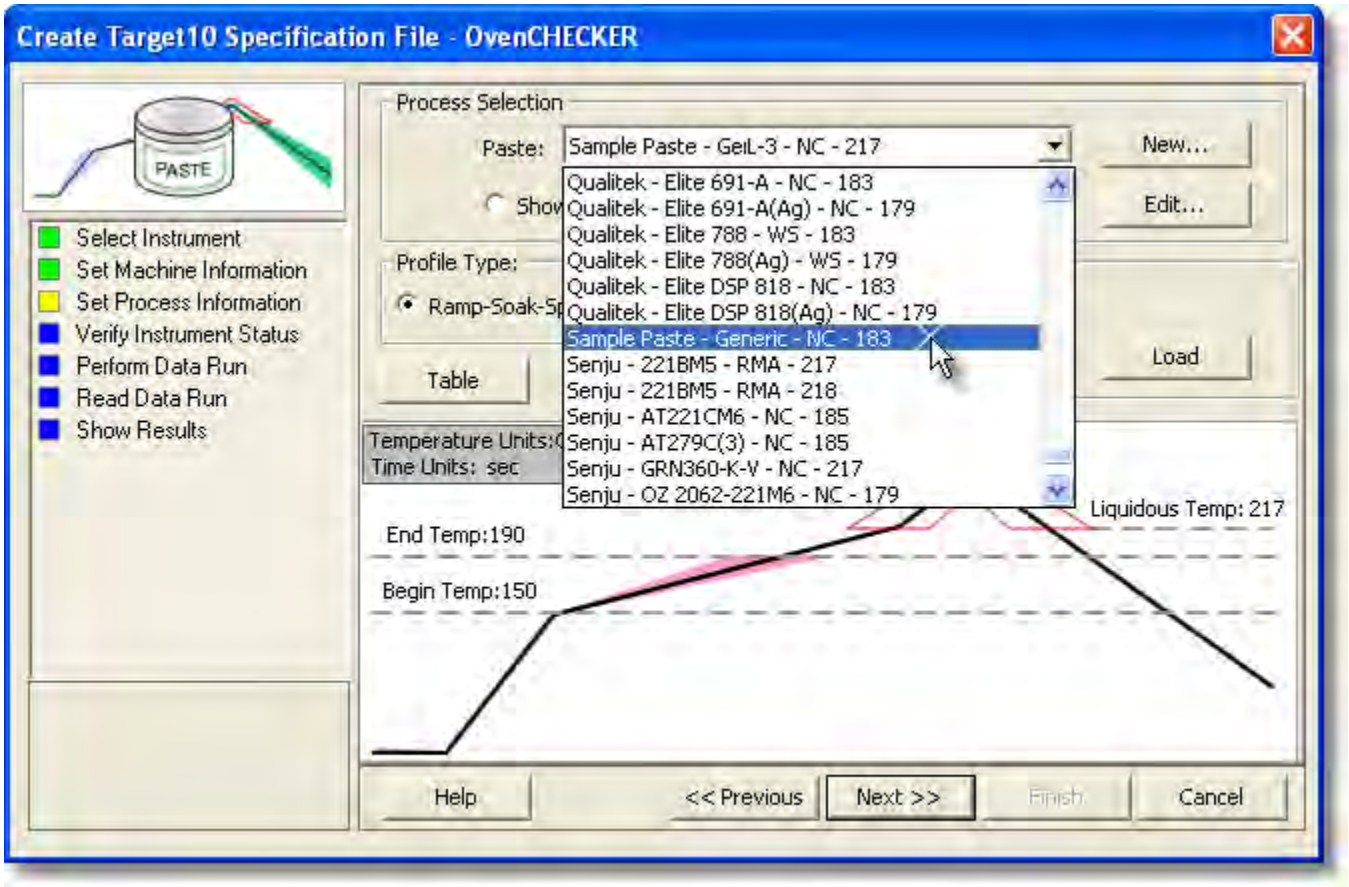
8) Click the ***Next*** command button.

If no value is specified for the conveyor speed or the default oven temperature values, the software will remind the user to set them.

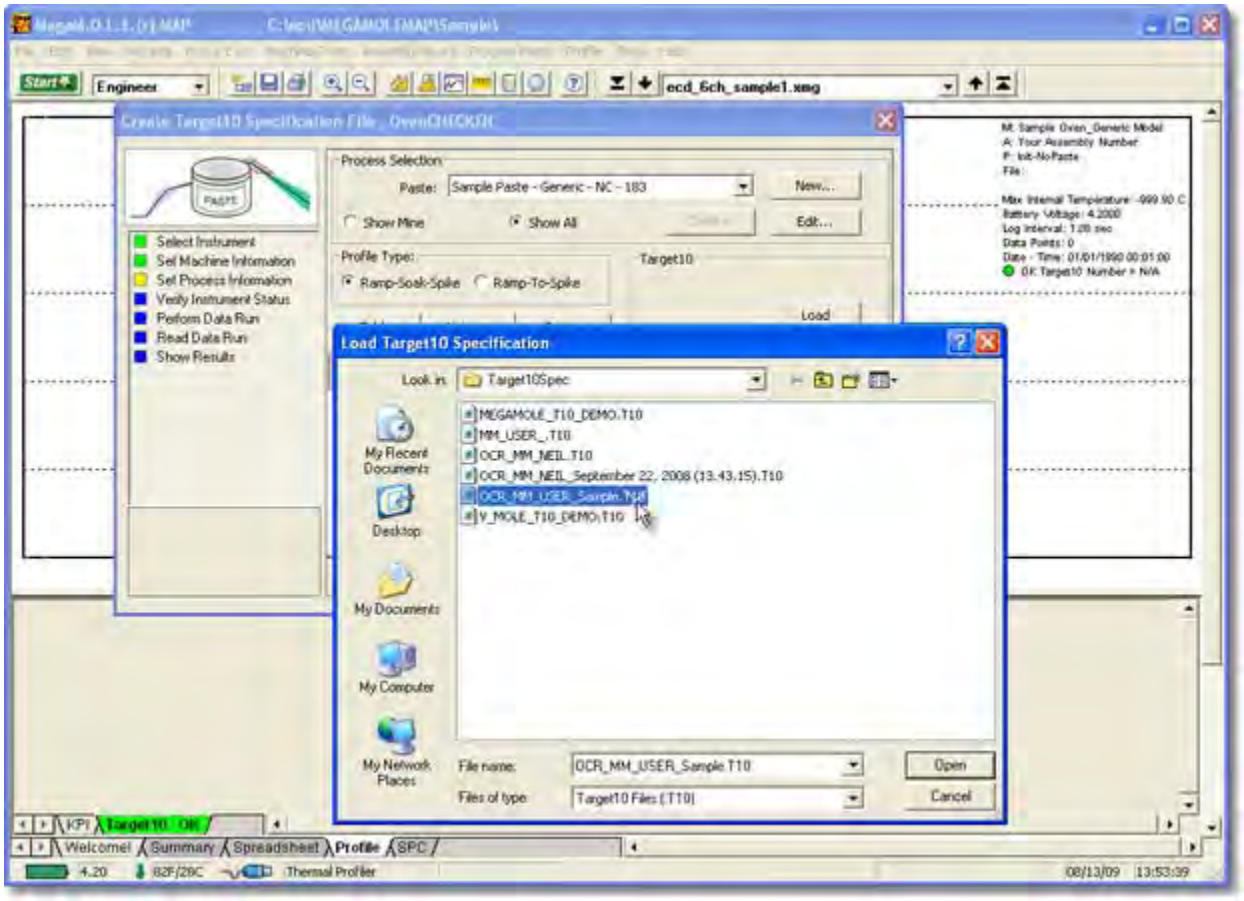
9) Select your process specification by selecting a ***Paste*** from the database or previously created ***Target 10 Specification***. If your Paste does not appear in the database list click the ***New*** command button to create a new one. Refer to topic ***Software>Menus>Process>Create new Paste*** for more information.

The OvenCHECKER™ uses the begin temp, end temp and liquidous temp to measure the initial slope, soak, TAL (time above liquidous), peak parameters from the selected ***Paste*** or ***Target 10 Specification***. Then based on the range of the parameters taken from the 3 OvenCHECKER™ sensors, automatically calculates the USL (Upper Specification Limits) and LSL (Lower Specification Limits).

When the user selects a paste from the database, they can use the radio buttons below the drop down box to filter and display only the user created pastes from paste database.



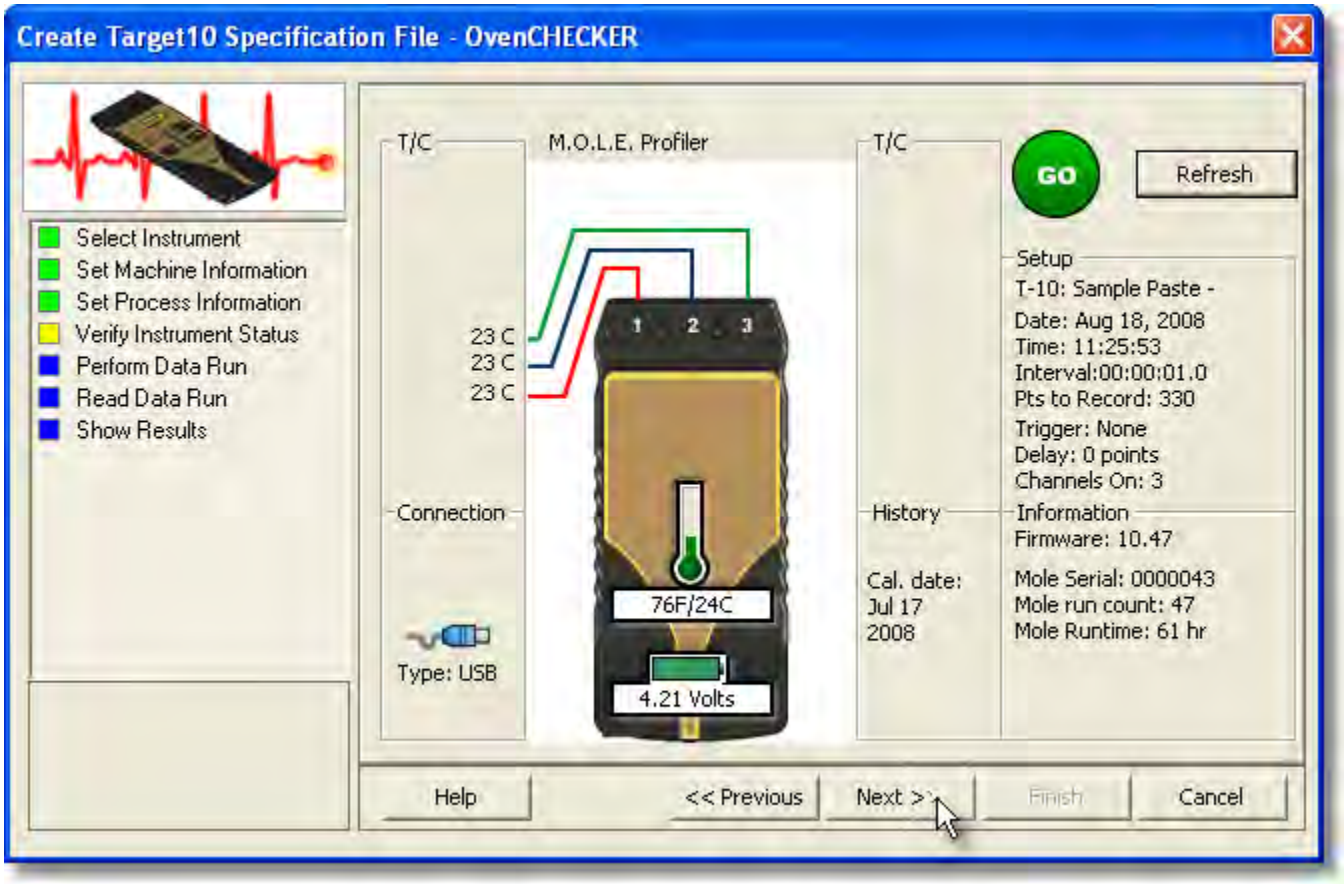
If the user decides to use a previously created Target 10 Specification, selecting the ***Load*** command button displays a list of Target 10 Specification Files (***.T10**).



10) After selecting a process specification, click the ***Next*** command button.

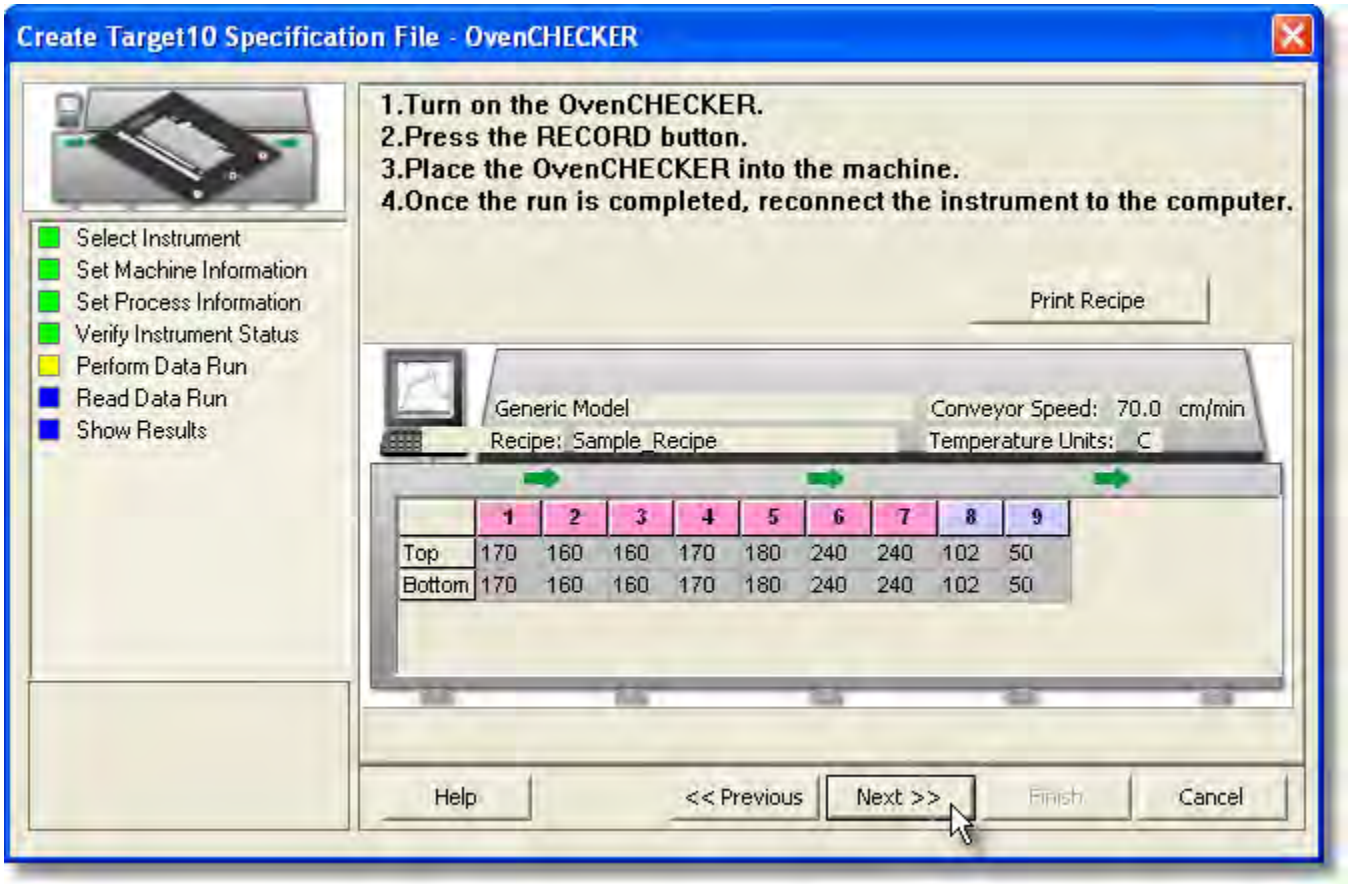
11) Verify the instrument status. This dialog box displays the health of the V-M.O.L.E.® Profiler such as battery charge, internal temperature, thermocouple temperatures.

If everything is ***OK***, the dialog box displays a **GREEN** sign. If there are any items that may prevent the user from collecting good data, they are highlighted and a **RED** sign is displayed.



12) Click the ***Next*** command button.

13) Review the machine settings and click the ***Next*** command button to continue.



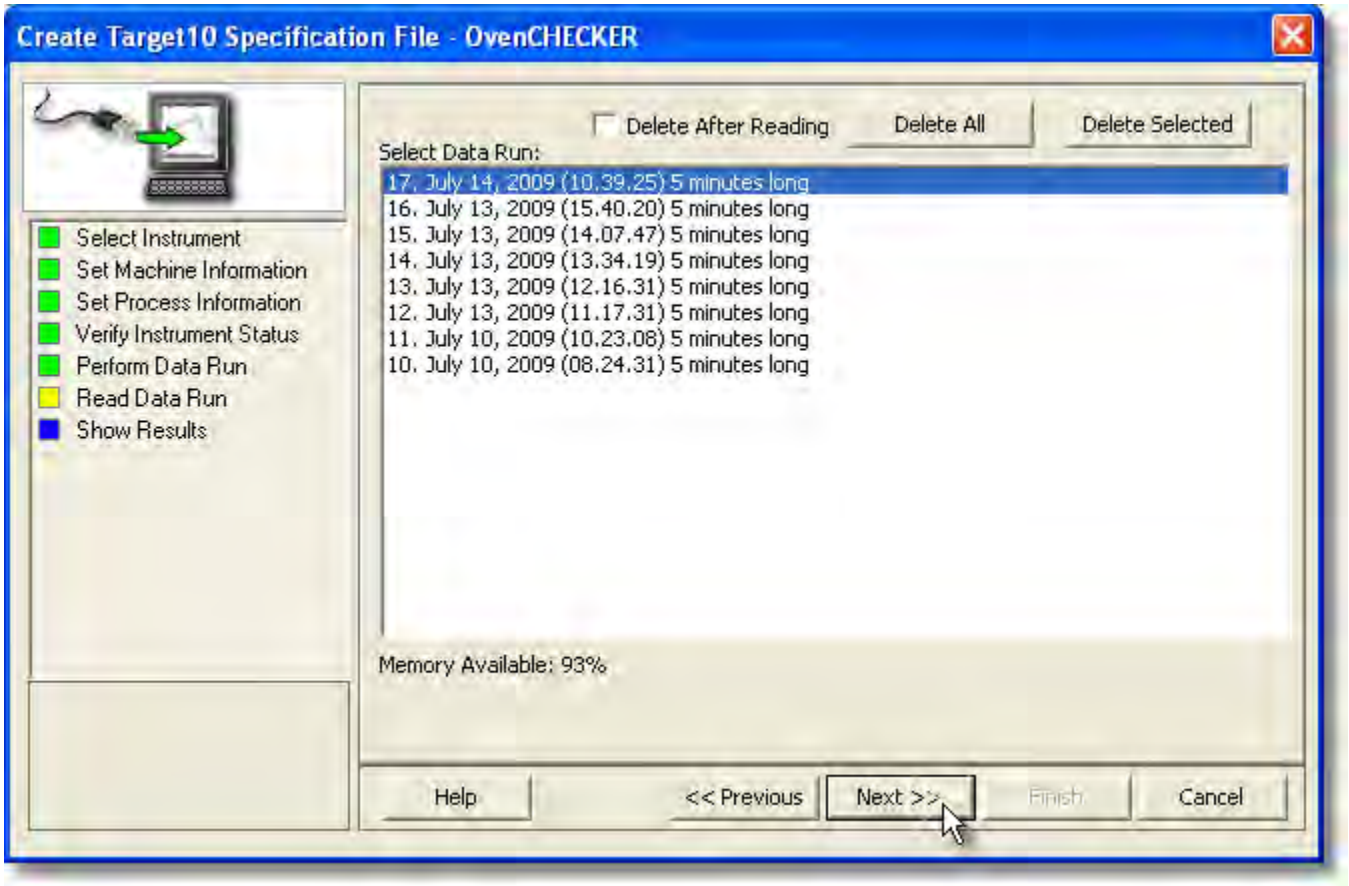
14) After the oven stabilizes, turn the V-M.O.L.E.® Profiler on and press the record button.

15) Pass the OvenCHECKER™ through the machine.

16) Once the OvenCHECKER™ has been retrieved from the machine and the V-M.O.L.E.® Profiler has been stopped, disconnect the V-M.O.L.E.® Profiler from the OvenCHECKER™ and place it near the computer. Since you are creating a new Target 10 Specification, the ***OK*** button on the V-M.O.L.E.® does not need to be pressed at this time as contains an old Target 10 Specification.

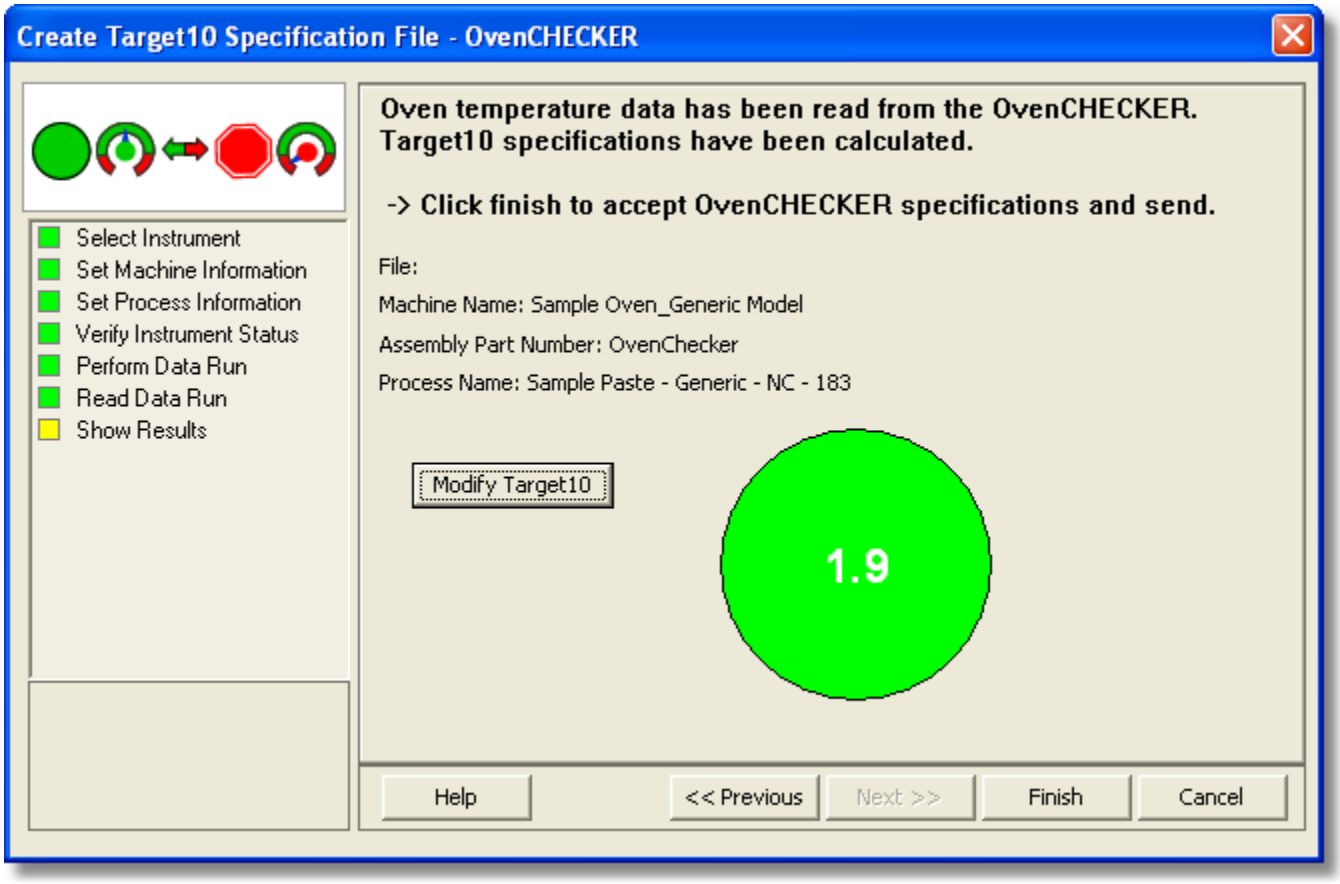
If the V-M.O.L.E.® Profiler already contains an previously recorded OvenCHECKER™ data run, a new data run does not need to be performed.

17) Select the desired OvenCHECKER™ data run and then click the ***Read*** command button to read the data run from the V-M.O.L.E.® Profiler.

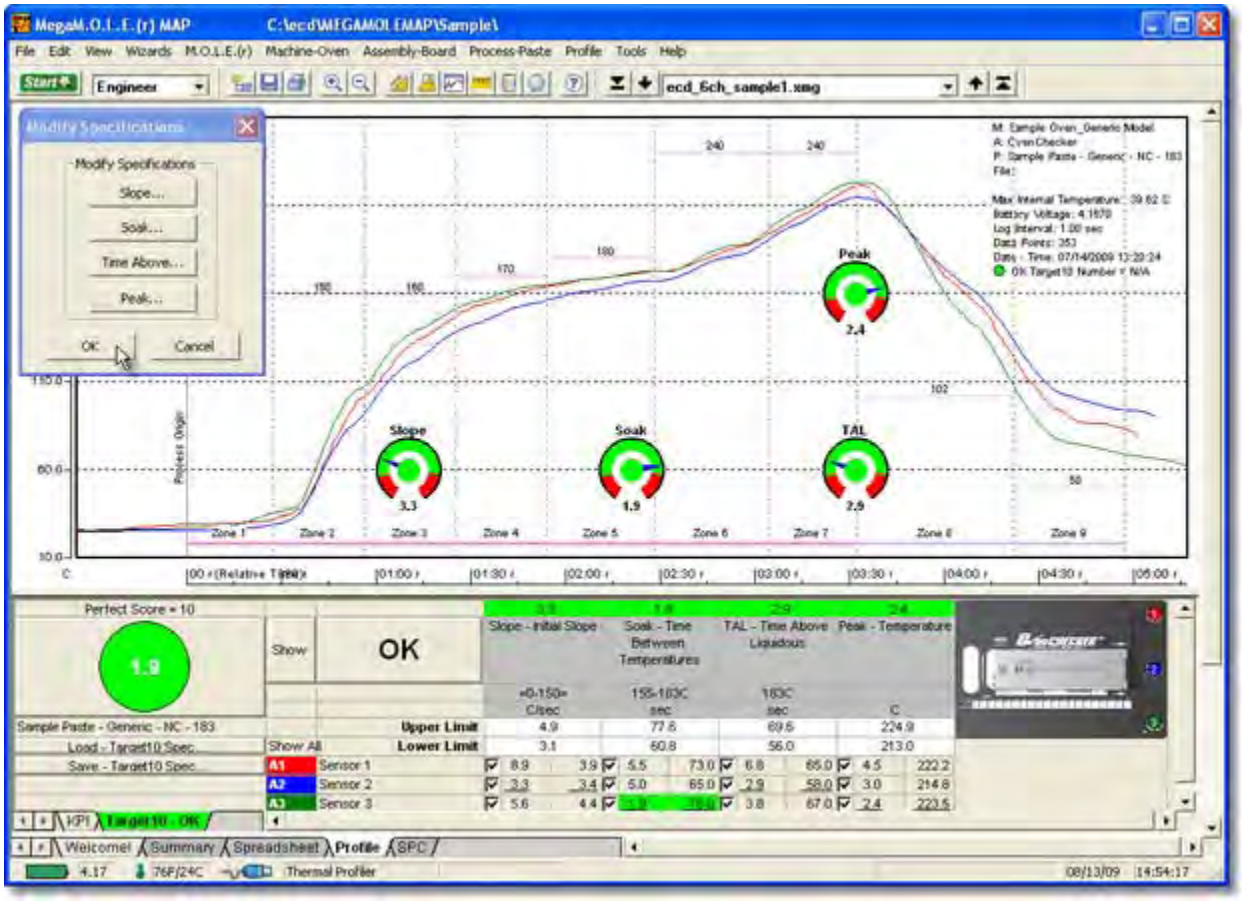


This step of the wizard allows the user to remove a selected data run from the M.O.L.E. Profiler by either selecting the ***Delete After Reading*** check box or selecting the ***Delete*** command button and removing it before downloading. This feature is not available for the SuperM.O.L.E.® Gold Thermal Profiler as it does not have the ability to store more than one data run.

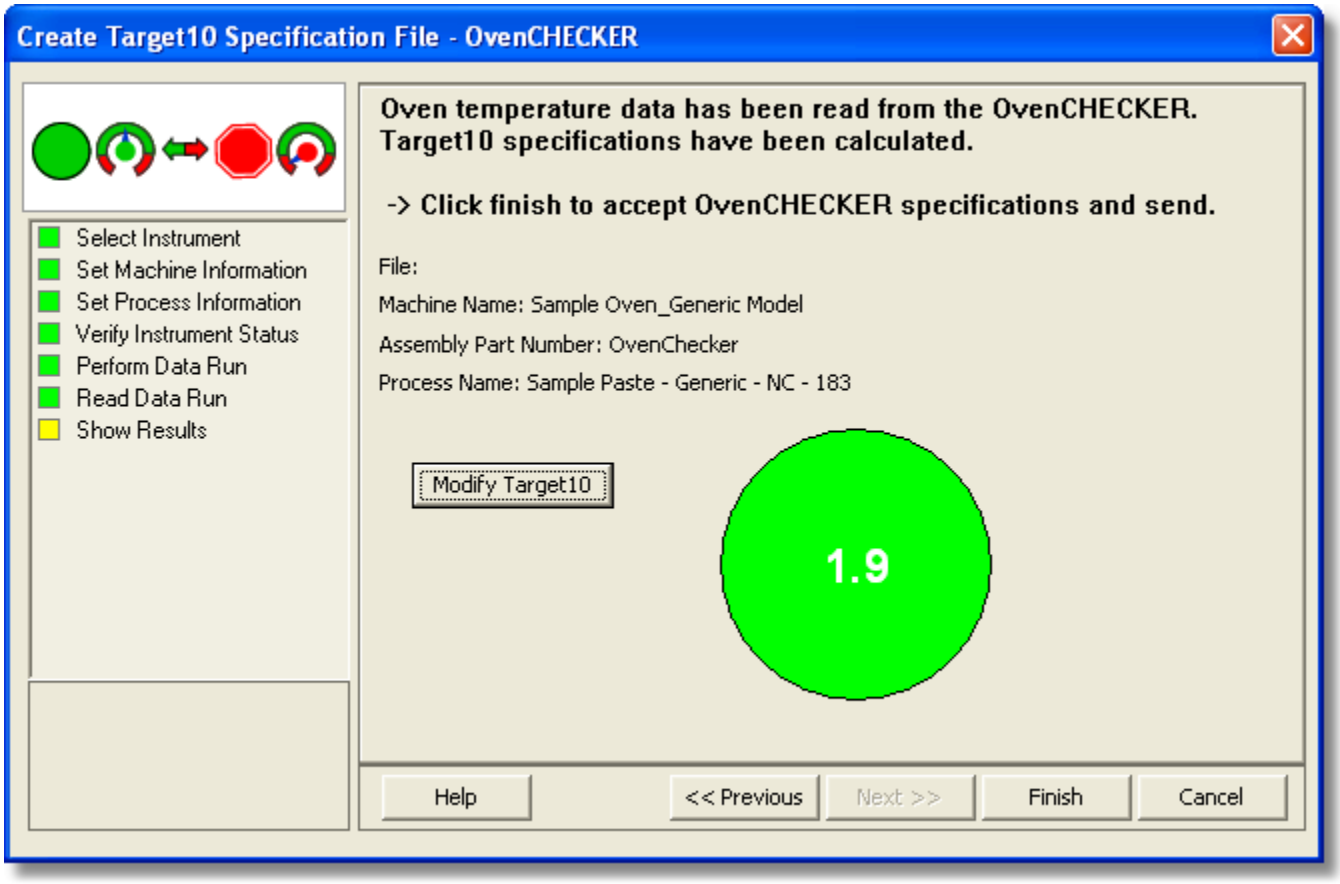
18) Once the OvenCHECKER™ data run is downloaded, review the calculated results of the Target 10 specification. The user can then decide if they wish to accept these or make final modifications to the Slope, Soak, Time Above and/or Peak parameter.



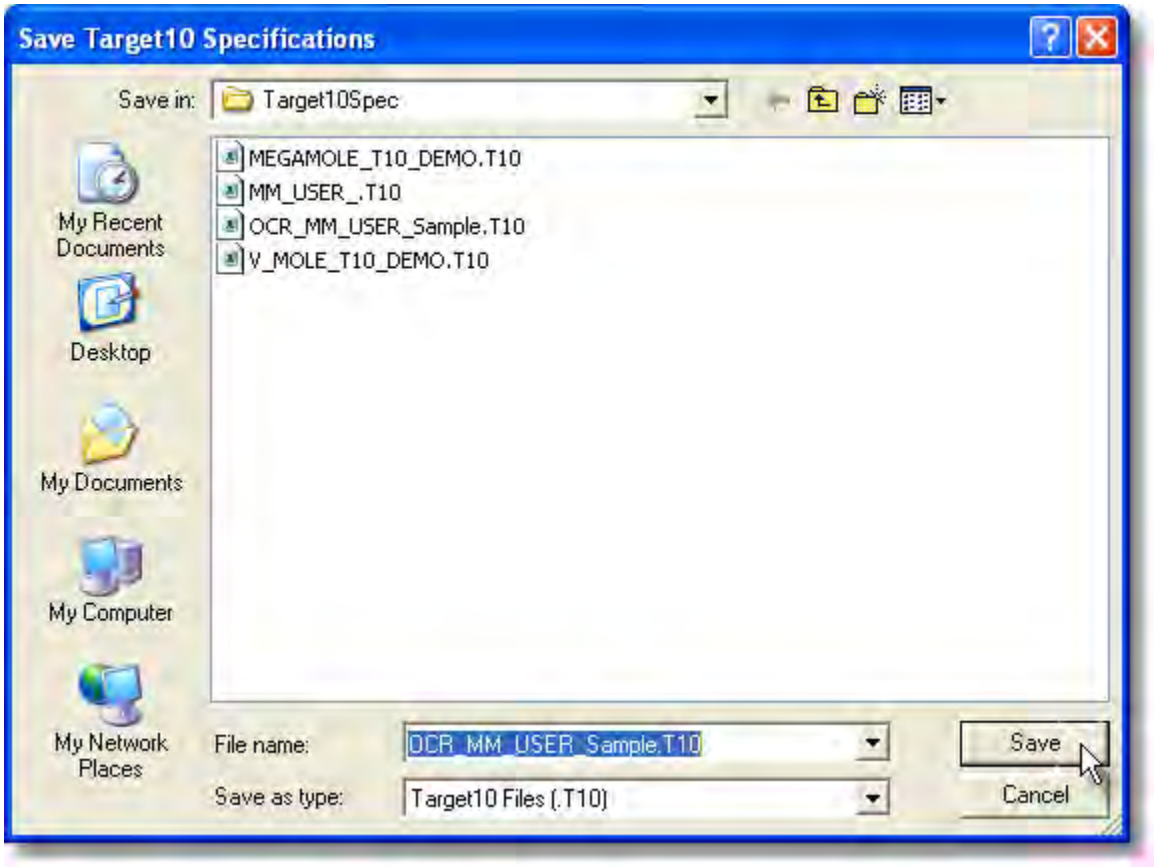
If the user decides to make modifications, click the ***Modify Target10*** command button and the the Target 10-OK tab is displayed. Make the desired modifications to the Slope, Soak, Time Above and/or Peak parameter specifications. If any of the parameter specifications are changed the ***OK*** button will inform the user by displaying (***OKModified***).



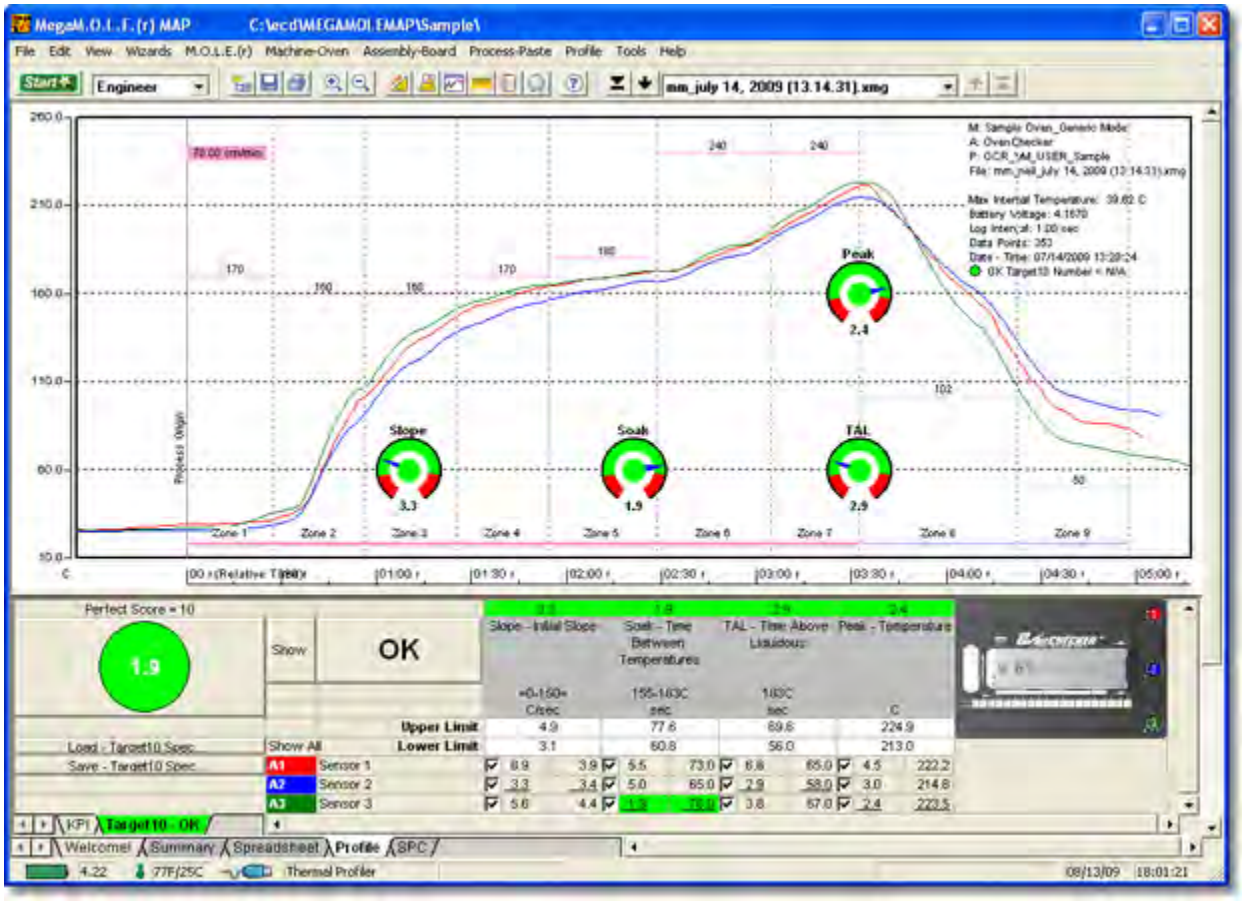
19) Click the ***OK*** command button on the ***Modify Specifications*** pallet to accept the specifications or ***Cancel*** to discard them and return to the workflow wizard.



20) Click the ***Finish*** command button and the software prompts the user to save the Target 10 Specification file (***.T10**).



21) When finished naming the file, click the ***Save*** command button to complete the workflow wizard. This step saves both the Target 10 Specification file (***.T10**) and the downloaded data run (**.XMG**) and is displayed on the Target10-OK tab.



This OvenCHECKER™ Target 10 Specification can now be used to verify that your machine performance is the same in the future. Refer to topic ***Menus and Tool Commands>File Menu>Wizards Menu>Verify Process*** for more information.

5.5.4.5. Download Data

The ***Download Data*** ***workflow*** is a wizard that starts a new profile (data run) by downloading a file from the M.O.L.E. Profiler. Once the data run is downloaded, the user can then choose to apply Machine (Oven), Assembly (Board) and Process (Paste) information.

This is available in both Engineer & Verify Modes.

5.5.4.5.1. Workflow

The Download Data workflow:

1) Connect the M.O.L.E. Profiler to the computer. Refer to ***Basics>Setup>Communications Setup*** for more information.

2) On the ***File*** menu, click ***New***. A message box appears with the five workflow wizard options.

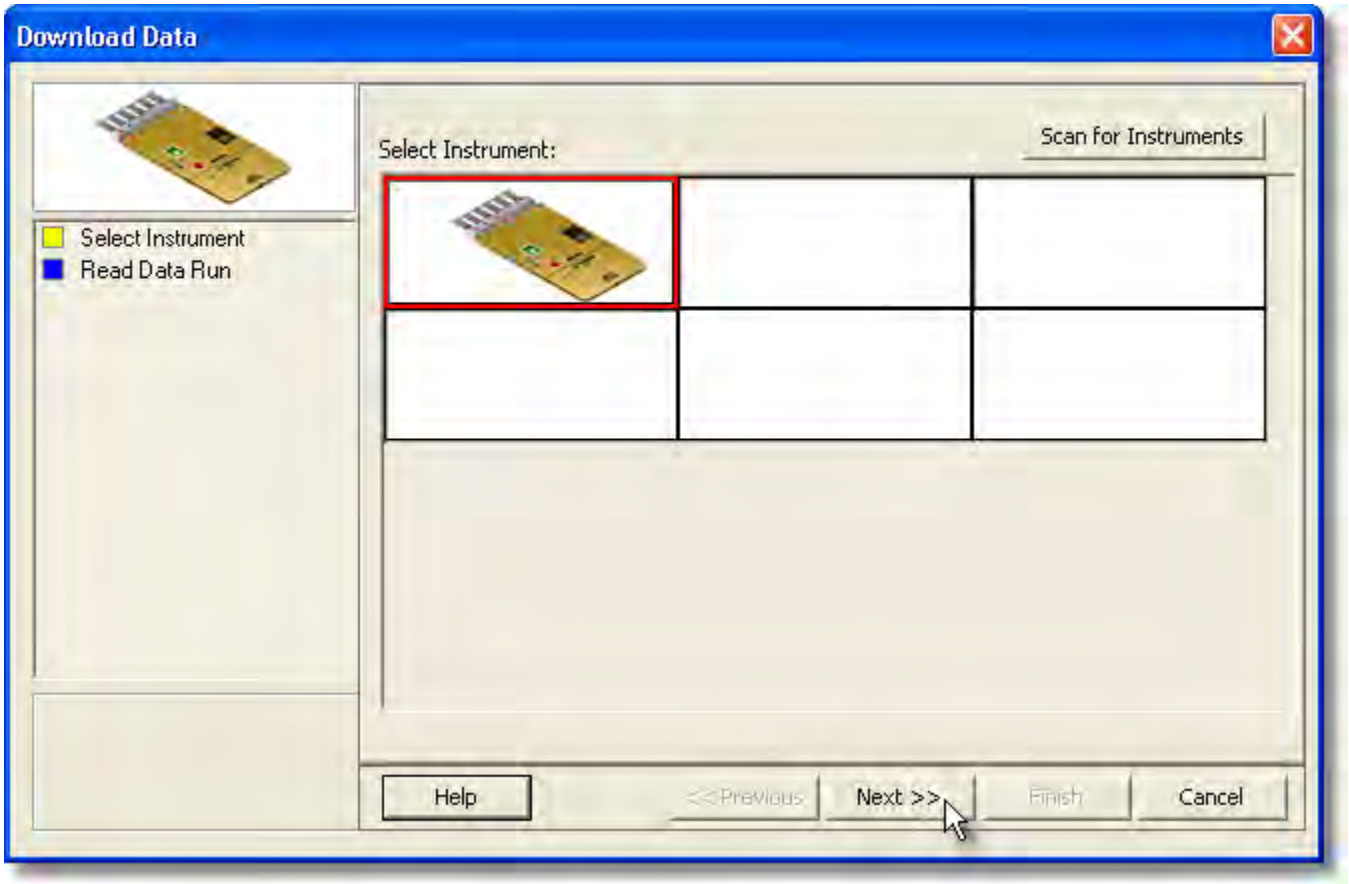
3) On the ***Start*** dialog box, click the ***Download Data*** command button and the workflow wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

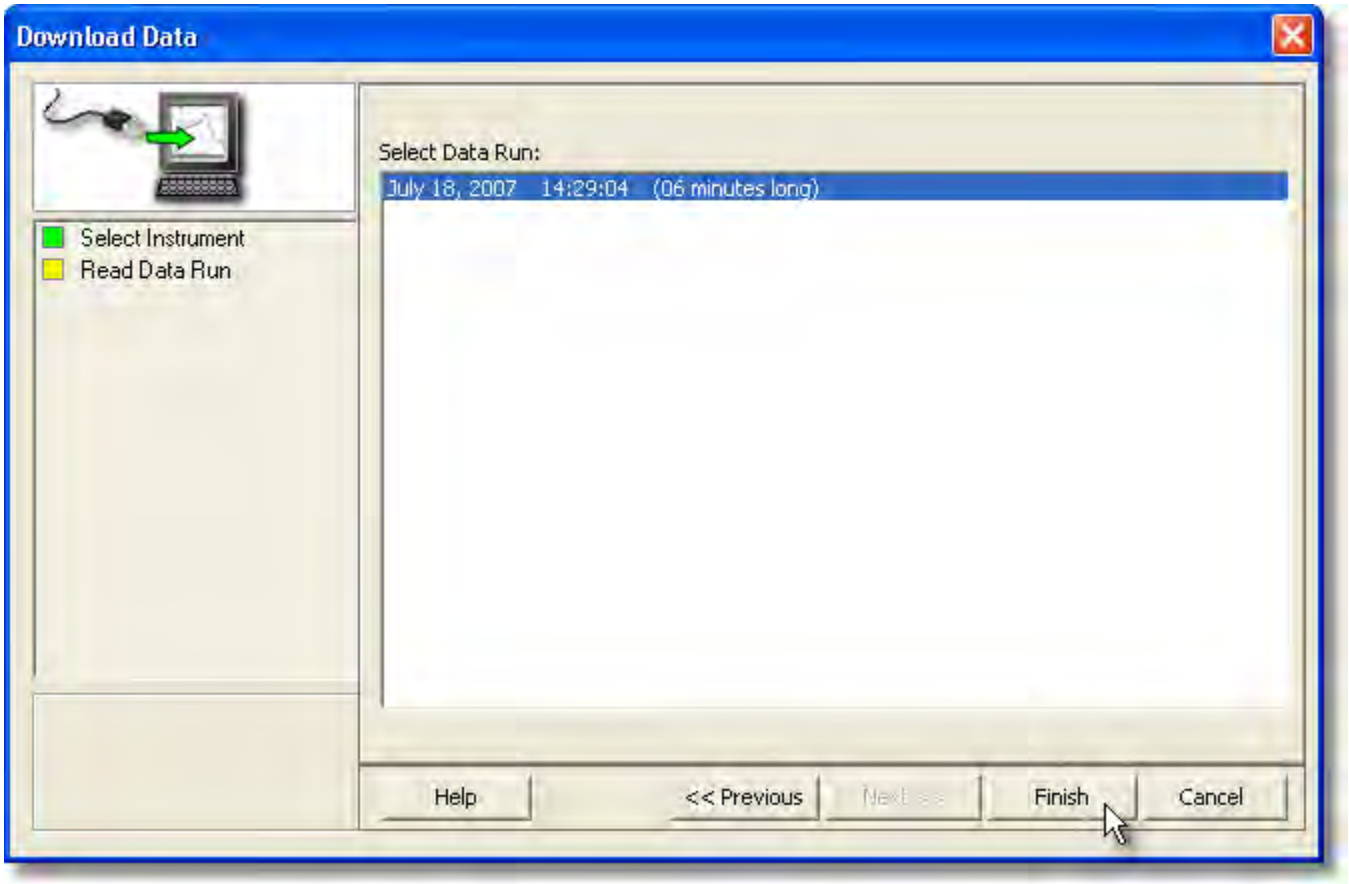
Current Completed Remaining

4) Select the desired instrument from the dialog box to make active. If a M.O.L.E. Profiler has already been selected during a different process, the software automatically selects the M.O.L.E. Profiler connected to the COM port previously used.

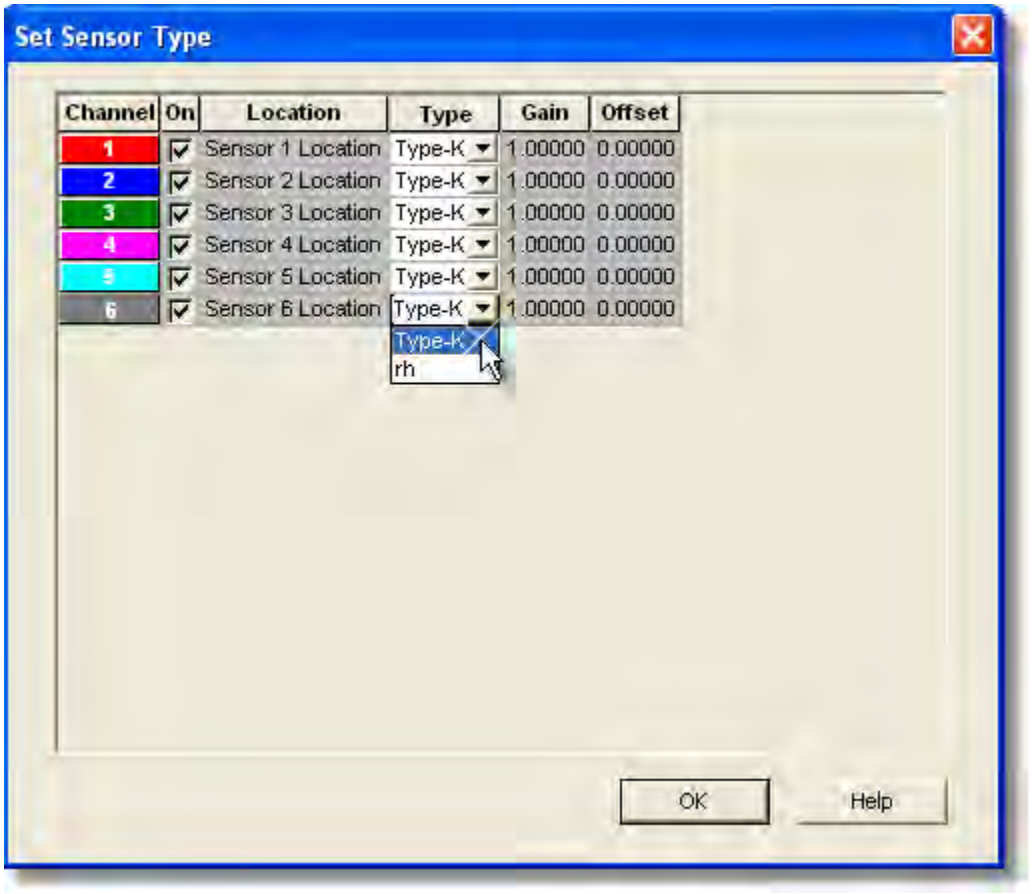
If the software does not detect a M.O.L.E. Profiler, using the communication cable connect it to the computer and click the ***Scan for Instruments*** command button to search again. M.O.L.E.® MAP software allows multiple instruments to be connected to a computer at one time. Selecting the ***Scan for Instruments*** command button will detect all instruments and display them in the dialog box. If no instrument is detected the software displays all of the Demonstration thermal profilers to select from.



5) Click the ***Next*** command button.
6) Select the desired data run and then click the ***Finish*** command button to complete the wizard and read the data run from the M.O.L.E. Profiler.

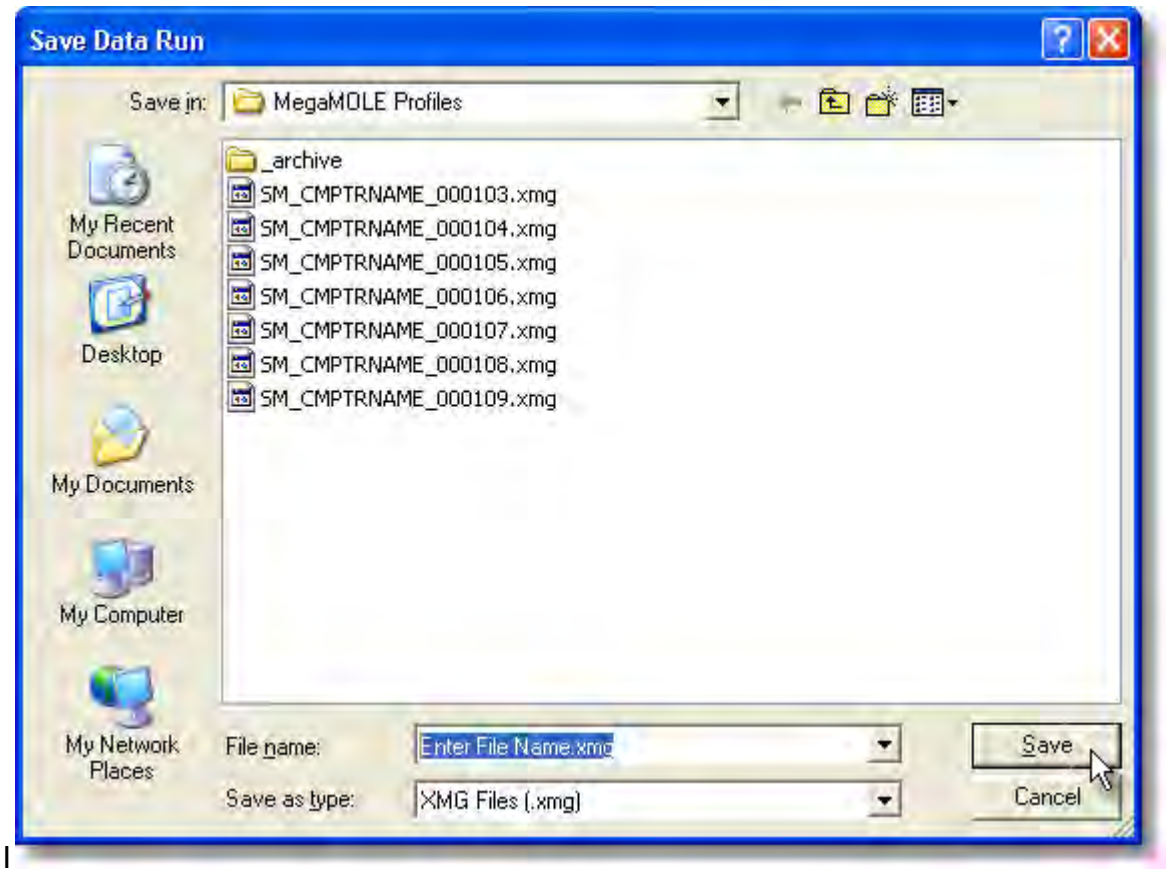


- Prior to reading the data run, the software prompts the user to select the sensor type for the active channels. When finished select the ***OK*** command button to proceed.



8) When the data run has been downloaded, the software prompts the user to specify a file name (*.XMG).

When saving a data run (***.XMG**) to a different file directory other than the current Working directory, the software automatically sets the new file directory as the current Working Directory. This process does not delete any data run files in the previously set Working directory and can be quickly accessed using the ***Recent Working Directory*** command on the ***File*** menu.



9) When finished, click the ***Save*** command button to complete the process.

5.5.4.6. Verify Process

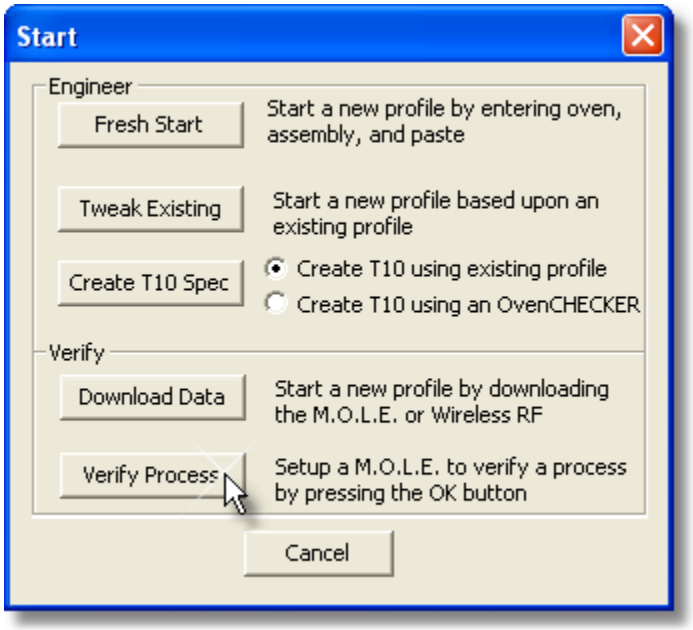
The ***Verify Process*** workflow is a wizard that configures a M.O.L.E. Profiler or OvenCHECKER™ to verify a process or machine performance using a Target 10 Specification file (***.T10**).

This is available in both Engineer & Verify Modes.

The Verify Process workflow:

The verify process can only be performed using a MEGAM.O.L.E.® or V-M.O.L.E.® Profiler.

1) Connect the M.O.L.E. Profiler to the computer. Refer to ***Basics>Setup>Communications Setup*** for more information.
2) On the ***File*** menu, click ***New***. The ***Start*** dialog box appears with the five workflow wizard options.



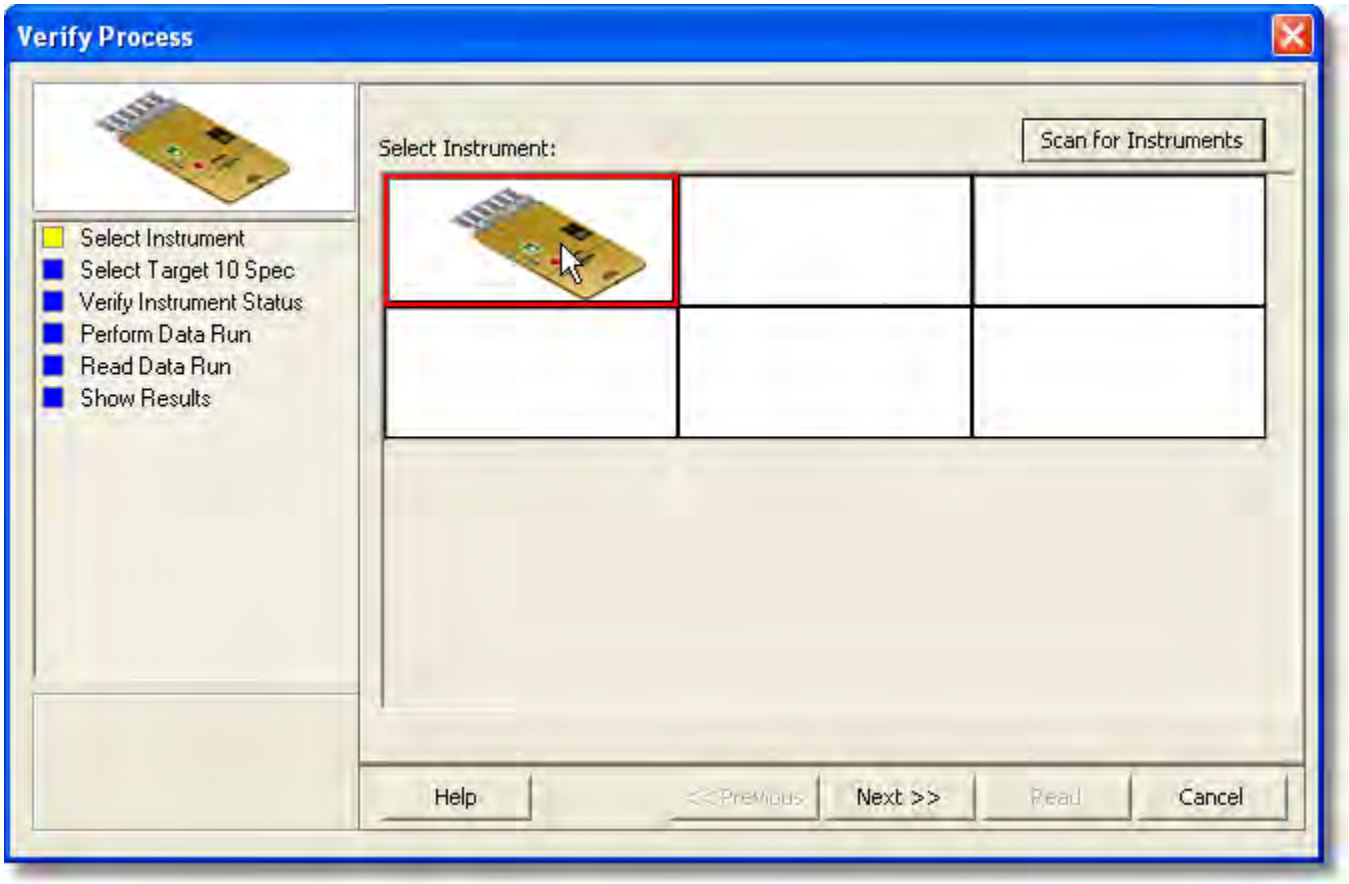
3) On the ***Start*** dialog box, click the ***Verify Process*** command button and the workflow wizard appears.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

Current Completed Remaining

4) Select the desired instrument from the dialog box to choose the M.O.L.E. Profiler. If a M.O.L.E. Profiler has already been selected during a different process, the software automatically selects the M.O.L.E. Profiler connected to the COM port previously used.

If the software does not detect a M.O.L.E. Profiler, using the communication cable connect it to the computer and click the ***Scan for Instruments*** command button to search again. M.O.L.E.® MAP software allows multiple instruments to be connected to a computer at one time. Selecting the ***Scan for Instruments*** command button will detect all instruments and display them in the dialog box. If no instrument is detected the software displays all of the Demonstration thermal profilers to select from.



5) Click the ***Next*** command button.
6) Select a Target 10 file from the list to verify. When placing the mouse cursor over a file on the list, a thumbnail image appears to help properly identify the assembly associated with it.

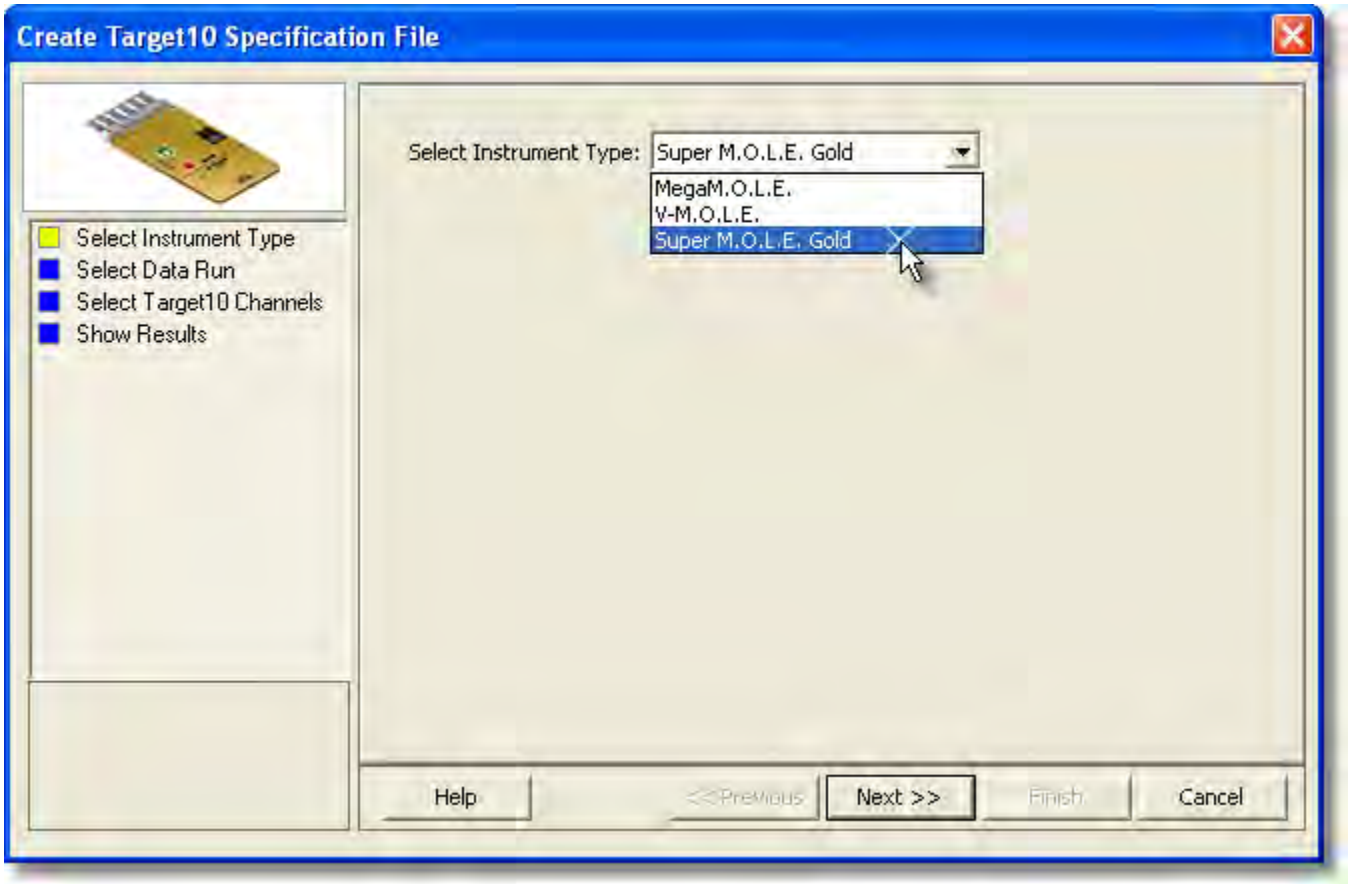
When selecting a Target 10 file to verify, the software displays files located in the ***\ECD\MegaMoleMAP\Target10Spec*** directory that are associated with the currently selected instrument.

7) Click the ***Next*** command button.

When selecting a Target 10 file, the software extracts the MAP data from it and sends it to the M.O.L.E. Profiler. The process will overwrite any configurations and Target 10 specs currently stored in the M.O.L.E. Profiler.

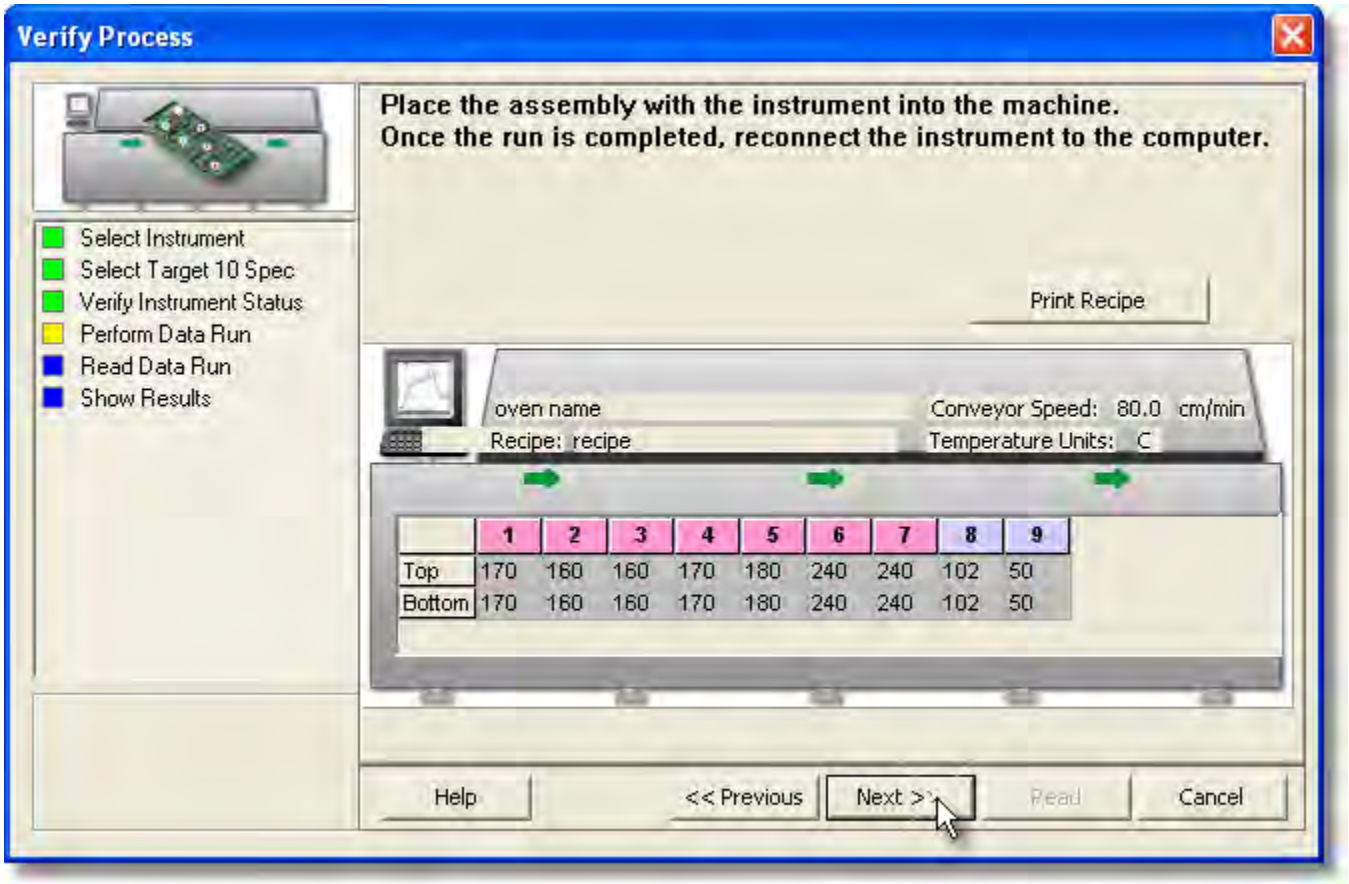
8) Verify the instrument status. This dialog box displays the health of the M.O.L.E. Profiler such as battery charge, internal temperature, thermocouple temperatures.

If everything is ***OK***, the dialog box displays a **GREEN** sign. If there are any items that may prevent the user from collecting good data, they are highlighted and a **RED** sign is displayed.



9) Click the ***Next*** command button.

10) Review the machine settings and click the ***Next*** command button to continue.



11) Pass M.O.L.E. Profiler and test product through the process. Refer to topic ***Basics>Verify>Step 2 - Verify Process*** for more information.

If the selected M.O.L.E. Profiler is wireless RF, click the ***Next*** command button to proceed to the Step 14.

12) Press the OK button on the M.O.L.E. Profiler and wait for the GO or NO-GO indication (**RED** or **GREEN**). By pressing the OK button, the M.O.L.E. Profiler analyzes the most recent data run to verify the Target 10 Specifications.

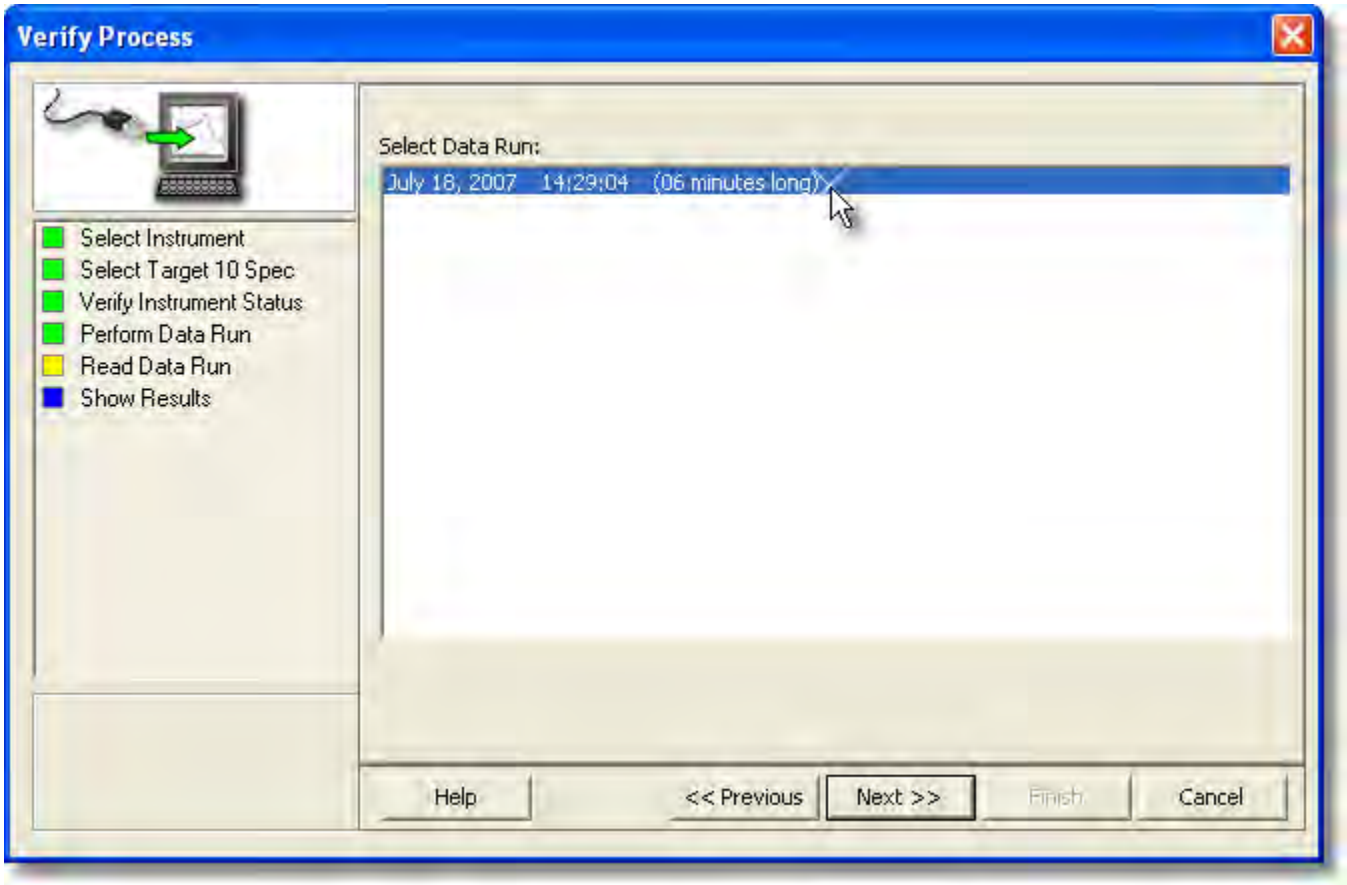
Only the MEGAM.O.L.E.® and V-M.O.L.E.® are equipped with the OK button. When using the SuperM.O.L.E.® Gold please skip the previous step.

13) Connect the M.O.L.E. Profiler to the computer and click the ***Next*** command button.

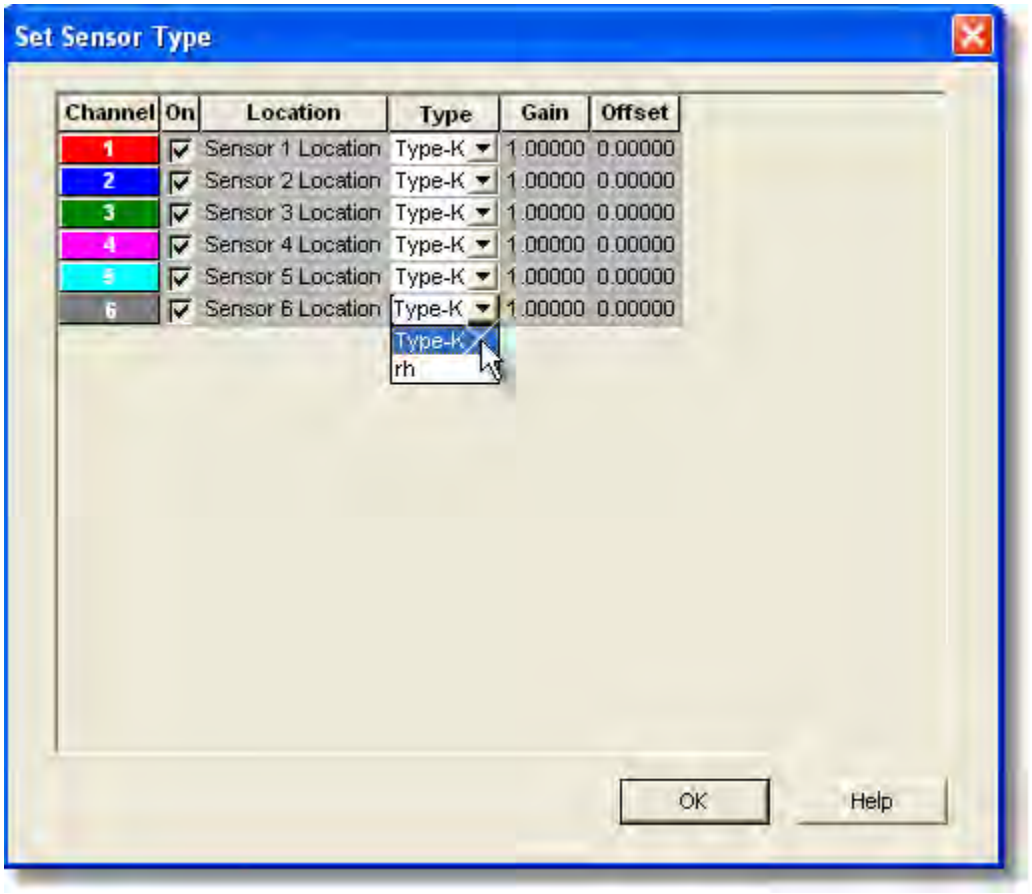
14) Select the desired data run and then click the ***Next*** command button to read the data run from the M.O.L.E. Profiler.

If the user has selected to use a Wireless RF option, select ***Start real-time RF*** on the top of the data run list and then the ***Finish*** command button to display the RF Control dialog.

This step of the wizard allows the user to remove a selected data run from the M.O.L.E. Profiler by either selecting the ***Delete After Reading*** check box or selecting the ***Delete*** command button and removing it before downloading. This feature is not available for the SuperM.O.L.E.® Gold Thermal Profiler as it does not have the ability to store more than one data run.

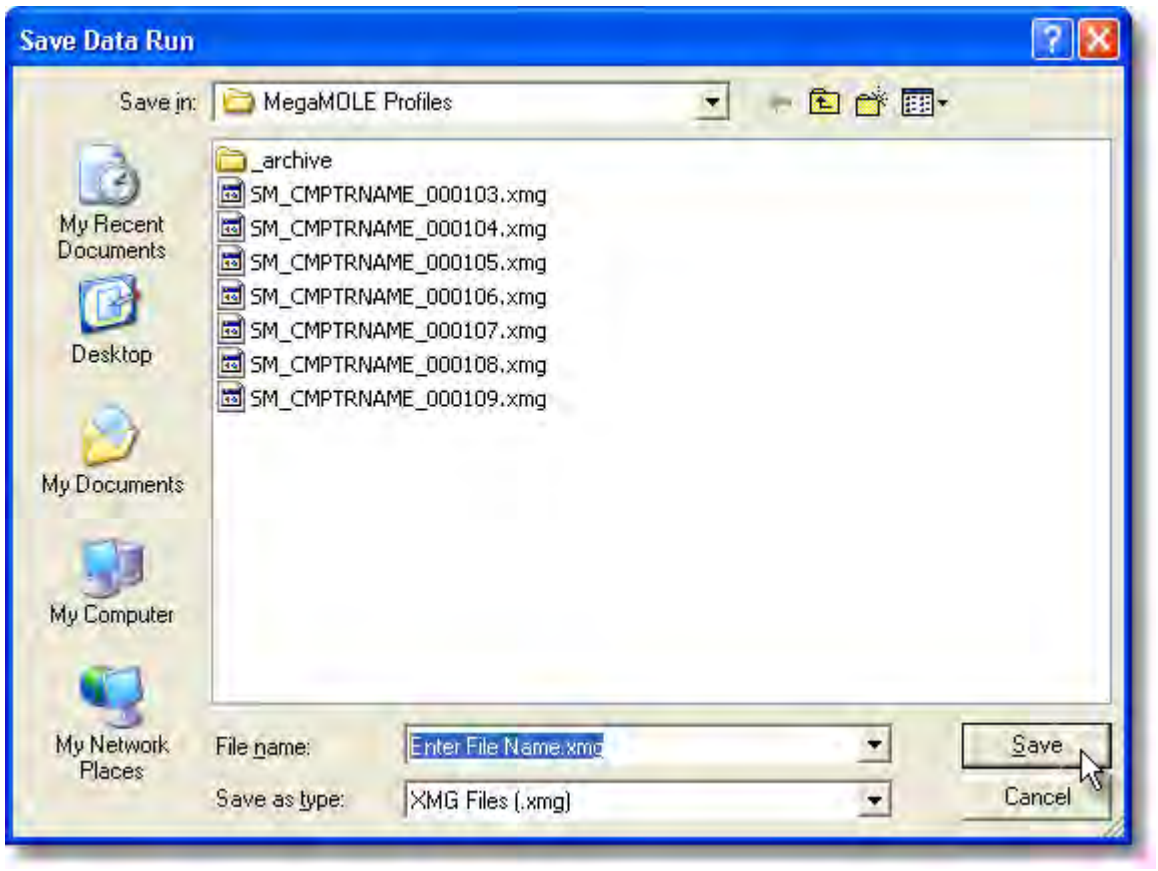


- Prior to reading the data run, the software prompts the user to select the sensor type for the active channels. When finished select the ***OK*** command button to proceed.

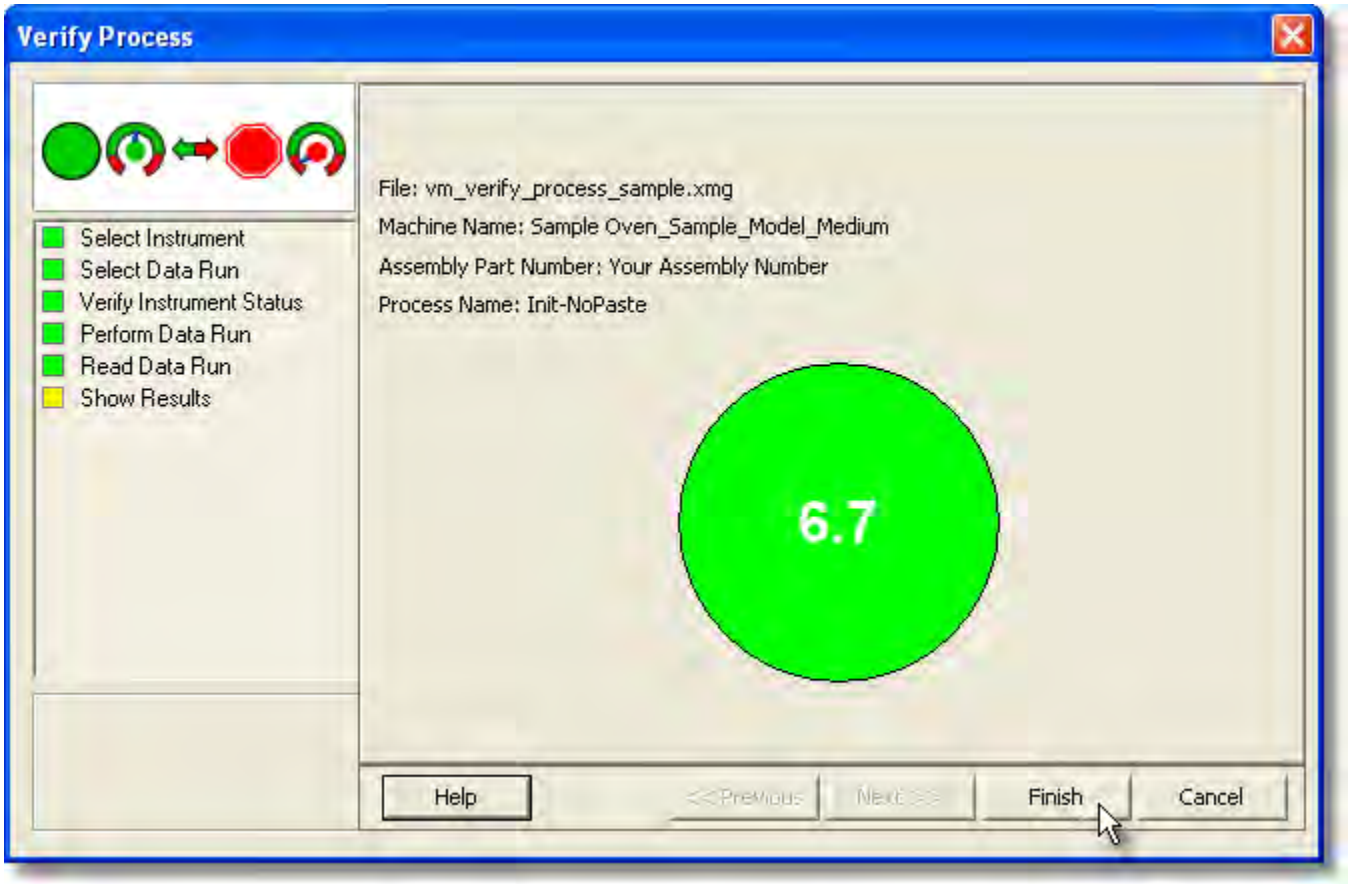


15) When the data run has been downloaded, the software prompts the user to save the verification data run file (.XMG).

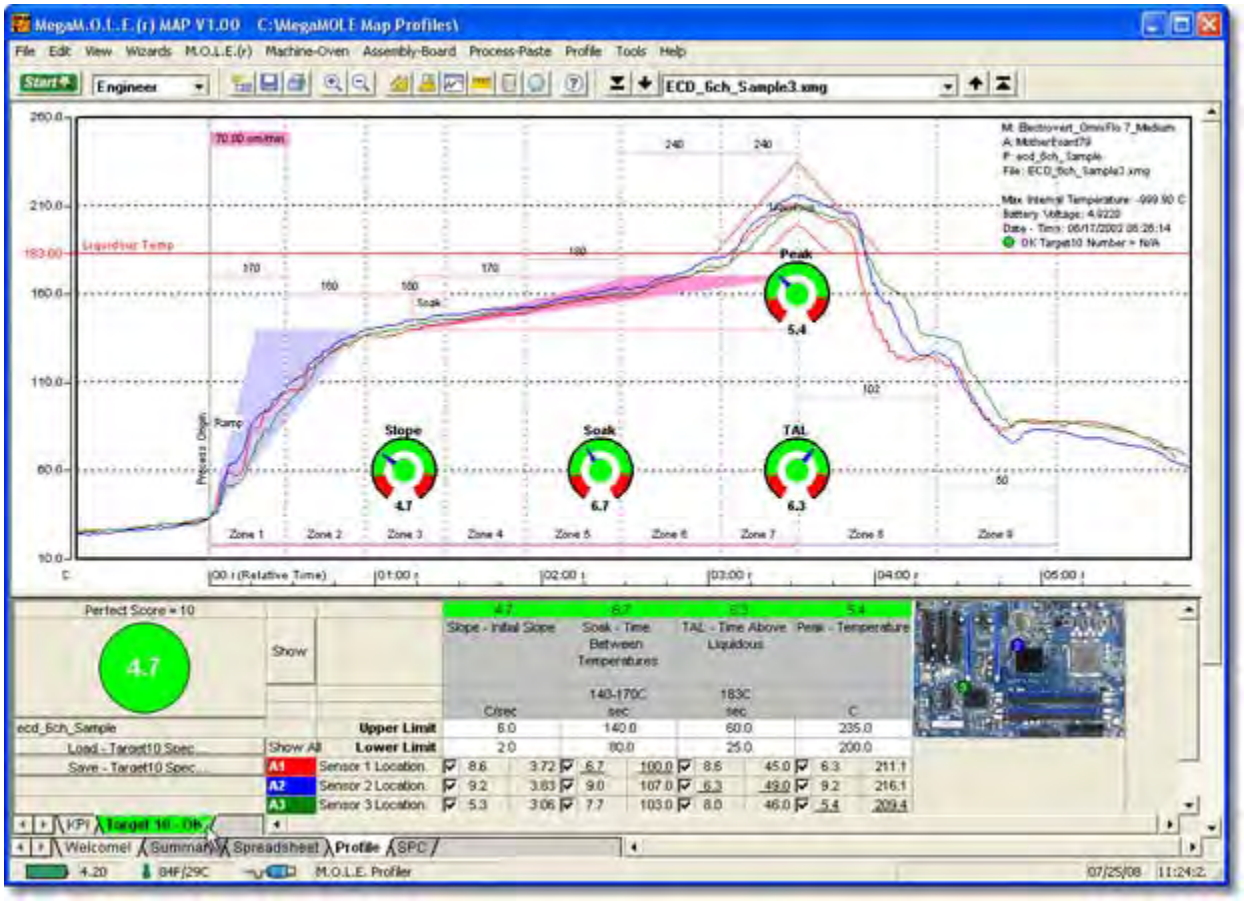
When saving a data run (***.XMG**) to a different file directory other than the current Working directory, the software automatically sets the new file directory as the current Working Directory. This process does not delete any data run files in the previously set Working directory and can be quickly accessed using the ***Recent Working Directory*** command on the ***File*** menu.



16) Once the file is saved, the software returns to the workflow wizard and displays the Target 10-OK results.



17)Analyze the data by selecting the Target10-OK tab on the Profile Tab.



5.5.5. M.O.L.E. Menu

The M.O.L.E. menu commands configure a M.O.L.E. Profiler for collecting process data.

5.5.5.1. Select Instrument

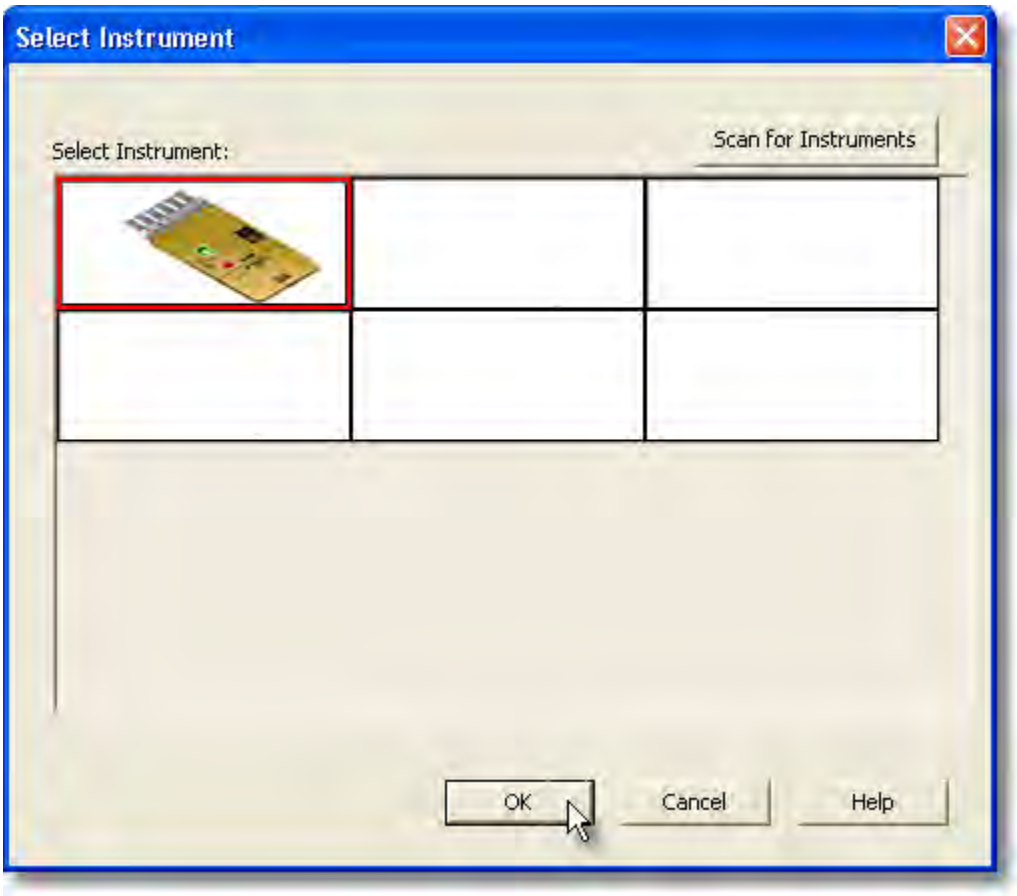
The Select Instrument command allows the user to select an available M.O.L.E. Profiler to make active so it can interface with the software.

This is available in both Engineer & Verify Modes.

To select an instrument:

1) Connect the M.O.L.E. Profiler to the computer. Refer to ***Basics>Setup>Communications Setup*** for more information.
2) On the ***M.O.L.E.*** menu, click the ***Select Instrument*** command.
3) Select the desired instrument from the dialog box. If there are none displayed, click the ***Scan for Instruments*** command button to detect all available instruments.

If the software does not detect a M.O.L.E. Profiler, using the communication cable connect it to the computer and click the ***Scan for Instruments*** command button to search again. M.O.L.E.® MAP software allows multiple instruments to be connected to a computer at one time. Selecting the ***Scan for Instruments*** command button will detect all instruments and display them in the dialog box. If no instrument is detected the software displays all of the Demonstration thermal profilers to select from.



4) Click the ***OK*** command button to accept or ***Cancel*** to quit the command.

5.5.5.2. Instrument Status

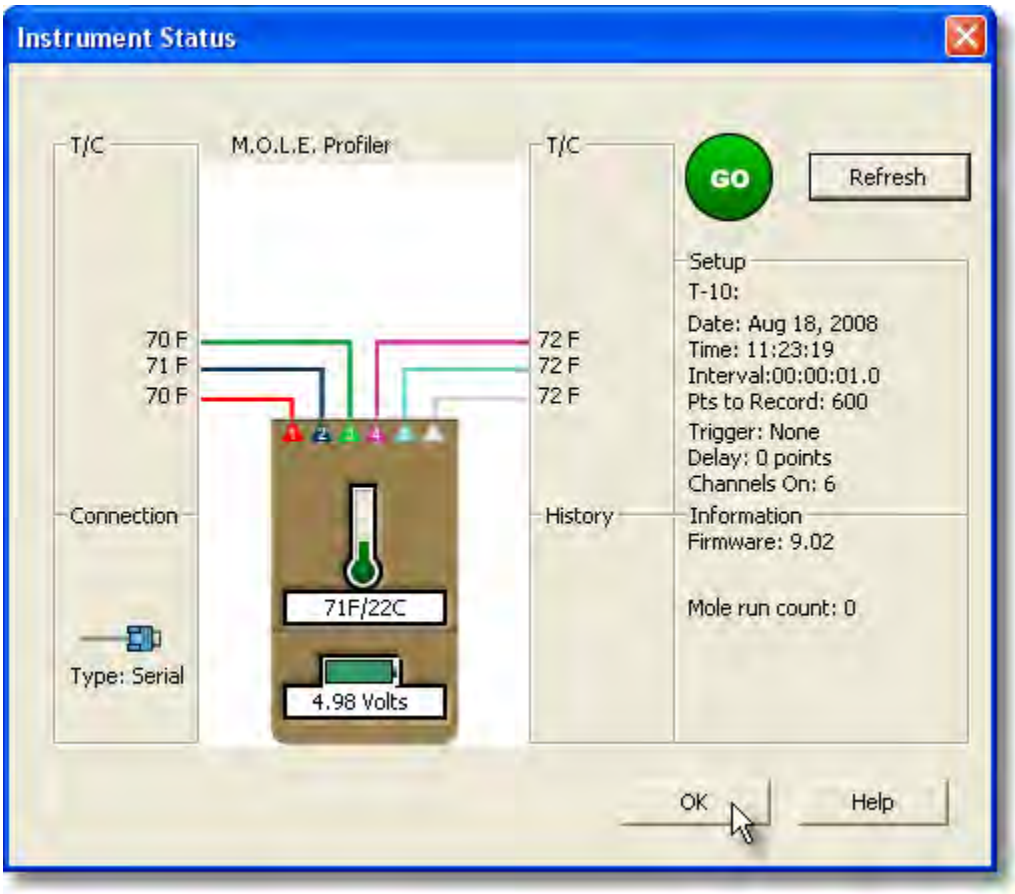
This command displays the health of the M.O.L.E. Profiler such as battery charge, internal temperature, thermocouple temperatures. This command also allows the user to display items that will prevent the user from completing a successful data run.

This is available in both Engineer & Verify Modes.

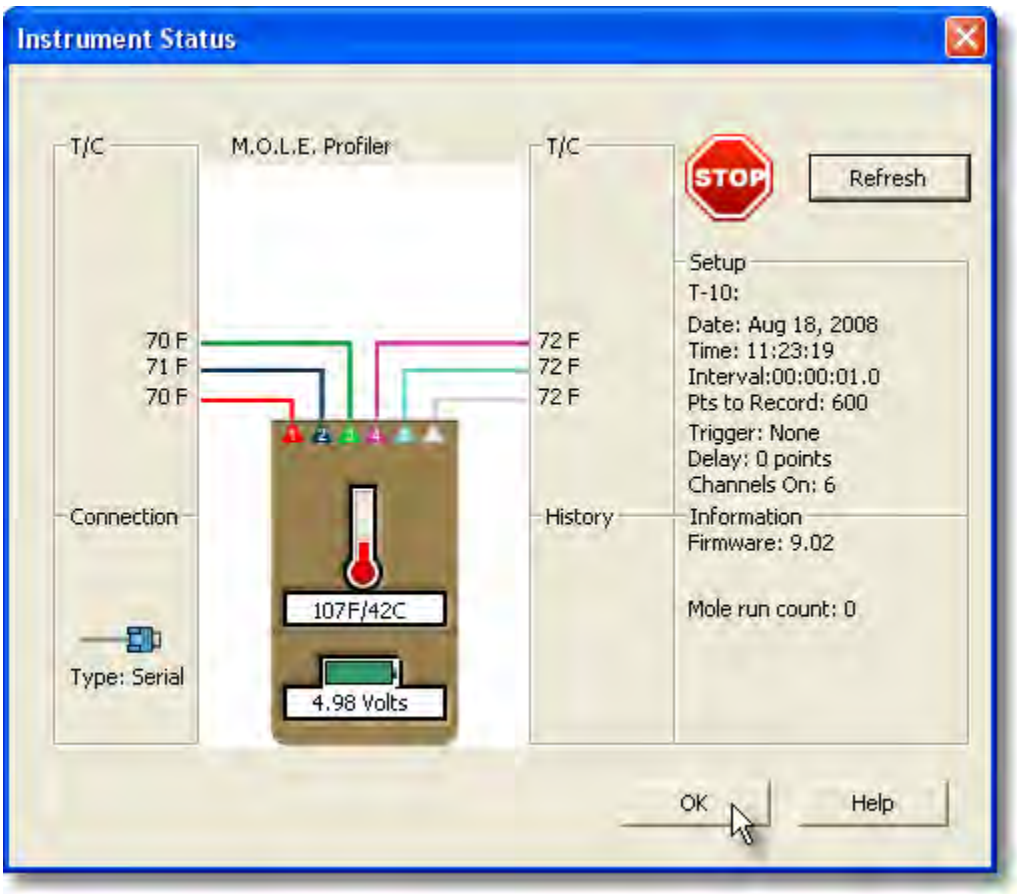
To display the instrument status:

1) On the ***M.O.L.E.*** menu, click ***Instrument Status*** and the dialog box appears.

If an instrument is not currently connected to the computer, the default Demonstration MEGAM.O.L.E.® profiler will be displayed.



If everything is ***OK***, the dialog box displays a **GREEN** sign. If there are any items that may prevent the user from collecting good data, they are highlighted and a **RED** sign is displayed.



2) Click the ***OK*** command button to close the dialog box.

5.5.5.3. Read Instrument

The ***Download Data*** workflow is a wizard that downloads a recorded thermal profile (data run) from the M.O.L.E. Profiler or starts logging wireless real-time data. Once the data run is downloaded, the user can then choose to apply Machine (Oven), Assembly (Board) and Process (Paste) information.

This is available in both Engineer & Verify Modes.

5.5.5.3.1. USB Communication

The Download Data workflow:

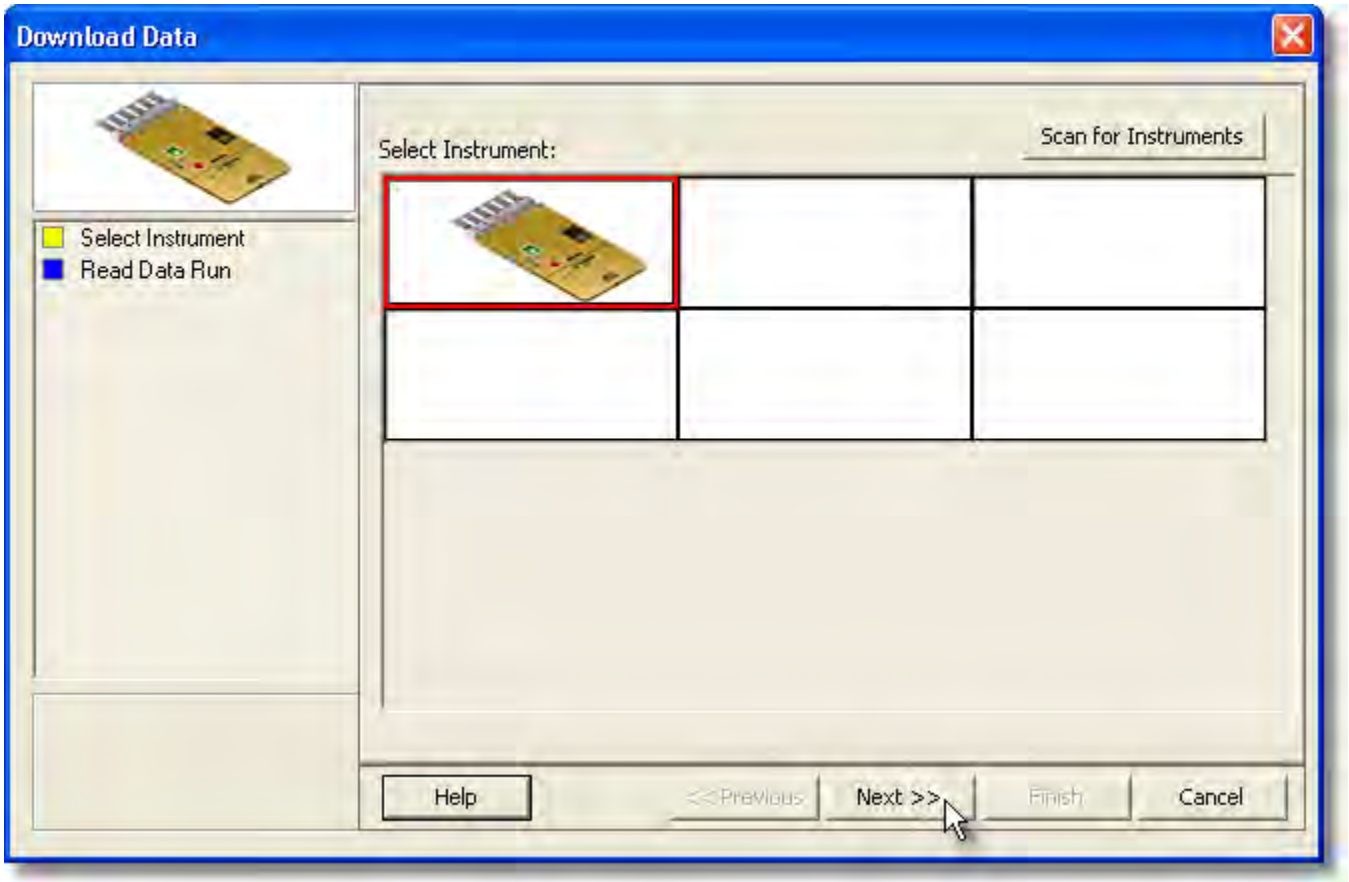
1) Connect the M.O.L.E. Profiler to the computer. Refer to ***Basics>Setup>Communications Setup*** for more information.
2) On the ***M.O.L.E.*** menu, click ***Read Instrument***.

When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.

Current Completed Remaining

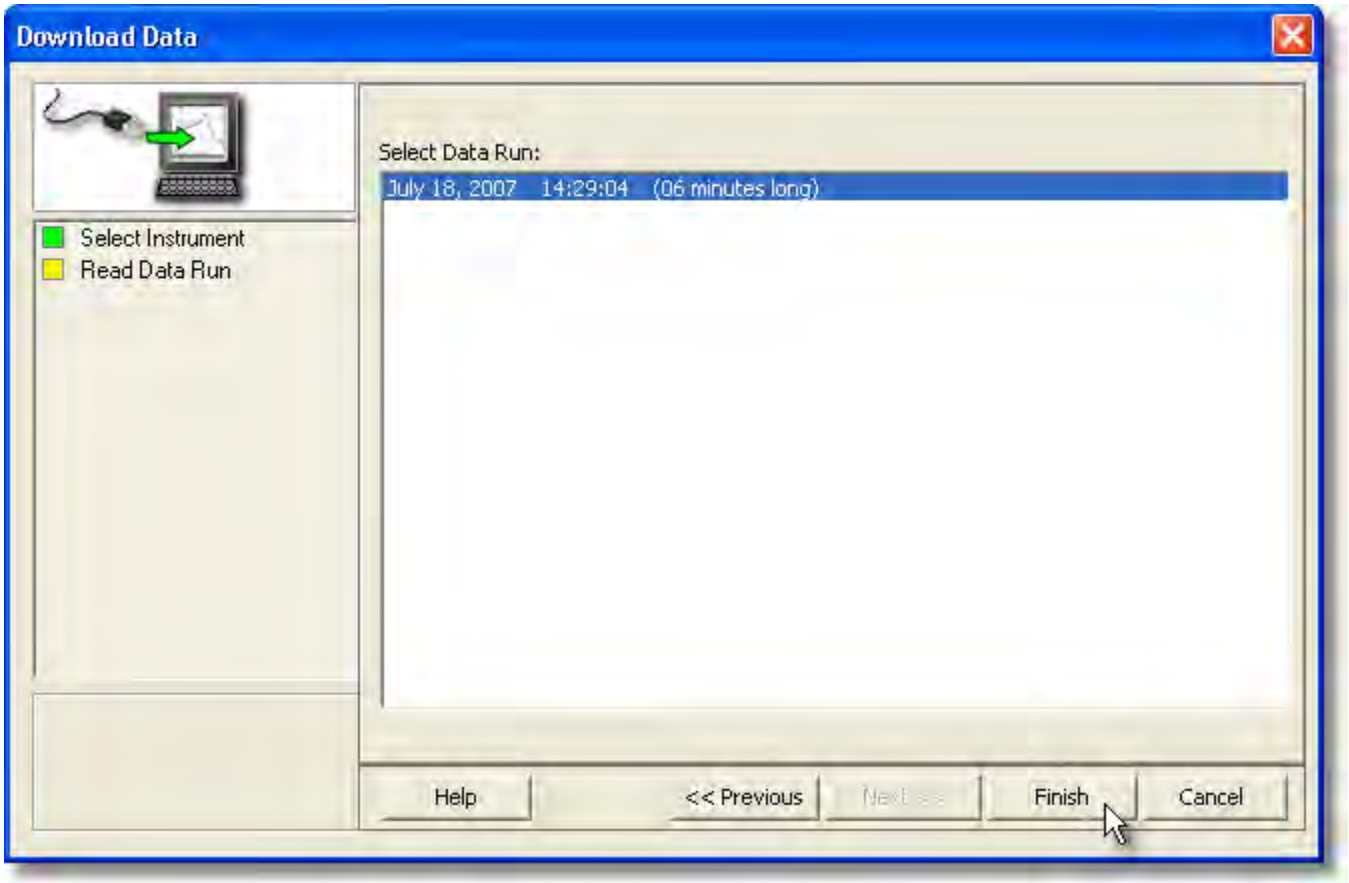
3) Select the desired instrument from the dialog box to make active. If there are none displayed, click the ***Scan for Instruments*** command button to detect all available instruments.

If the software does not detect a M.O.L.E. Profiler, using the communication cable connect it to the computer and click the ***Scan for Instruments*** command button to search again. M.O.L.E.® MAP software allows multiple instruments to be connected to a computer at one time. Selecting the ***Scan for Instruments*** command button will detect all instruments and display them in the dialog box. If no instrument is detected the software displays all of the Demonstration thermal profilers to select from.

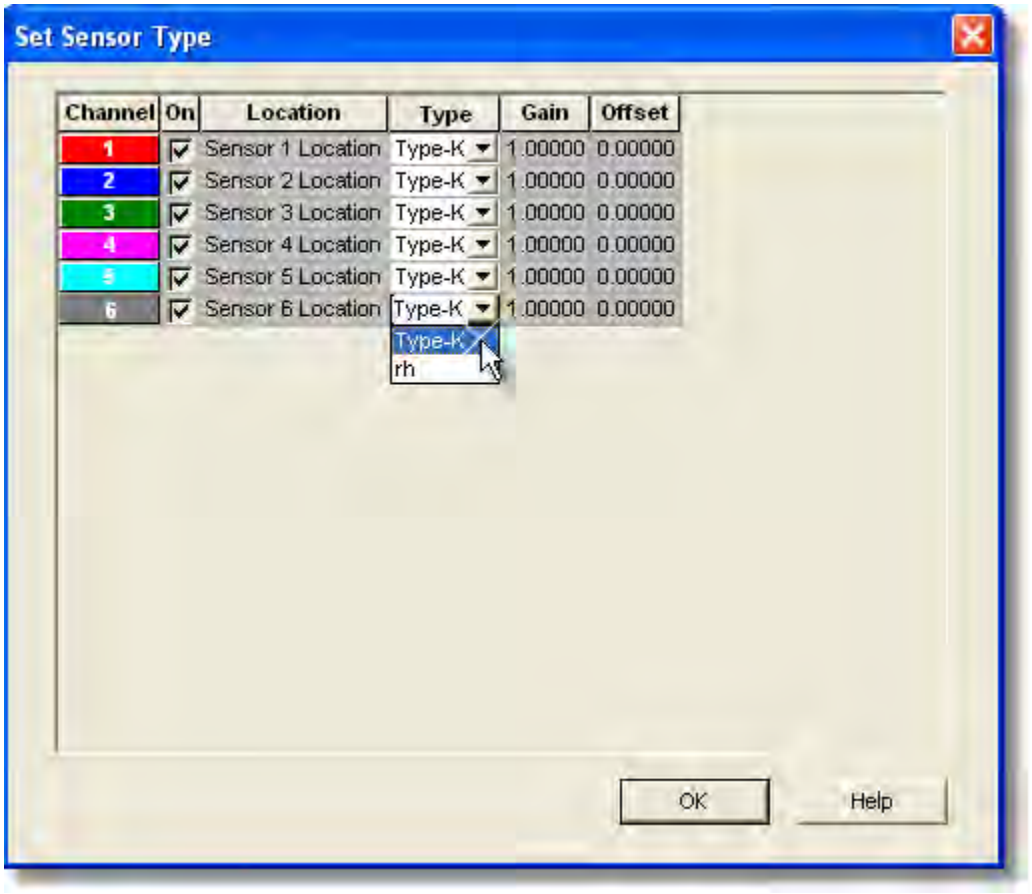


4) Click the ***Next*** command button.
5) Select the desired data run and then click the ***Finish*** command button to complete the wizard and read the data run from the M.O.L.E. Profiler.

If the user has selected to use a Wireless RF option, select ***Start real-time RF*** on the top of the data run list and then the ***Finish*** command button to display the RF Control dialog.



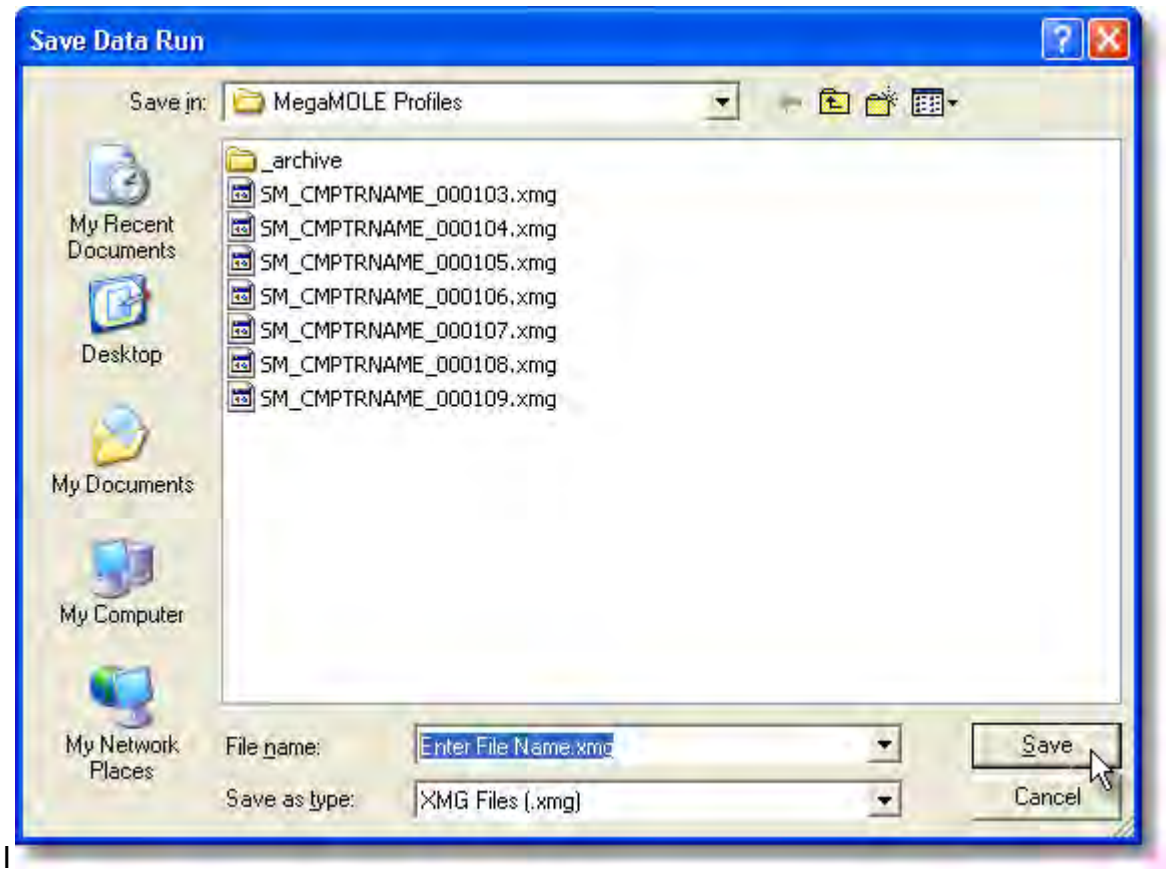
- Prior to reading the data run, the software prompts the user to select the sensor type for the active channels. When finished select the ***OK*** command button to proceed.



This step of the wizard allows the user to remove a selected data run from the M.O.L.E. Profiler by either selecting the ***Delete After Reading*** check box or selecting the ***Delete*** command button and removing it before downloading. This feature is not available for the SuperM.O.L.E.® Gold Thermal Profiler as it does not have the ability to store more than one data run.

6) When the data run has been downloaded, the software prompts the user to specify a file name (*.XMG).

When saving a data run (***.XMG**) to a different file directory other than the current Working directory, the software automatically sets the new file directory as the current Working Directory. This process does not delete any data run files in the previously set Working directory and can be quickly accessed using the ***Recent Working Directory*** command on the ***File*** menu.



7) When finished, click the ***Save*** command button to complete the process.

5.5.5.3.2. Wireless RF Communication

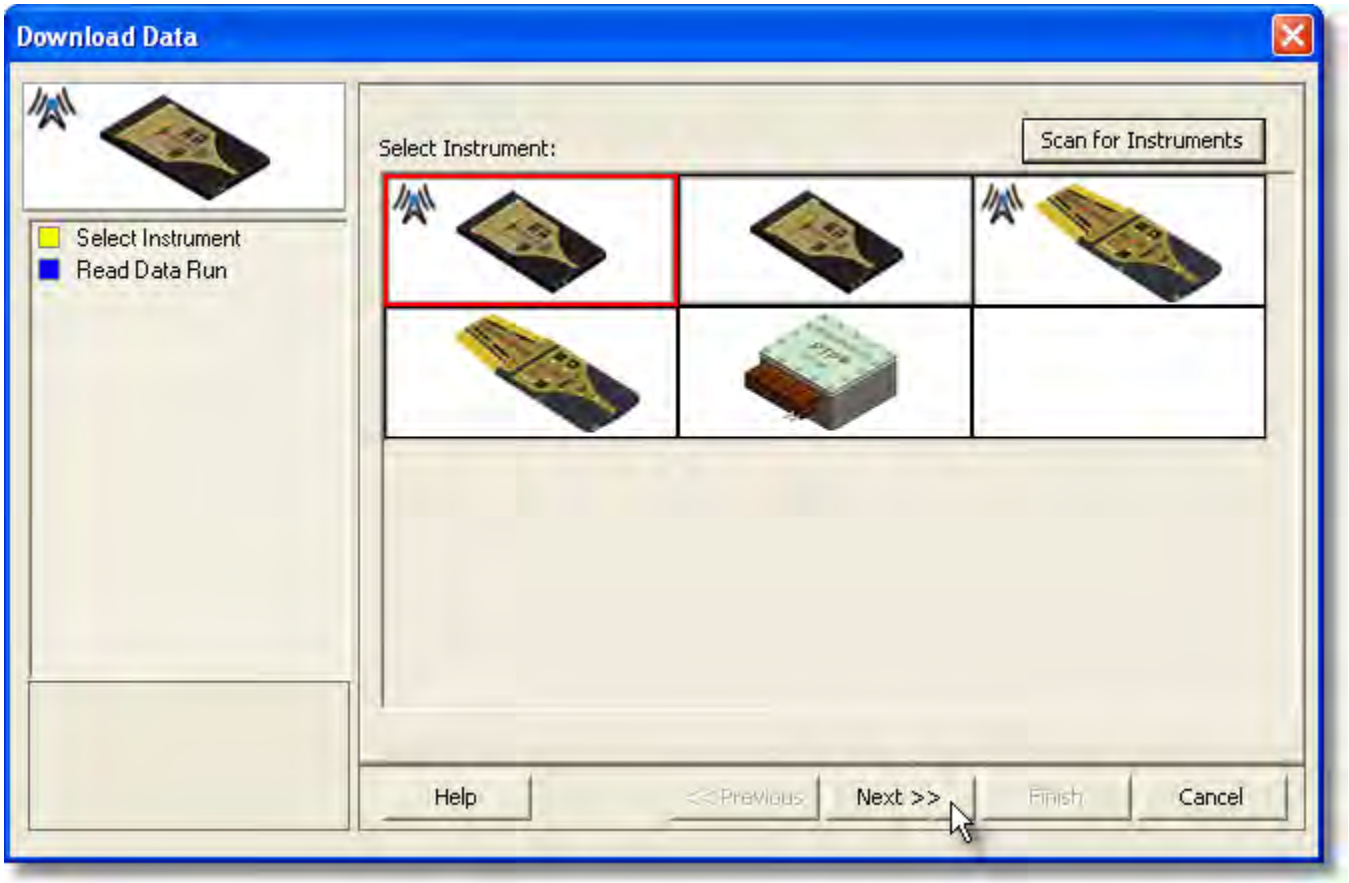
The Download Data workflow:

1) Connect the M.O.L.E. Profiler to the computer. Refer to ***Basics>Setup>Communications Setup*** for more information.
2) On the ***M.O.L.E.*** menu, click ***Read Instrument***.

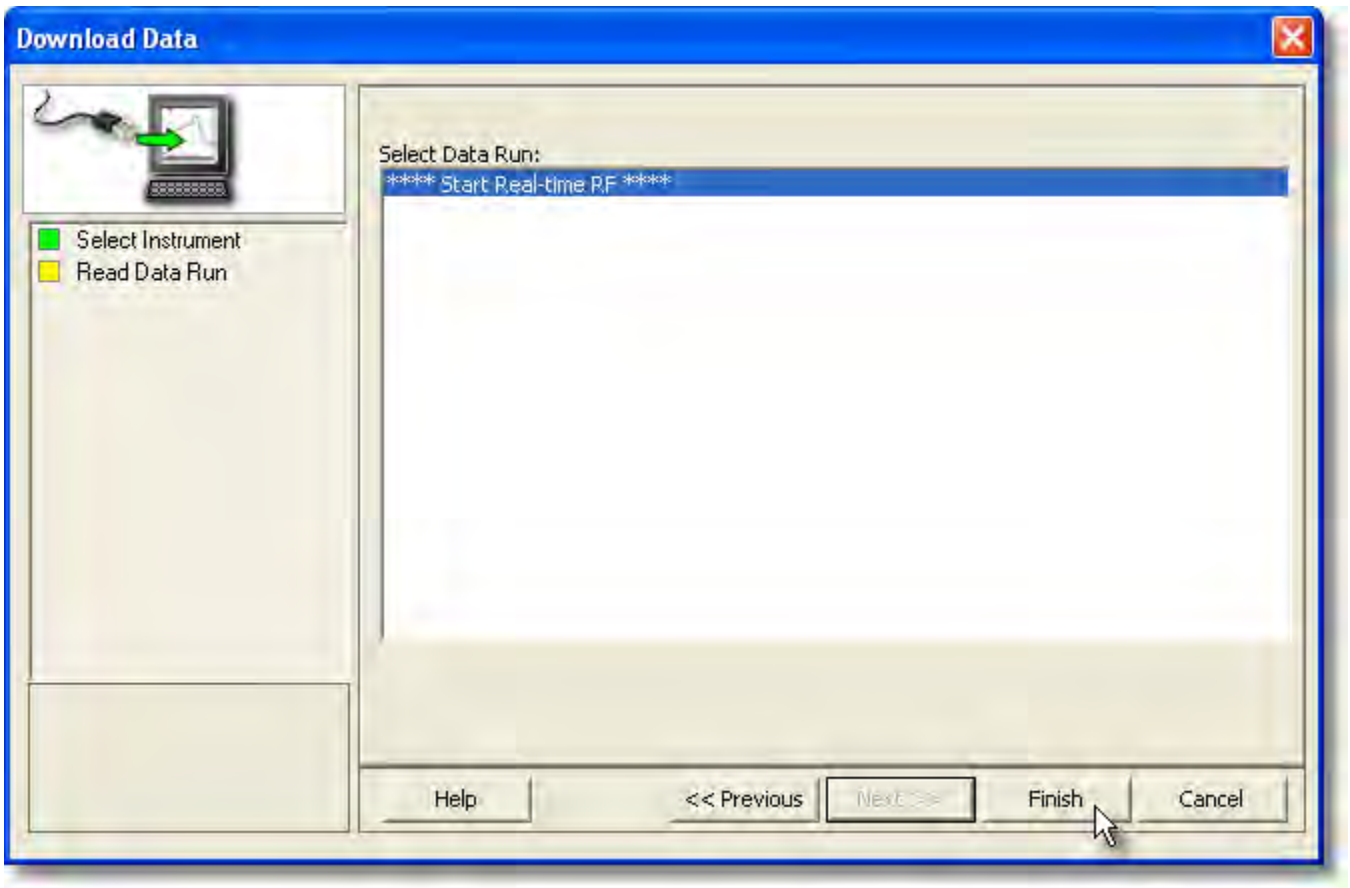
> When navigating through the wizard, the step list on the left uses a color key to inform the user of the current step, steps that have been completed and remaining steps.
>
> Current Completed Remaining

3) Select the desired instrument from the dialog box to make active. If a M.O.L.E. Profiler has already been selected during a different process, the software automatically selects the M.O.L.E. Profiler connected to the COM Port previously used.

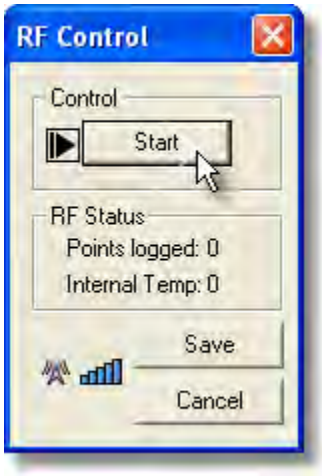
If the software does not detect a M.O.L.E. Profiler, make sure it is ON and/or connected to the computer and click the ***Scan for Instruments*** command button to search. M.O.L.E.® MAP software allows multiple instruments to be connected to a computer at one time. Selecting the ***Scan for Instruments*** command button will detect all instruments and display them in the list. If no instrument is detected, the software displays a warning message.



4) Click the ***Next*** command button.
5) Select ***Start Real-time RF*** on data run list then select the ***Finish*** command button to complete the wizard and display the ***RF Control*** dialog box.



6) Once the RF Control dialog is displayed, it includes the following command buttons and information:



Start/Stop:

- Starts logging real-time data and is displayed on the Data Graph.
- Once the ***Start*** command button is selected it automatically changes to a ***Stop*** command button which Stops the M.O.L.E. Profiler logging real-time data.

RF Status:

- Points logged: Indicates number of data points received.