MCS GRAPHICS BUILDER

MICRO CONTROL SYSTEMS
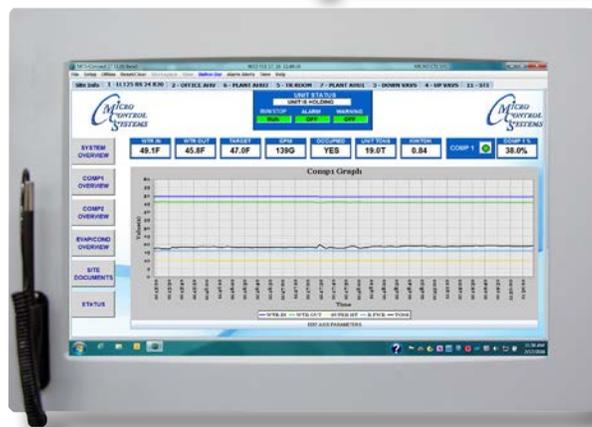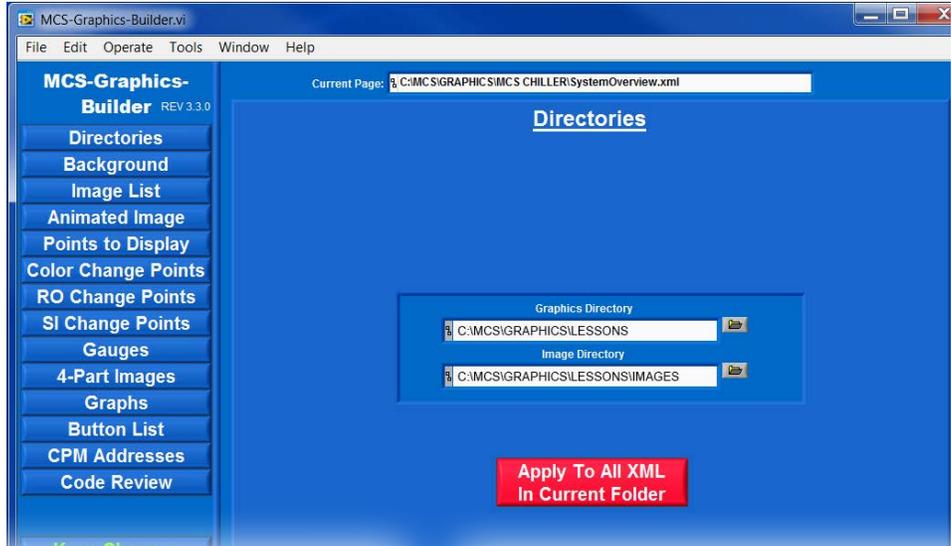
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MCS Total Solution for all your Control Needs

RoHS Compliant

Energy Efficient and RoHS Compliant

Revision / Disclaimer

Revisions

Date	Author	Description of Changes
01-8/18-2016	DEW	Setup Manual
02-04-2016	DEW	Update to 3.10 screen shots, add Graph section
02-16-18-2016	DEW	Update to 3.1.2 screen shots
03-01-2016	DEW	Update to 3.1.5 screen shots
05-02-16	DEW	Update to 3.2.0 screen shots
01-19-17	DEW	Update to 3.3.0 screen shots
03-21-17	DEW	Update Set Point Key list
07-09-2019	DEW	Update to version 3.4.2 Graphics Builder

The MCS Commitment is to provide practical solutions for the industries
needs and to be both a leader and partner in the effective use of
microprocessor controls.

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Chapter - 1.   GRAPHICS AND MCS-CONNECT

1.1.   GRAPHICS USING MCS GRAPHIC BUILDER

This Manual describes the MCS GRAPHICS BUILDER and its interaction with the MCS-CONNECT system. It allows the user to create custom graphic images and view them dynamically via MCS-CONNECT.

The MCS Graphics starts with a basic template to which you can add your company's logo, add additional points to monitor and customize placement of buttons, etc.

OEM's can use the template supplied as a starting point to build basic information for their chiller or rooftop units.

You will learn how to replace images, change input and output displays, to move buttons and images and to display exactly the information you want and where you want it.

Desktop Computer running
MCS-CONNECT with Graphics

PC Laptop running
MCS-GRAPHICS-BUILDER

1.2.   MCS GRAPHICS BUILDER PC Requirements

To install and run the program we suggest the following minimum system requirements:

- PC with a Pentium2-class or higher processor
- It is highly recommended a Desktop monitor be used with the 'Extended Display' option.
- Windows 7 or later operating system
- Photoshop, or program for sizing images
- Minimum 1GB of RAM
- Minimum 4GB Drive
- 1280 x 800 pixel or higher display
- Ethernet 10/100/1000
- USB port 2.0 or higher

MCS-MAGNUM NEMA4-15.4
CONTROL CABINET with Graphics display

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Chapter - 2.   ABOUT GRAPHICAL INTERFACE

The Graphical interface is a combination of computer programs, Javascript, HTML, CSS, and XML which builds the screens showing your compressors in real time graphics.

Graphical user interfaces are build to show the important status information for your unit.

Multiple screens can be built to help you see and monitor the operation of the chiller, rooftop unit, its compressors, sensors, and relays.

It provides you with an easy-to-grasp overview of its systems *'in real time'*.

POINTS ARE DISPLAYED SHOWING CURRENT VALUES AND STATUS OF THE UNIT
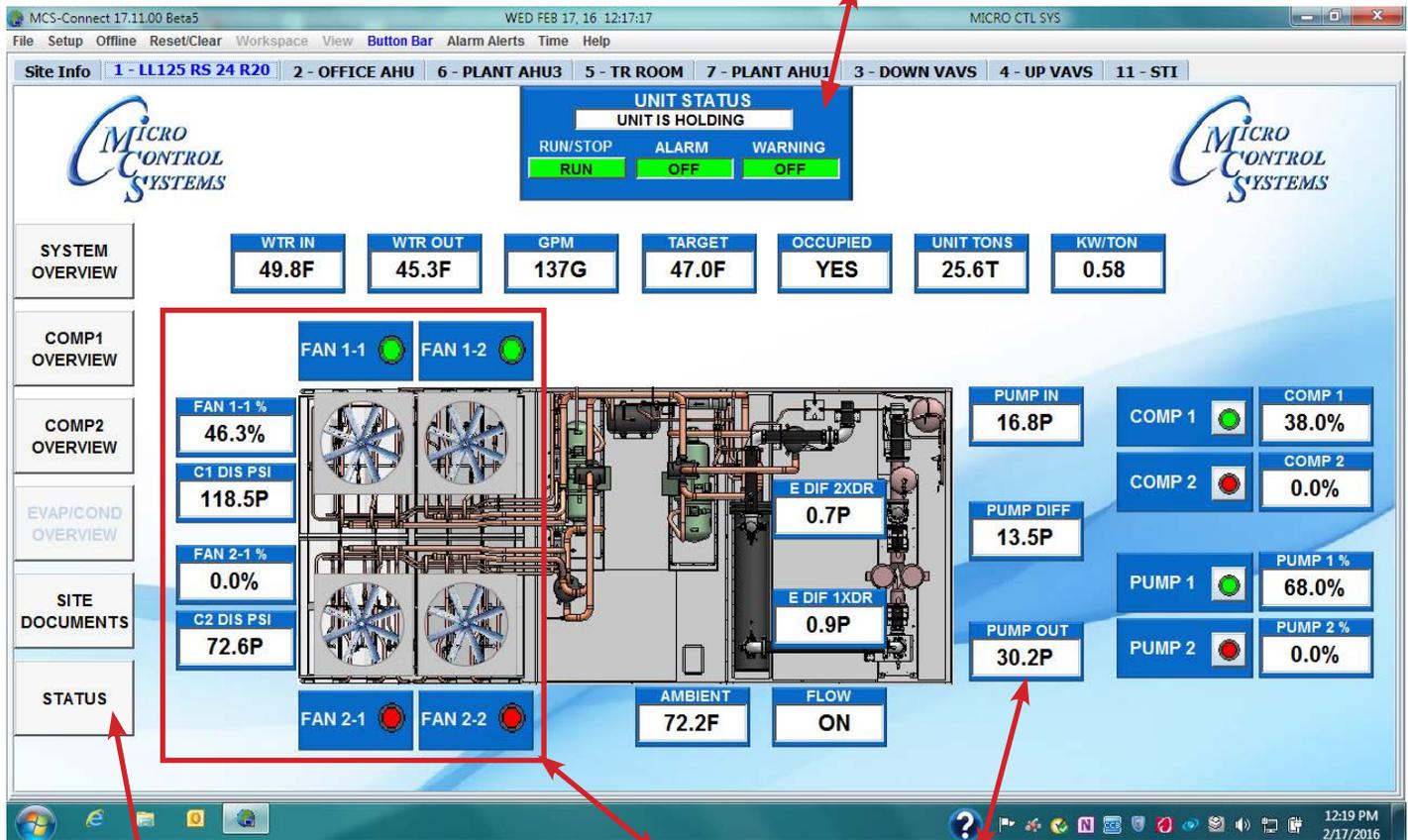
USERS ARE ABLE TO CLICK ON BUTTONS TO SEE DIFFERENT OVERVIEWS AS WELL AS THE STATE OF THE UNIT

WITH THE GRAPHIC BUILDER POINT VALUES CAN BE PLACED CLOSE TO THE GRAPHICS SO YOU CAN BETTER UNDERSTAND WHAT YOU ARE VIEWING

In addition to loading the Graphics onto your MCS High Resolution Touch you can view the Graphics using your desktop remotely. Remote monitoring via MCS-Connect and the 'Graphical user interface' will increase the value of your installations. It enables the user to view the system without the need to be at the site if you are connected remotely.

It also aids the user to troubleshoot failures and have the appropriate equipment on hand before going to the unit's site.

MCS-Connect and the 'Graphic Interface' provides a dynamic, easy to understand man machine interface, but more importantly you have better control of your chillers and rooftop units and can monitor all parameters in real time through MCS-CONNECT.

Each 'Graphic Package' screen can be different depending on how you want to display information in real time mode.

Changes to setpoints, relays, etc. can be made at the MCS-Connect status screen if you have the proper authorization.

SYSTEM OVERVIEW
THIS WINDOW SHOWS STATUS OF THE COMPRESSORS

UNIT IS UNLOADED

STATUS OF STEPS WTD, STEPS ON, AMBIENT TEMP, ETC.

Chapter - 3.   MCS GRAPHIC BUILDER

3.1.   Main Screens

Opening Screens- Background and Image List controls.
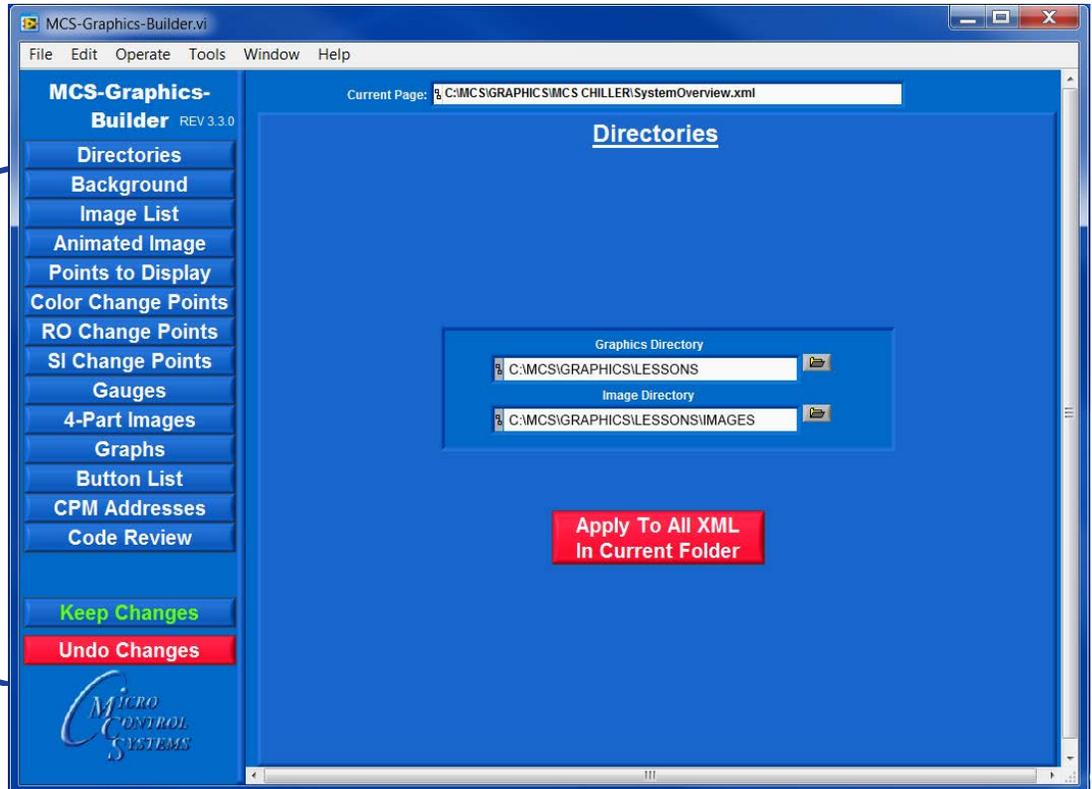
Graphics Builder Menu Panel

XML FILE NOW OPEN

Select Point Object location

Image Name Assigned

Location of Image and Name
NOTE: all images must be stored in root directory C:/MCS/Graphics/MCS CHILLER

Sizing/Position Tools
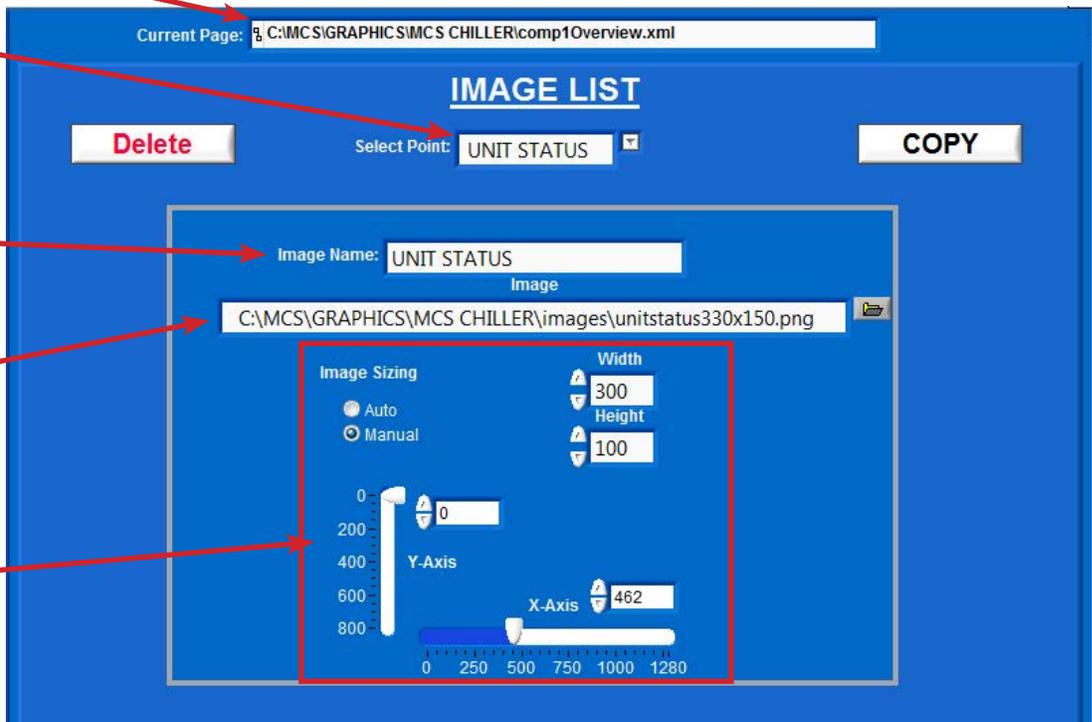
Chapter - 4.   DESCRIPTION OF IMAGES, BUTTONS, POINTS

POINTS DISPLAYED
(Reading and Status of Unit)

BUTTONS

IMAGES
(CHILLER AND LOGOS

IMAGE CHANGE
POINTS

ANIMATED
GRAPHICS
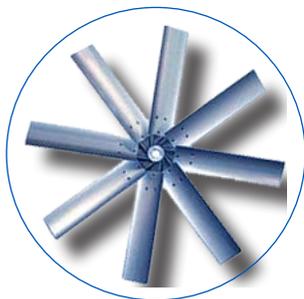
Fan Blades Turning
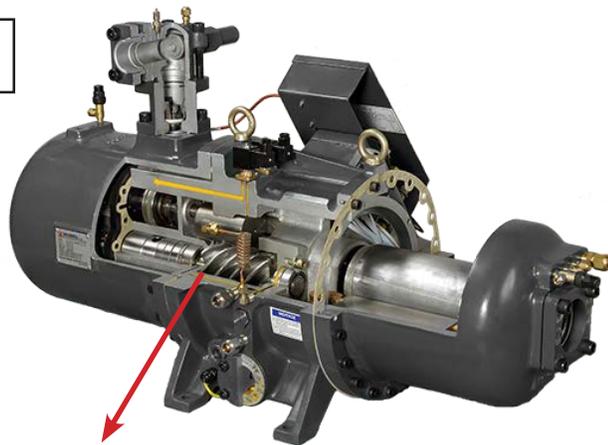
Gears Turning

Chapter - 5.   SIZING FOR IMAGES

5.1.   Image sizing is important

You should have available a software program that can size your images, logos prior to importing into the MCS GRAPHICS BUILDER.

Photoshop is an excellent program or use Windows Photo Gallery which is free from Microsoft.

Images can be re-sized once placed in the GRAPHICS BUILDER if they are not the correct size you want, but it helps to get them close to the right size.

Image of Chiller used in Template
Original size: 1941 x 849 pixels
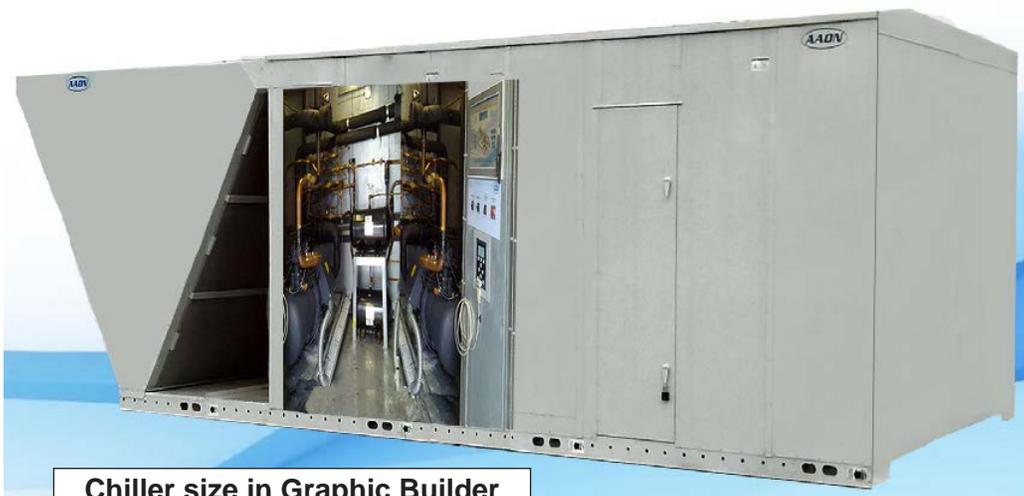
Chiller size in Graphic Builder
Size: 950 x 475 pixels

Chapter - 6.   IMAGES, POINTS, BUTTONS and Gauges

6.1.   UNDERSTANDING EDITABLE/NON EDITABLE IMAGES

Images placed in your graphics are broken into different categories as shown below.

Some images are **'EDITABLE'** while other images cannot be changes in size.

RO (Relay Outputs) and SI (Sensor Inputs) are 'NON EDITABLE' images.

The reason is that MCS-CONNECT controls the placement of the sizes for RO (Relay Outputs) and SI (Sensor Inputs) points based on the points we are displaying.

WHILE IT'S POSSIBLE TO USE YOUR OWN IMAGES IN YOUR GRAPHICS, NON-EDITABLE IMAGES MUST BE SIZED AS PER THE SAMPLES IN OUR TEMPLATE.

Stored in the template image folder supplied with MCS-GRAPHIC-BUILDER you will find the sample images.

6.2.   EDITABLE IMAGES USED (sizes can be changed)

6.3.   NON-EDITABLE IMAGES USED

YOU CANNOT RE-SIZE THE IMAGES SHOWN BELOW.

Green On   Green On Manual   Red Off   Red Off Manual   Red Lockout
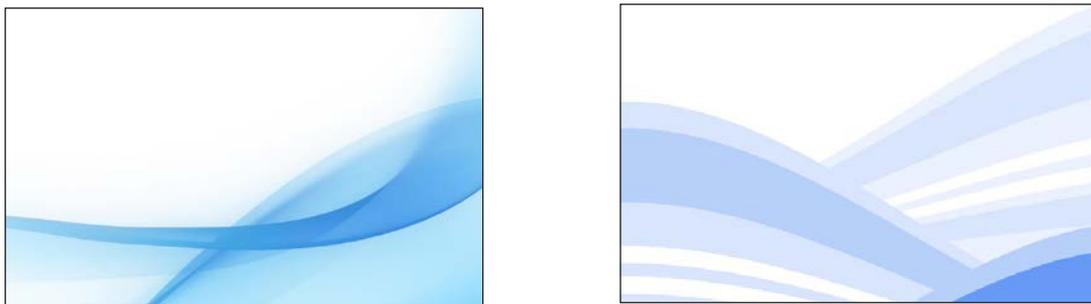
6.4. GAUGES

Gauges are used in our graphic package as devices for measuring a physical quantity, pressure of flow, or displays the measurement of a sensor that is being monitored using a needle or pointer that moves along a calibrated scale.

There are two types of gauges that will be available soon in the Graphic Package:

Radial gauges (available revision 3.10)
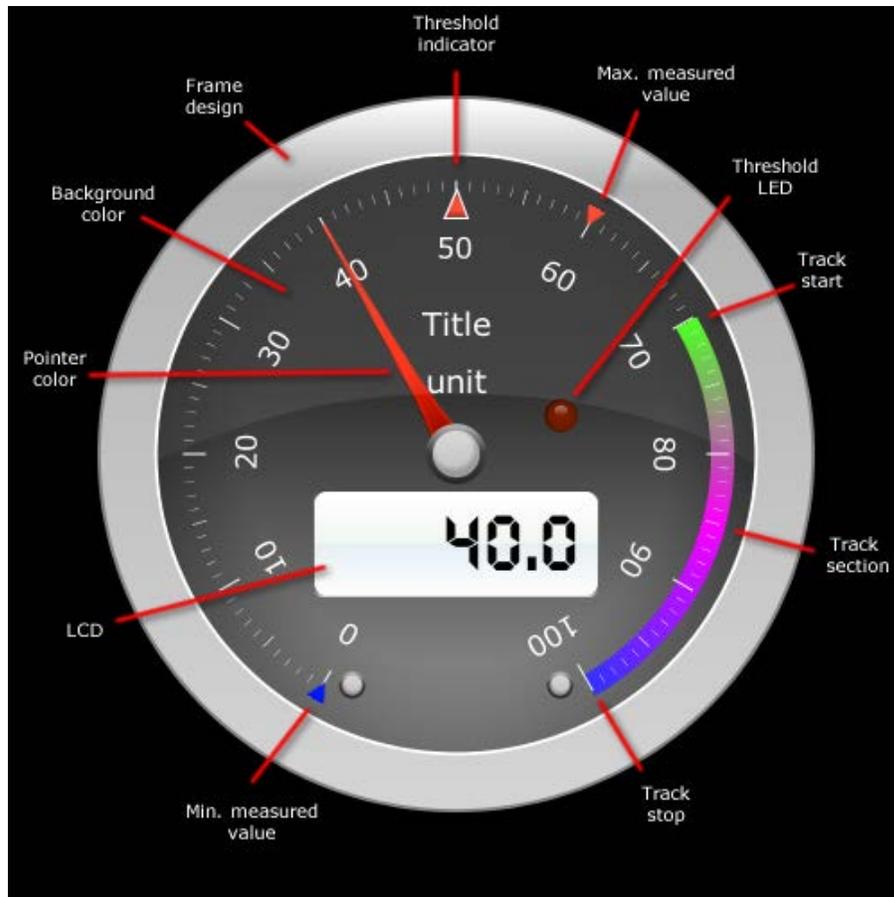
Linear gauges (available version 3.4.2
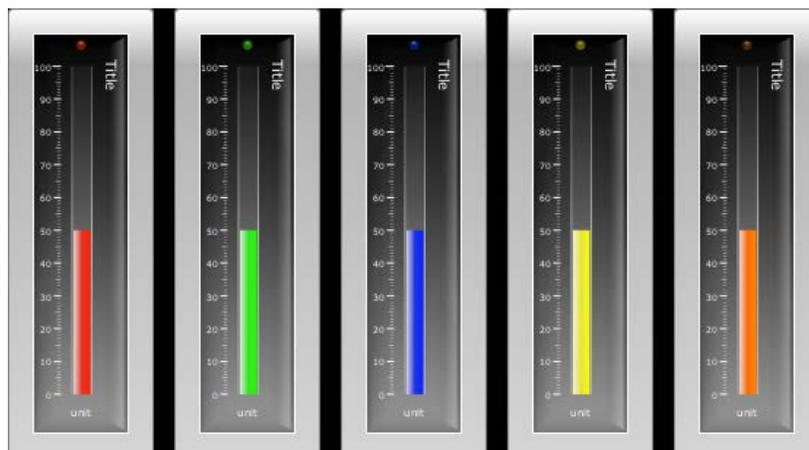
Chapter - 7.   INSTALLING THE MCS GRAPHIC BUILDER

7.1.   Files Associated with MCS GRAPHICS-BUILDER

The Graphics Builder is a software program designed to be installed on a PC running Windows 7 or later operating system.

Software will consist of the following files after installation:

1. MCS-XML-BUILDER-Version 3.xxx.exe   Application program
2. MCS-XML-BUILDER-Version 3.xxx.ini   Configuration setting
3. MCS-XML-BUILDER-Version 3.xxx alias   Desktop Aliases File
4. MCS Folder (Main folder on C:/ drive
   a. Sub Folder (MCS CHILLER for demo)
      1. Graphics (sub folder)
      2. Images (sub folder)
      3. Names of XML files that have been build (SystemOverview.xml)

7.2.   Starting MCS GRAPHICS-BUILDER

1. Download Software from http://www.mcscontrols.com/Documents/MCS/Graphics and save to your hard drive.
2. OPEN FOLDER **'INSTALLER/VOLUME/SETUP.EXE**
3. CLICK ON **'SETUP.EXE'** TO LOAD SOFTWARE ONTO YOUR COMPUTER'S HARD DRIVE.
4. ACCEPT THE DEFAULT DIRECTORY FOR INSTALLATION AS SHOWN ON SCREEN BELOW.
5. AFTER SOFTWARE IS INSTALLED, CONFIRM THAT FILES WERE INSTALLED CORRECT.
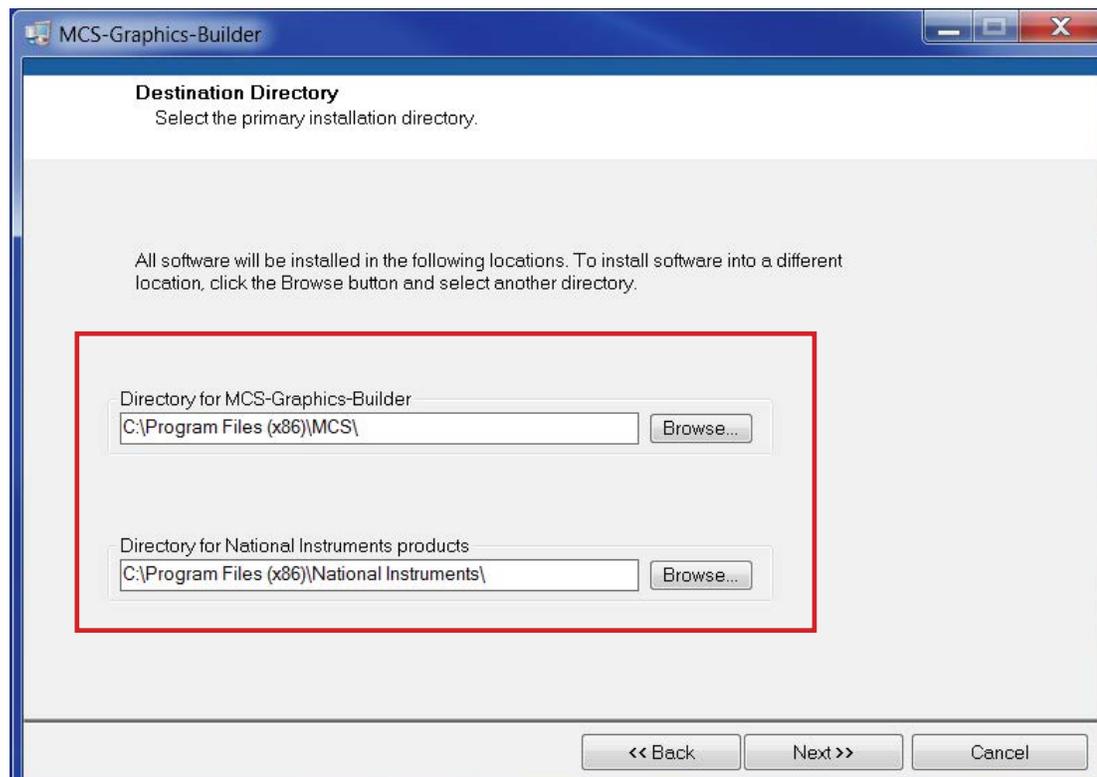
7.3. STARTING MCS-GRAPHIC-BUILDER

1. CLICK ON WINDOWS ICON ON DESKTOP AND GO TO ALL PROGRAMS.
2. CLICK ON **MCS-GRAPHICS-BUILDER** TO OPEN.
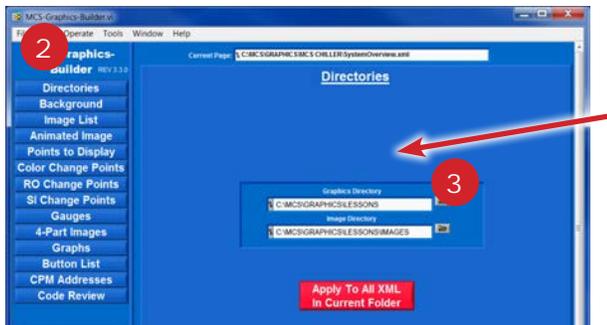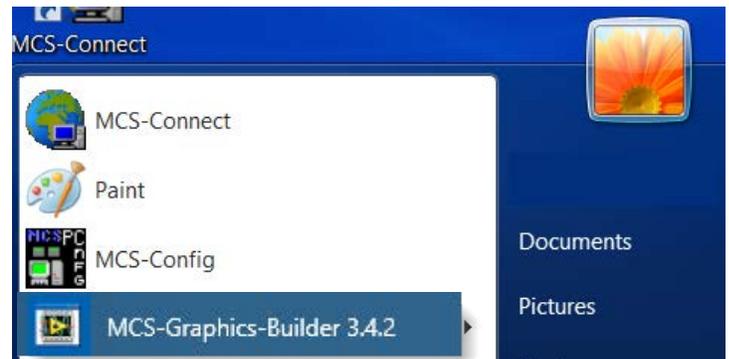
2. Once the MCS-GRAPHICS BUILDER is open you will see the first screen (2).

3. Click OPEN EXISTING GRAPHICS FILE

4. CLICK ON '**FILE FOLDER ON RIGHT'** TO LOAD AN EXISTING GRAPHIC FILE.

5. Click 'GO'.

6. Navigate to: **C:\MCS\GRAPHICS\lessons** and select **systemoverview.xml**

Name	Date modified	Type	Size
images	1/5/2016 2:25 PM	File folder	
compoverview1.xml	9/25/2015 3:20 PM	XML File	31 KB
compoverview2.xml	9/25/2015 3:18 PM	XML File	31 KB
evapoverview.xml	9/25/2015 4:24 PM	XML File	24 KB
systemoverview.xml	9/25/2015 4:24 PM	XML File	22 KB

CONTINUE TO NEXT PAGE TO CONTINUE TO LOAD GRAPHIC FILES

7. If Graphics were created before April 2016, you will see the following popup
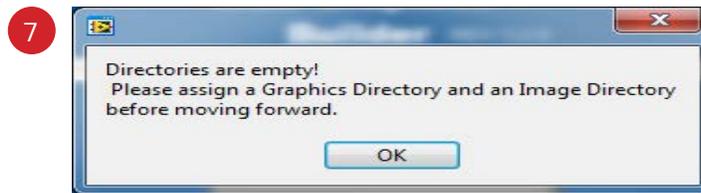
8. The Graphics Directory and Image directory must be set to continue

9. Now at the main screen of the builder, we can set our directories.
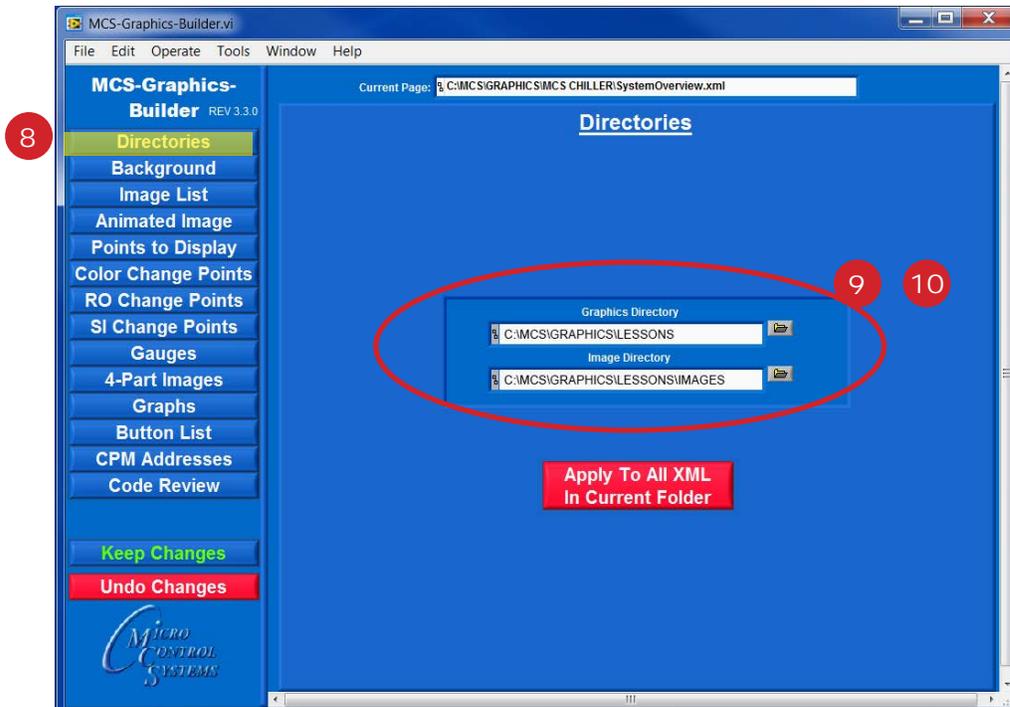
✔ **Graphics Directory: The directory that contains the XML files and images**

✔ **Image Directory: The directory located in the graphics directory that contains images and animations.**

10. Navigate to: **C:\MCS\GRAPHICS\lessons** and select:
    a. LESSONS (Graphics Directory)
    b. IMAGES (in the Lessons directory, choose Images as your image directory)

MCS-GRAPHICS-BUILDER is now ready for viewing and editing 'LESSONS\systemview.xml

CONTINUE TO SETUP AND OPEN MCS-CONNECT

7.4. STARTING MCS-CONNECT

NOW OPEN MCS-CONNECT ON YOUR COMPUTER(LAPTOP) TO BE ABLE TO VIEW THE FILE(S) YOU WILL CREATE IN MCS-GRAPHICS-BUILDER.

1. START MCS-CONNECT ON YOUR COMPUTER

2. **CLICK ON 'OFFLINE/LOAD ON OFFIINE XML FILE/ENABLE AUTO SCREEN REFRESH'**

This will enable MCS-CONNECT to refresh the screen every time you make a change in MCS GRAPHICS BUILDER.
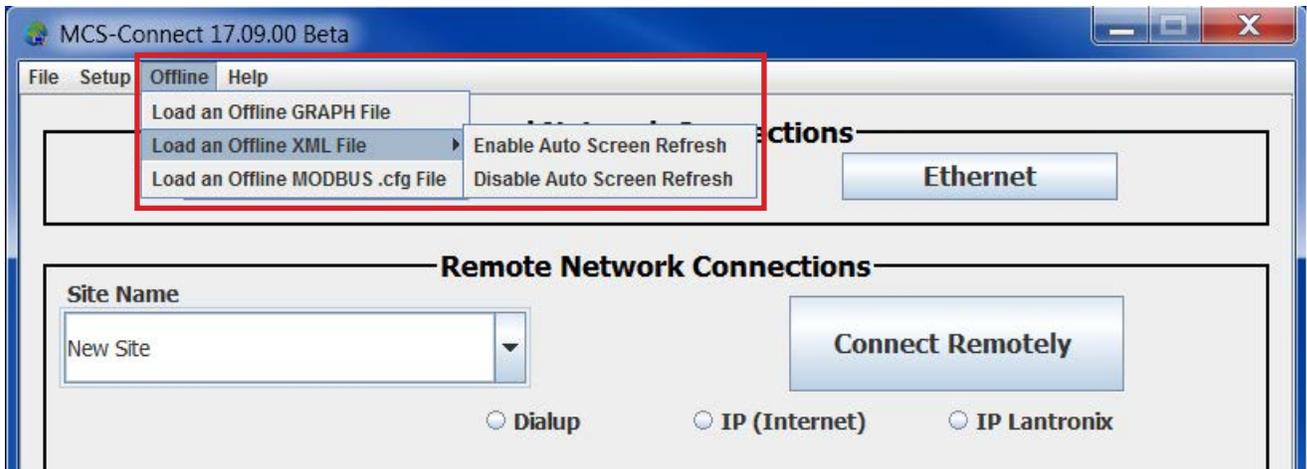
Chapter - 8.   UNDERSTANDING IMAGE SIZING

Images can be inserted using **'AUTO SIZING'** but in most cases you will want to resize the image to fit your area.

It is a good idea to bring the image that you will be using into a program like Microsoft Paint and 'RESIZE' the image to fit the area you will be placing the image into. You can use either the percentage or pixels adjustment to resize the image.
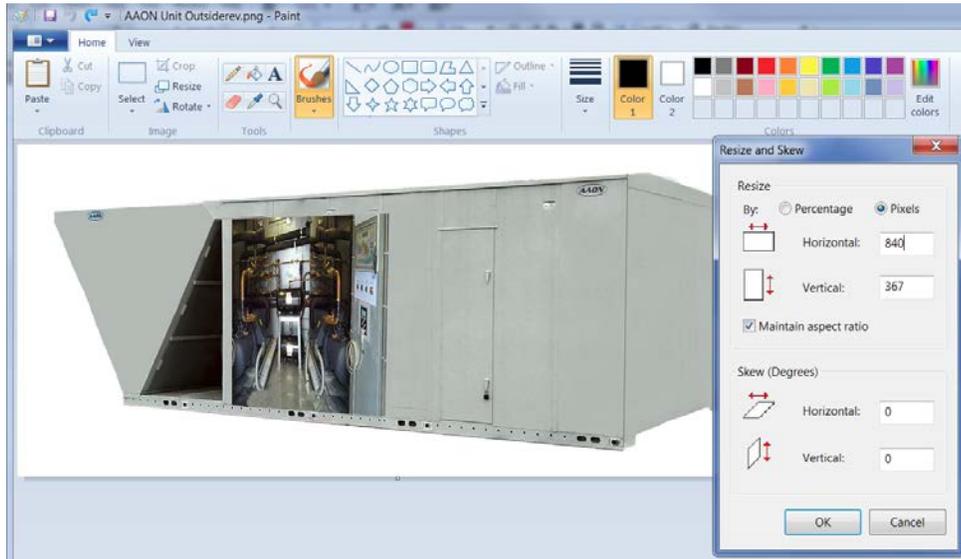
The 'CHILLER' image we used in our Graphics Builder template was 840 x 420 pixels.

Once you have the image placed close to the size you have allotted, you can use 'MANUAL' to size the image.

Click on **'MANUAL'** to size your image

Use the Width and Height controls to size your image, remember to try to keep the image in proportions to the original size.
Once you get your size close, use the up and down arrows to make small adjustments.

'X AXIS' and 'Y AXIS'–

Position of the image can be controlled by using the X and Y Axis controls.

'X' moves the image left to right

'Y' moves the image up and down

Click on the 'arrow' and drag the arrow to move the image across your page.

Use the up and down arrows to make slight adjustments.

'X' small arrow on bottom moves the image 'RIGHT'

'Y' small arrow on bottom moves the image 'UP'
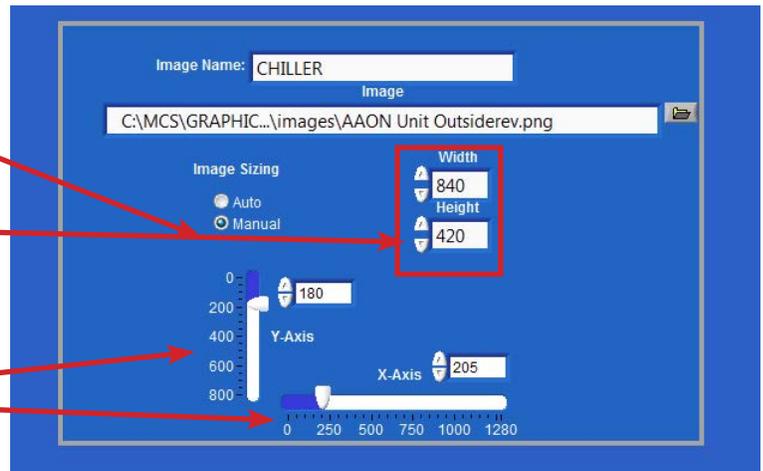
Chapter - 9.   SELECT POINT, COPY AND DELETE BUTTONS

Several tabs have buttons that say Delete, Copy, and have a Select Point dropdown.

The tabs that have it are highlighted

Directories
Background
Image List
Animated Image
Points to Display
Color Change Points
RO Change Points
SI Change Points
Gauges
4-Part Images
Graphs
Button List
CPM Addresses
Code Review

Delete   Select Point: ▼   **COPY**
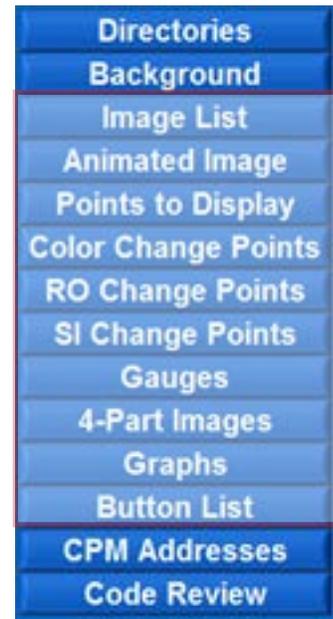
Delete button
Deletes current item

Select Point
Dropdown list that lists all current items for selected tab. Allows you to choose item to edit.

Copy button
Copies all values and creates a new item named 'New' which can then be renamed.

Chapter - 10.   DESCRIPTION OF THE MENU TABS

10.1. Menu Tabs

1. **'BACKGROUND TAB' -** allows you to change the background of the graphics.
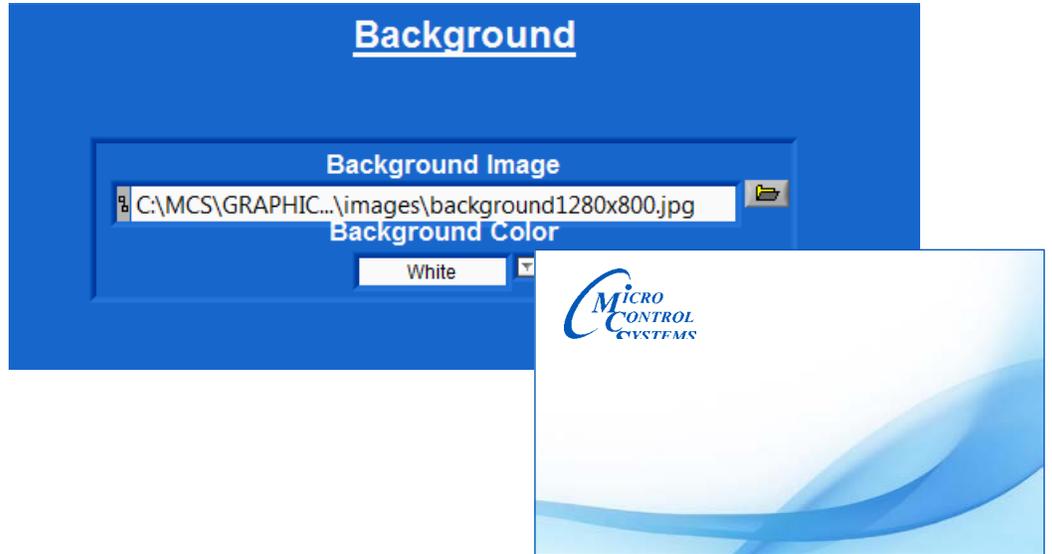
'IMAGE LIST TAB' - Creates images to display on graphics screen.

Field Name	Explanation
Image Name	Title of image being created
Image	File location of Image
Image Sizing (Auto, Manual)	Auto sets image to actual dimensions. Manual is controlled by Width and Height
Width, Height	Sets manual dimensions of image (Not used when using Auto sizing)
X-Axis, Y-Axis	Controls placement of image

Menu Tabs Continued

MCS-Graphics-Builder
Background
Image List
Animated Image
Points to Display
Color Change Points
RO Change Points
SI Change Points
Gauges
4-Part Images
Graphs
Button List
CPM Addresses
Code Review
Keep Changes
Undo Changes
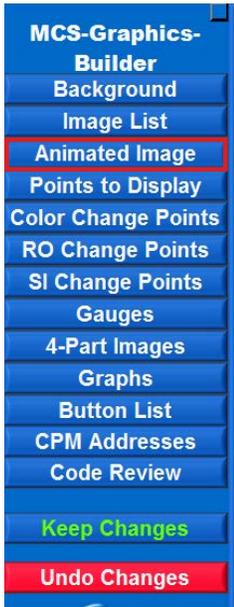
3.   **'ANIMATED IMAGE TAB'** - images used for showing 'ON AND OFF MOTION'
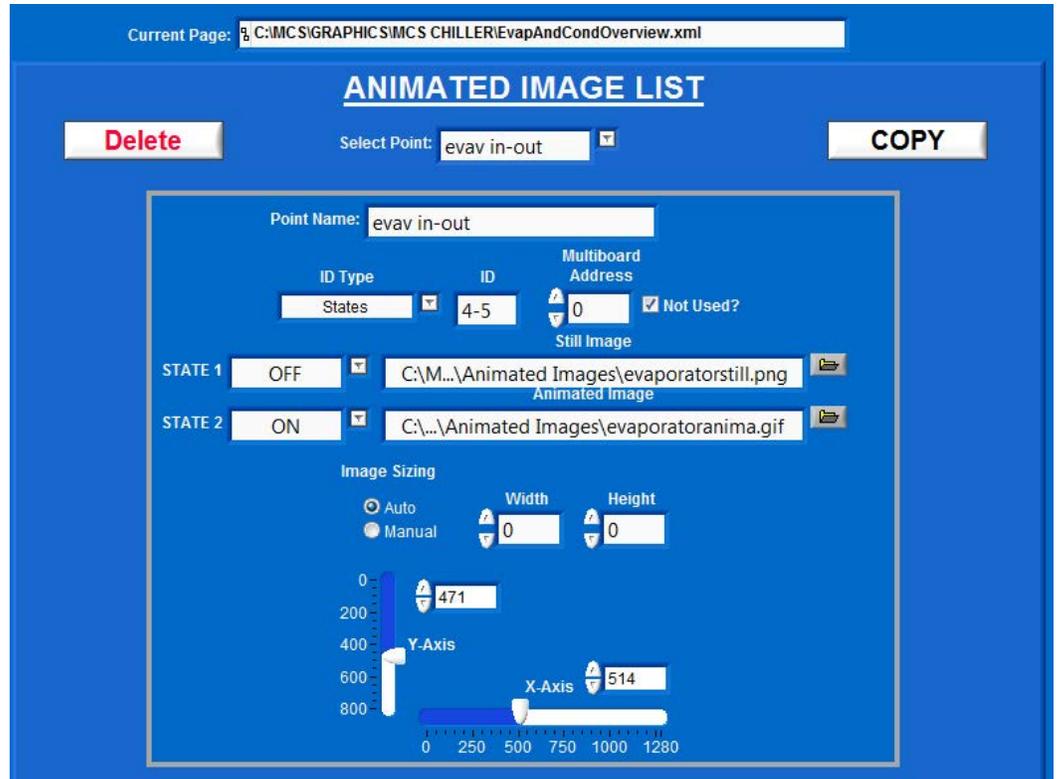
Field Name	Explanation
Point Name	Title of animated image being created
ID Type, ID	ID Type is the type of point (Relay Outputs, Analog Outputs, Sensor Inputs, etc.) ID is the number of the point to display (See Graphics ID key list)
State1, State 2 (ON, OFF, RUN, STOP, OK, TRIPPED, etc.)	State 1 is the state that the still image should be displayed, State 2 is the state that the animated image should be displayed
Still Image, Animated Image	The still image is usually used to display when in the "OFF" position, the animated image is usually used to display when in the "ON" position
Image Sizing (Auto, Manual)	Auto sets image to actual dimensions. Manual is controlled by Width and Height
Width, Height	Sets manual dimensions of image (Not used when using Auto sizing)
X-Axis, Y-Axis	Controls placement of image

For example: Screen 1 shows **'STILL IMAGE' EVAV OFF'**

Screen 2 shows **'ANIMATED IMAGE - EVAV RUNNING'**

Screen 1

Screen 2
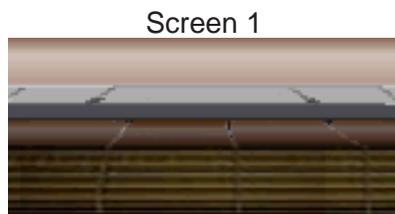
Still Image - EVAV OFF
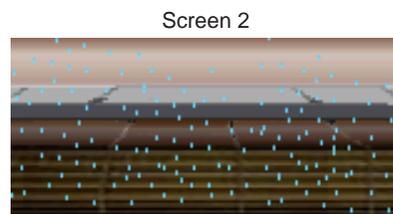
Animated Image - EVAV RUNNING

Menu Tabs Continued

4.   **'POINTS TO DISPLAY TAB'** - Creates a text box that displays current value of point selected. Optional background image for point can be set.

Field Name	Explanation
Point Name	Title of point being created
ID Type, ID	ID Type is the type of point (Relay Outputs, Analog Outputs, Sensor Inputs, etc.) ID is the number of the point to display (See Graphics ID key list)
Is Editable, Auth Level	Is Editable can be set to true or false. When set to true it allows the user to change values through the graphics screen as long as Auth level is reached
Multiboard Address, Not used?	Multiboard Address is used in graphics that read multiple controllers, address is set to Network Address of the controller. If only reading one controller, select not used.

Field Name	Explanation
Image	File location of Image
Image Sizing (Auto, Manual)	Auto sets image to actual dimensions. Manual is controlled by Width and Height
Width, Height	Sets manual dimensions of image (Not used when using Auto sizing)
X-Offset, Y-Offset	Controls placement of background image in reference to the text box

Points to Display (continued)

Field Name	Explanation
Auto, On, Off Labels	Indicates what to display for each state for Digital Sensors
X-Offset, Y-Offset	Controls placement of header in reference to the text box
Width, Height	Sets dimensions of header text
Font Size	Font size for the header text
Header Color	Color chooser to select header text color

Field Name	Explanation
Font Size	Font size for text inside text box
Width, Height	Sets dimensions of the text box
X-Axis, Y-Axis	Controls placement of entire point (header, background image, text box)
Header Color	Color chooser to select header text color

Points to Display (continued)

For example: below we are displaying points (data) from a compressor. Points are received every few seconds from the controller and updated on your graphics.
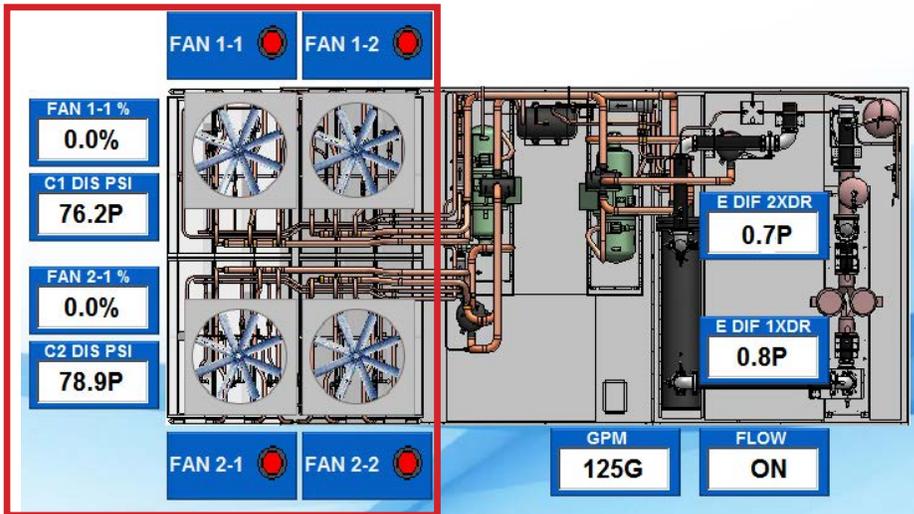
The MCS GRAPHICS BUILDER allows you to position information on the graphics where it easily identifies with the function allowing for quick identification of potential problems.

Menu Tabs Continued
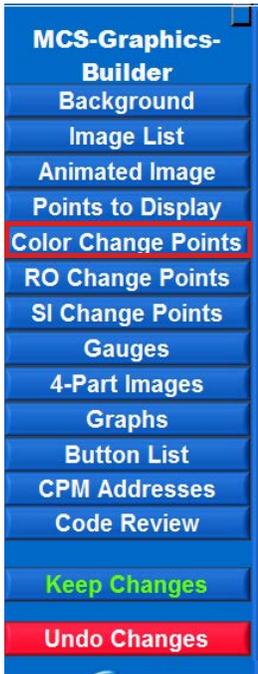
1. **'COLOR CHANGE POINTS TAB'** - in the example below Green is showing in the Run/Stop, Red in Alarm and Yellow Warning. If the unit was stopped, the color would change to a preset color in the graphic builder such as Red. These are easily changed in the MCS GRAPHICS BUILDER.

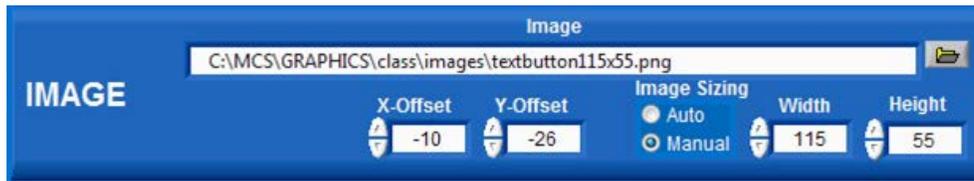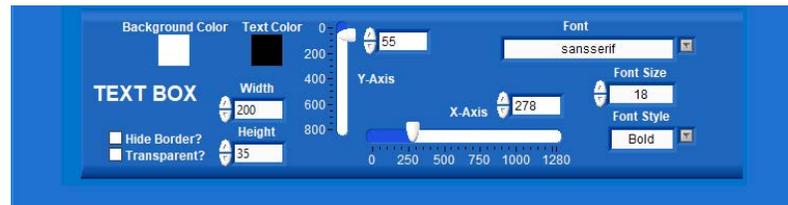| Field Name	Explanation
Point Name	Title of point being created
ID Type, ID	ID Type is the type of point (Relay Outputs, Analog Outputs, Sensor Inputs, etc.) ID is the number of the point to display (See Graphics ID keylist)
Is Editable, Auth Level	Is Editable can be set to true or false. When set to true it allows the user to change values through the graphics screen as long as Auth level is reached
Multiboard Address, Not used?	Multiboard Address is used in graphics that read multiple controllers, address is set to Network Address of the controller. If only reading one controller, select not used.

Color Change Points (continued)

Field Name	Explanation
Auto, On, Off Labels	Indicates what to display for each state for Digital Sensors
X-Offset, Y-Offset	Controls placement of header in reference to the text box
Width, Height	Sets dimensions of header text
Font, Size and style	Font size and style for the header text
Header Color	Color chooser to select header text color

Field Name	Explanation
Image	Choose background image to use
Image Sizing	Changes xy position and width and height
Auto, Manual	Auto brings exact size of stored image, manual lets you override size
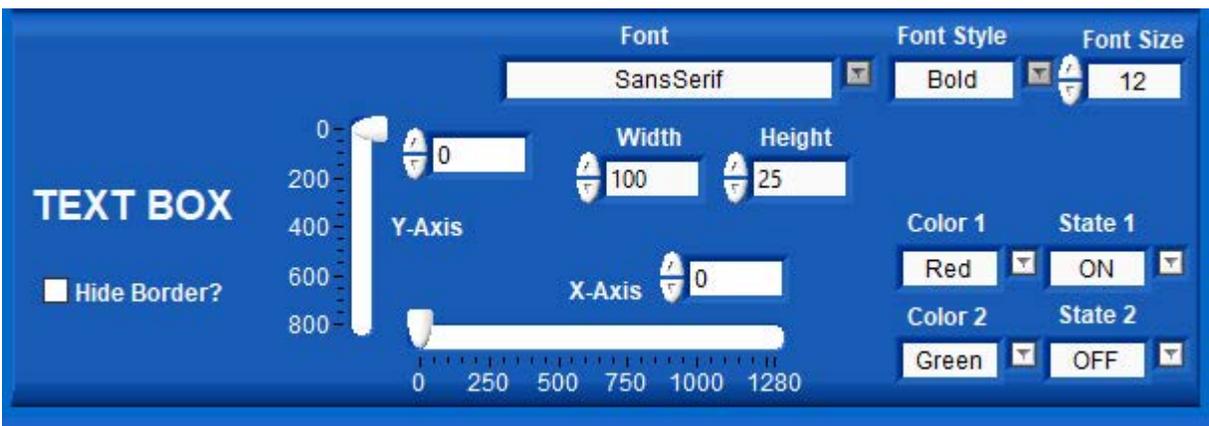
Field Name	Explanation
Font, style and size	Allows user to change font, style and size
X-Offset, Y-Offset	Controls placement of text
Color	Allows changing color for State 1 and State 2

Menu Tabs Continued

MCS-Graphics-Builder
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Animated Image
Points to Display
Color Change Points
RO Change Points
SI Change Points
Gauges
4-Part Images
Graphs
Button List
CPM Addresses
Code Review
Keep Changes
Undo Changes

1. **'RO CHANGE POINTS'** - this tab will change the mode display of the buttons showing the status of the unit.

   Example: Green On, Green On Manual, Red Off, Red Off Manual, Red Locked.

Field Name	Explanation
Point Name	Title of point being created
ID Type, ID	ID Type is the type of point (Relay Outputs) ID is the number of the point to display (See Graphics ID key list)
Is Editable, Auth Level	Is Editable can be set to true or false. When set to true it allows the user to change values through the graphics screen as long as Auth level is reached
Multiboard Address, Not used?	Multiboard Address is used in graphics that read multiple controllers, address is set to Network Address of the controller. If only reading one controller, select not used.

NOTE:

WHEN USING 'RO (RELAY OUTPUTS POINTS' THE IMAGES YOU ARE USING MUST TO BE THE PIXEL SIZE WE HAVE IN THE TEMPLATE, THESE ARE NON-EDITABLE IMAGES.

IF YOU CHANGE THE IMAGE, MAKE YOUR IMAGES THE SAME PIXEL SIZE WE USED FOR THE IMAGES THAT HAVE BEEN PLACED IN THE TEMPLATE TO DISPLAY PROPERLY.

RO Change Points (Continued)

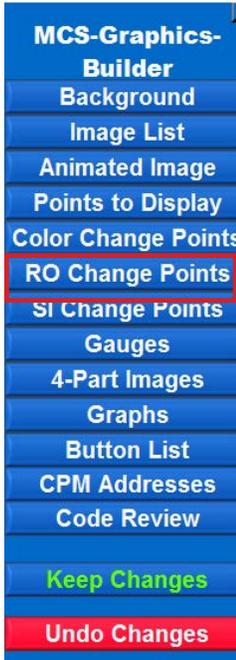| Field Name	Explanation
Auto, On, Off Labels	Indicates what to display for each state for Digital Sensors
X-Offset, Y-Offset	Controls placement of header in reference to the state indicator image
Width, Height	Sets dimensions of header text
Font Size	Font size for the header text
Header Color	Color chooser to select header text color

Field Name	Explanation
Image	File location of Image
Image Sizing (Auto, Manual)	Auto sets image to actual dimensions. Manual is controlled by Width and Height
Width, Height	Sets manual dimensions of image (Not used when using Auto sizing)
X-Offset, Y-Offset	Controls placement of background image in reference to the state indicator image

Field Name	Explanation
AUTO, MAN, LOCKOUT images	Images to display when each state is met. See reference below.
Image Sizing (Auto, Manual)	Auto sets image to actual dimensions. Manual is controlled by Width and Height
Width, Height	Sets manual dimensions of image (Not used when using Auto sizing)
X-Axis, Y-Axis	Controls placement of entire point (header, background image, state indicator image)

Menu Tabs Continued

MCS-Graphics-
Builder
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Keep Changes

Undo Changes

1.   'SI CHANGE POINTS TAB' - Used for Digital sensors, displays an image for each state (Auto, On, Off). If set to editable, it can be used to change the state of the sensor if auth level is reached.
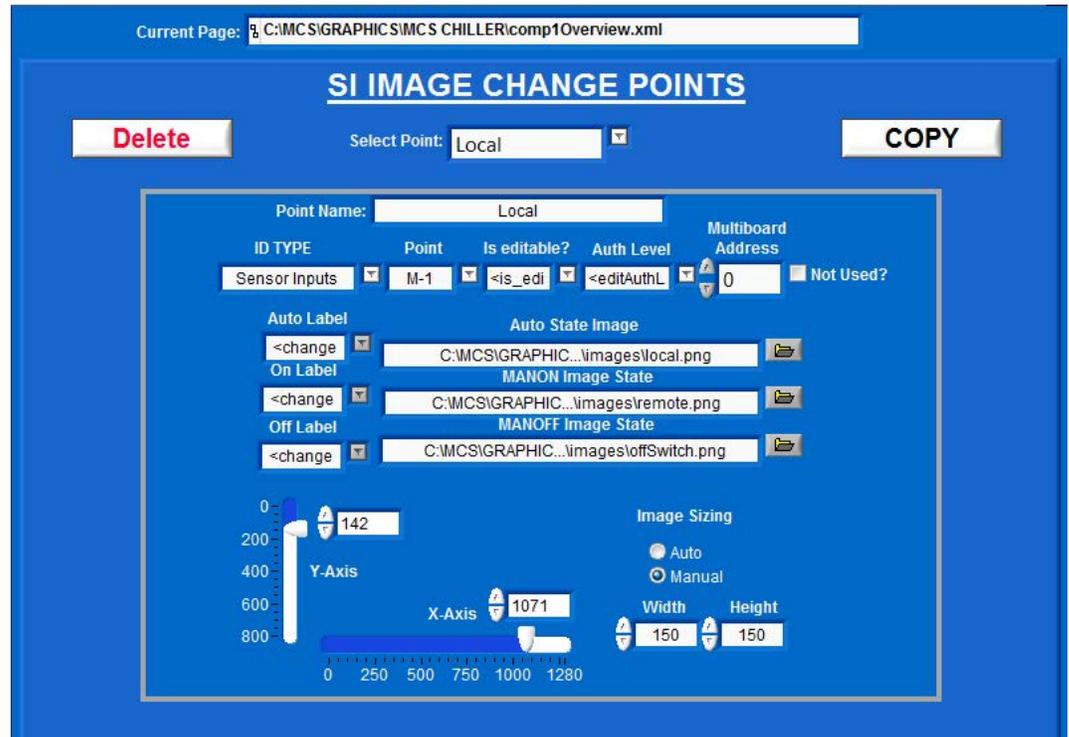
Field Name	Explanation
Point Name	Title of point being created
ID Type, Point	ID Type is the type of point (Sensor Inputs), Point is the number of the sensor (See Graphics ID key list)
Is Editable, Auth Level	Is Editable can be set to true or false. When set to true it allows the user to change values through the graphics screen as long as Auth level is reached
Multiboard Address, Not used?	Multiboard Address is used in graphics that read multiple controllers, address is set to Network Address of the controller. If only reading one controller, select not used.

NOTE:

WHEN USING 'SI (SENSOR INPUT POINTS' THE IMAGES YOU ARE USING MUST TO BE THE PIXEL SIZE WE HAVE IN THE TEMPLATE, THESE ARE NON-EDITABLE IMAGES.

IF YOU CHANGE THE IMAGE, MAKE YOUR IMAGES THE SAME PIXEL SIZE WE USED FOR THE IMAGES THAT HAVE BEEN PLACED IN THE TEMPLATE TO DISPLAY PROPERLY.
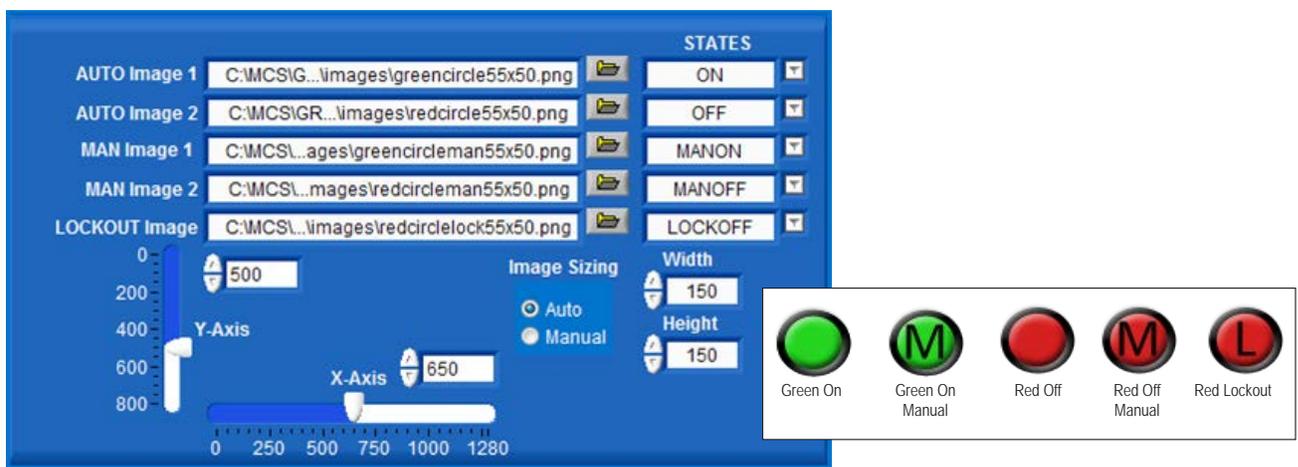
SI Change Points (continued)

Field Name	Explanation
Auto Label, Auto state image	Auto State Image file location to image to display when Auto state is met.
On Label, MANON state image	MANON State Image file location to image to display when MANON state is met.
Off Label, MANOFF state image	MANOFF State Image file location to image to display when MANONFF state is met.
Image Sizing (Auto, Manual)	Auto sets image to actual dimensions. Manual is controlled by Width and Height
Width, Height	Sets dimensions of image
X-Axis, Y-Axis	Controls placement of image

Menu Tabs Continued

'GUAGES TAB'- Gauges have many features as you will see in the MCS-GRAPHICS BUILDER. For the purpose of this lesson we will setup one gauge only to get you started. In a custom installation, as shown in our manual, you can setup a screen with multiple gauges to monitor your chiller.
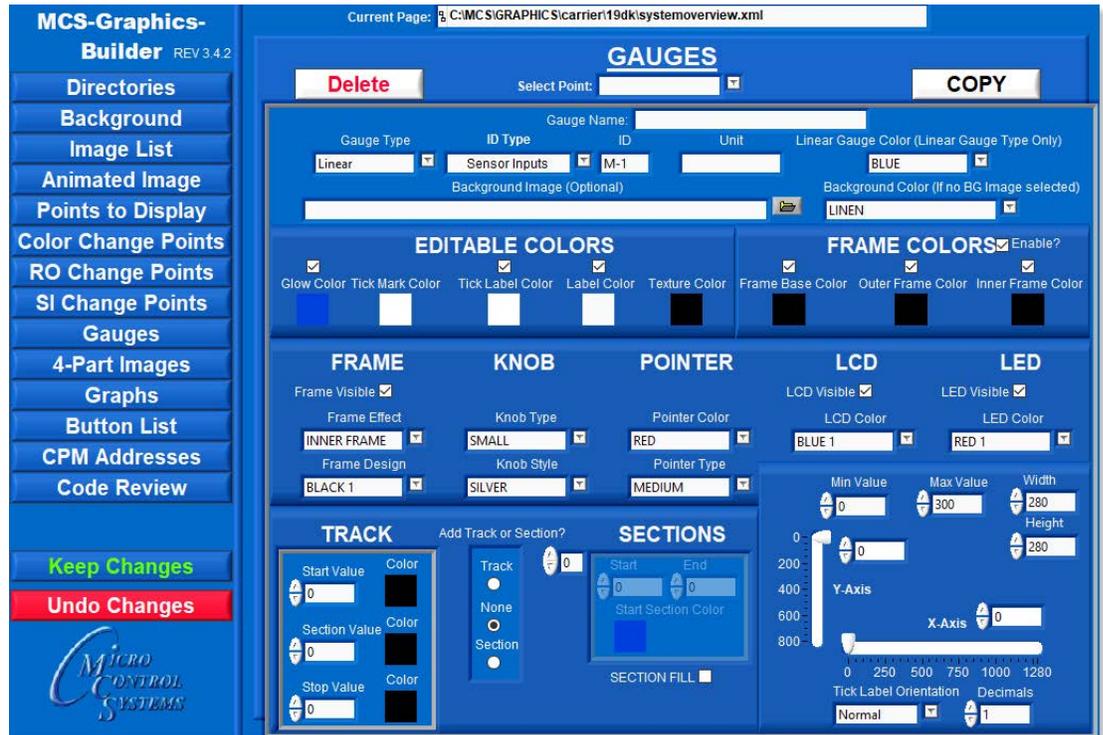
DESCRIPTION OF GAUGE BUTTONS AND THEIR FUNCTIONS

1. Click on 'Gauge Name' to create a new Gauge.
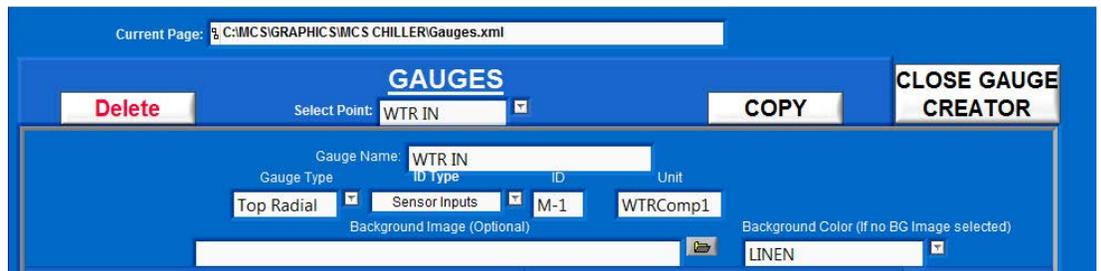
2. In Gauge Name field, enter 'WTR IN' for the name of our first gauge as an example.

Gauge Type available:

a. RADIAL
b. SQUARED RADIAL
c. VERTICAL RADIAL
d. TOP RADIAL
e. LINEAR
f. LINEAR

RADIAL   SQUARE RADIAL   VERTICAL RADIAL   TOP RADIAL

LINEAR
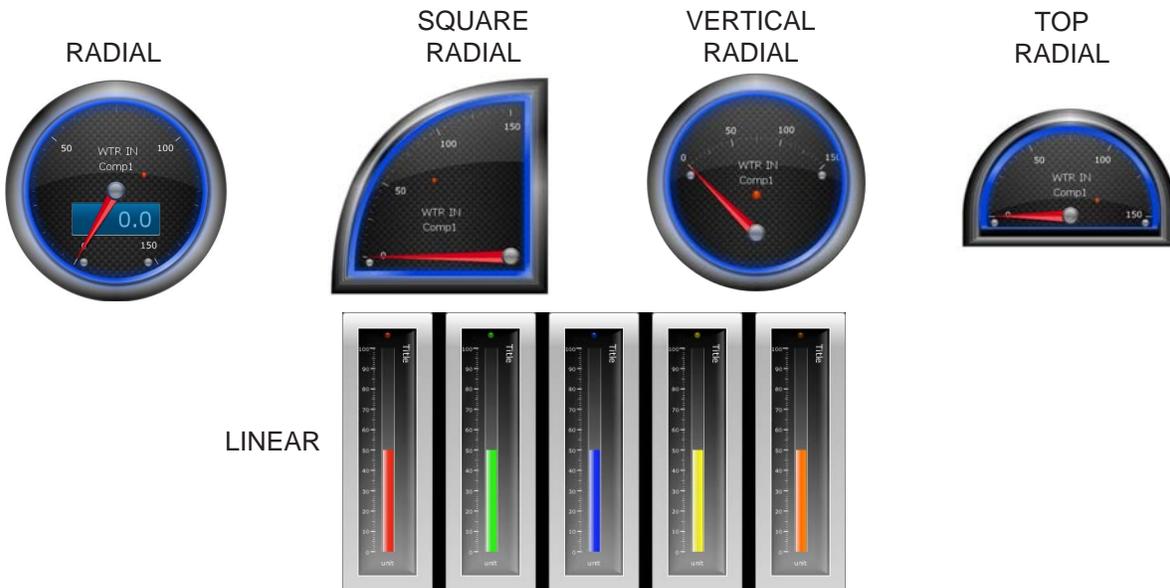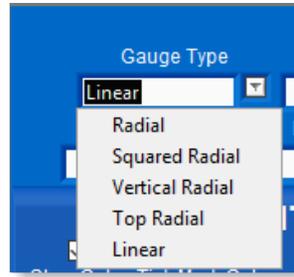
2. Gauge 'ID TYPE':

a. SENSOR INPUTS
b. ANALOG OUTPUTS
c. SETPOINTS
d. STATES
e. DYNAMIC VARIABLE
f. RELAY RUN HOURS
g. RELAY TOTAL CYCLES
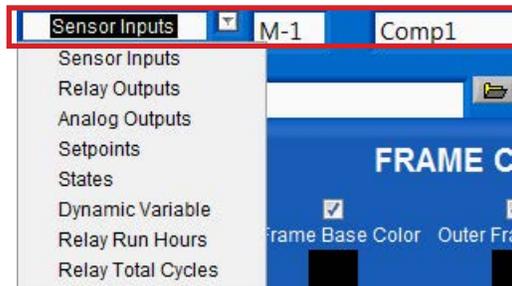
ID Type and the ID are found in the print out of your config program supplied by MCS when your system is shipped.

An addendum sample in included in this manual at the back.

8. BACKGROUND IMAGE, COLOR, EDITABLE COLORS, FRAME COLORS

a. **BACKGROUND IMAGE** - you can add a background to your gauge as shown in the screen shot below.

In this example, we added a background from our images (textbutton115x55.png) blue background. We are showing a Section solid bar to indicate safe zone in green, caution zone in yellow and unsafe zone in red.

The Graphic Builder allows you to display your gauges how you want them to alert you to any problems.

b. **BACKGROUND COLOR** - our default shows a linen background in black, here we changed to a white background with black ticks. Again, you have the options to change the colors how you want them.

New White background

Default Linen background

c. **EDITABLE COLORS** - allows you to change the 'GLOW COLOR', TICK MARK COLOR, TICK LABEL COLOR, LABEL COLOR AND THE TEXTURE COLOR of your gauge.

d. **FRAME COLORS** - you can change the FRAME BASE COLOR, OUTER COLOR and INNER FRAME COLOR.

9. **ATTRIBUTES -** allow you to make changes to various parts of your gauges, changing the frame design, knob size and color, and point color and size. Click on each to see the options available.

In our samples we added the LCD and LED so we could show the numbers better. This can be enabled or disabled.

You also can display your numbers in the gauge, HORIZONTAL, NORMAL or TANGENT.

HORIZONTAL   NORMAL   TANGENT

10.   TRACK AND SECTION DISPLAYS

a. **TRACK** - allows you to setup a series of three (3) numbers to show a 'GRADIENT' track around your gauge as seen in the sample below.

b. **SECTIONS**- instead of 'TRACK', you can change your display to 'SECTIONS' which will display a solid instead of the gradient as seen below.

Example settings:

0. set start range at '0' and end at '50' - **BLUE**
1. set start range at '50' and end at '100' - **GREEN**
2. set start range at '100' and end at '300' - **RED**

Menu Tabs Continued
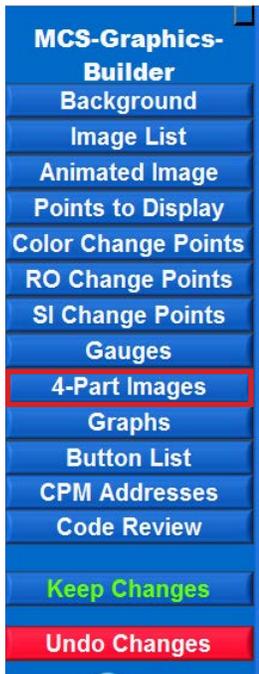
1. **'FOUR-PART IMAGES TAB'** - To show an animated object, you will need four images of the same object.

Menu Tabs Continued

1.   **'GRAPHS TAB'** - used to display a graph for sensors, etc.
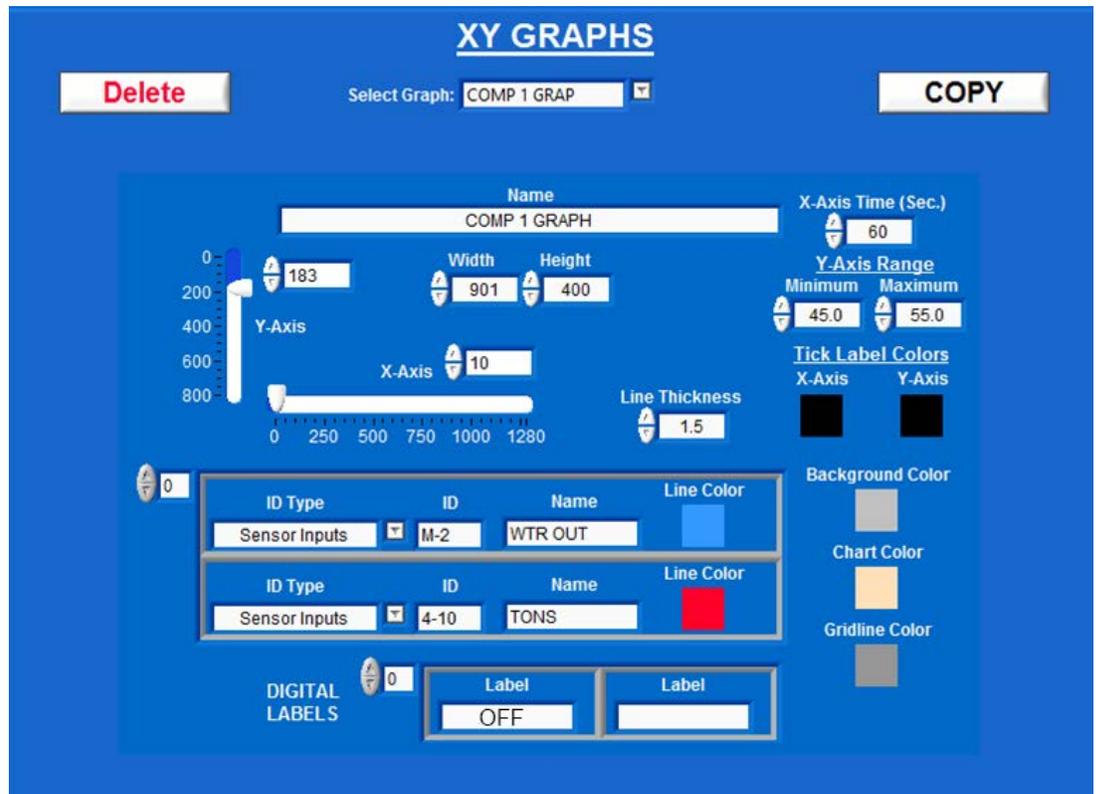
2.   **CREATE A NEW WINDOW FOR DISPLAYING THE 'Comp1 Graph'**

   1.   At the root directory on your computer, navigate to MCS/GRAPHICS/MCS CHILLER

   2.   For this example, **copy 'COMP1 OVERVIEW FILE' and rename the file** 'Comp1 Graph.xml'
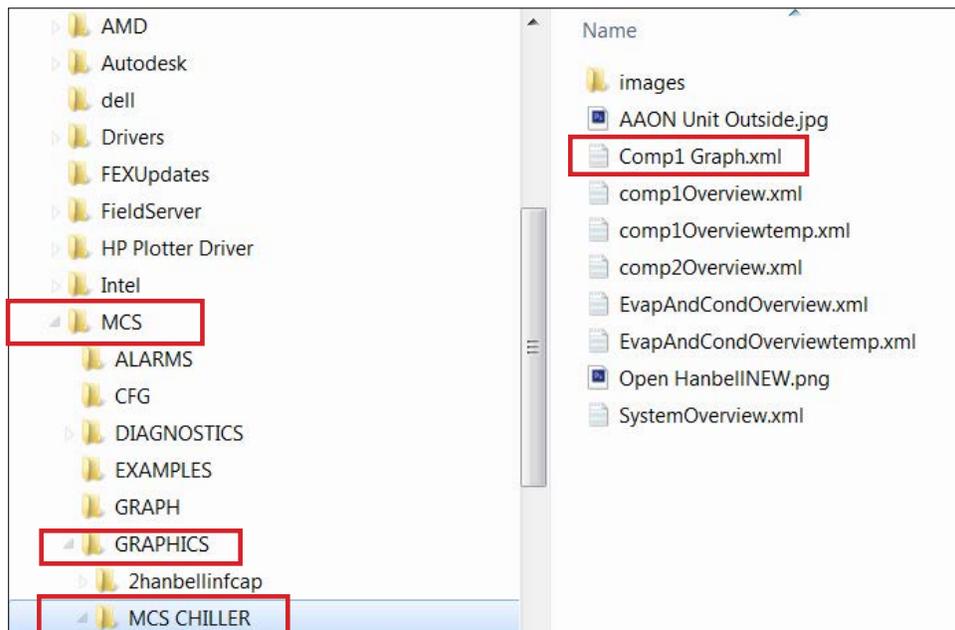
Menu Tabs Continued

3. Open MCS-CONNECT and open the file 'Comp1 overview.xml' to setup the new button - COMP1 GRAPH
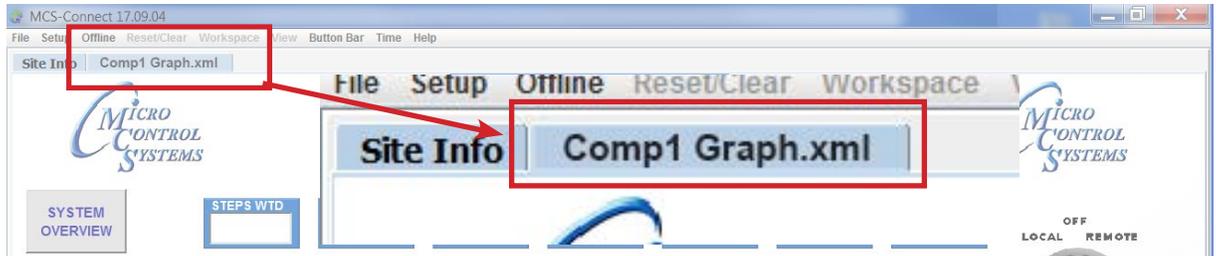
4. Open the MCS-GRAPHIC BUILDER

1. Navigate to the 'Button List' and create a new button **'Comp1 Graph'**

2. Link the file to the **'COMP1 GRAPH'** and click on **page default**
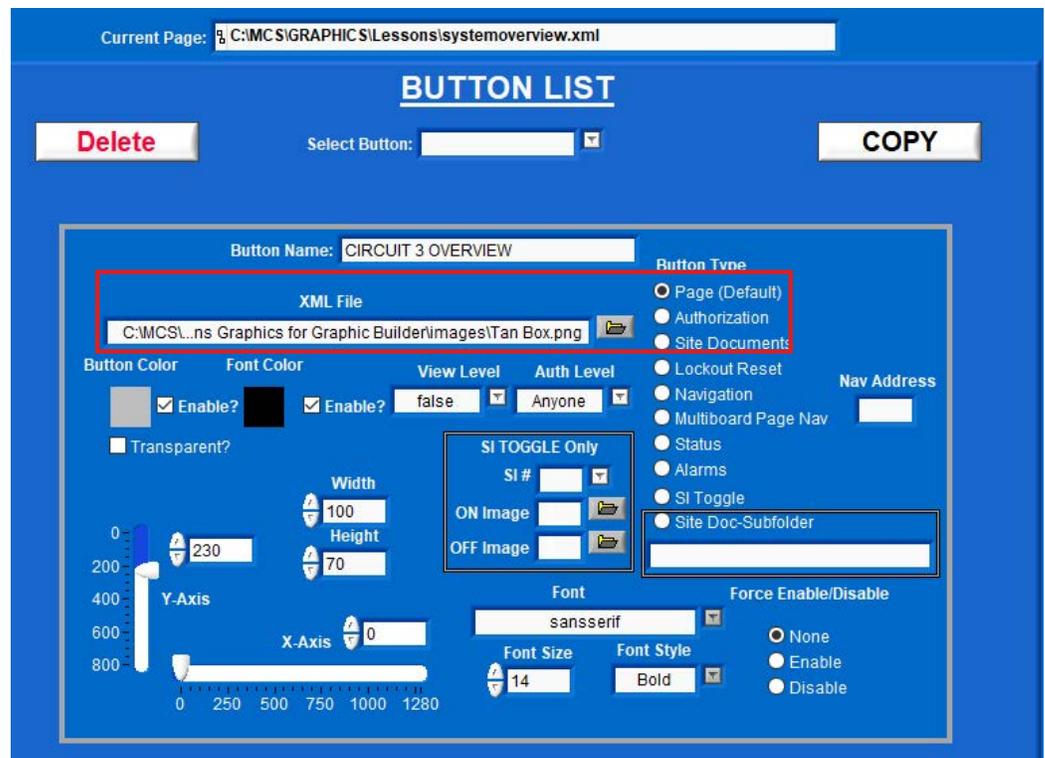
3.   For this example, position the button as per the screen shown below
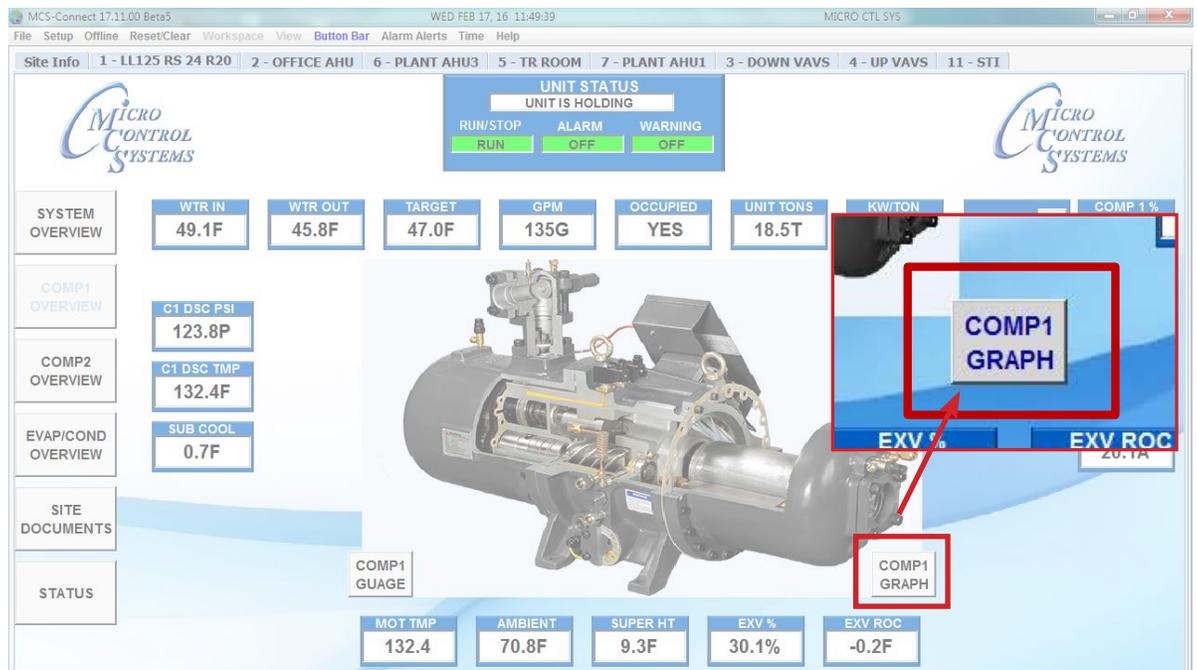
5.   **Navigate to the 'GRAPH MENU TAB'**

1.   Name your new Graph – **'Comp1 Graph'**

2.   Set up the position and size for the graph, Time, text colors and sensors you want to view.
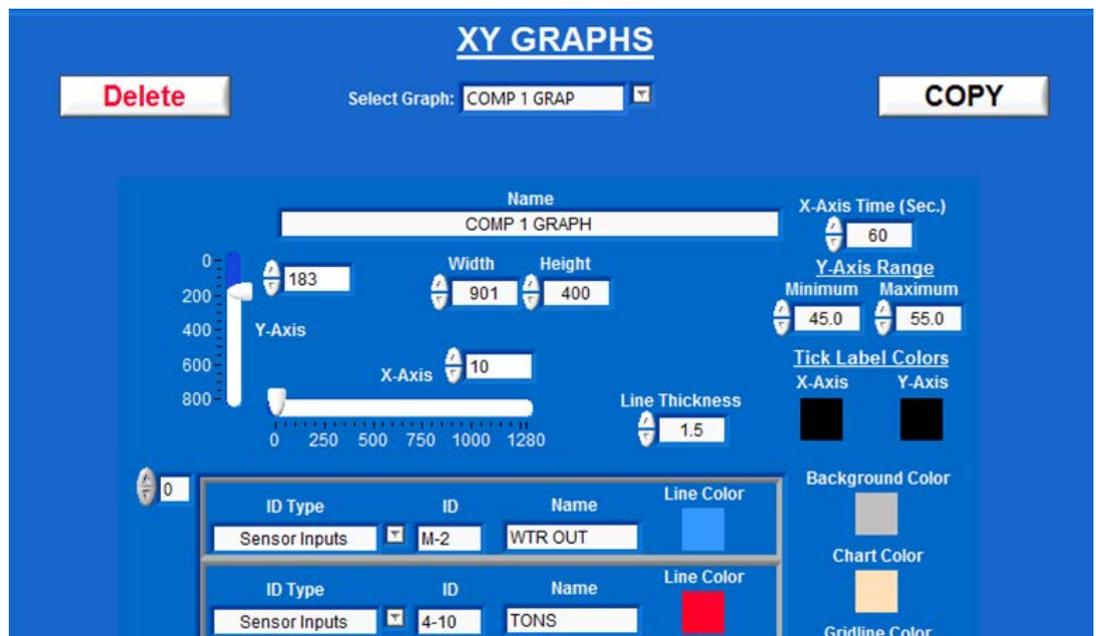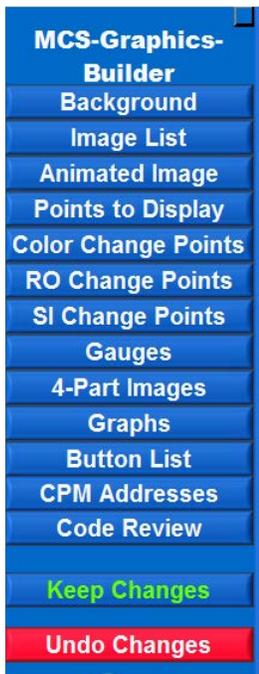
NOTE: IF YOU NEED THE GRAPH TO BE LARGER FOR BETTER VIEWING
MOVE THE POINTS TO DISPLAY TO THE RIGHT MORE AS SHOWN IN THE NEXT SCREEN

3.   Click on the new **'Comp1 Graph'** to display the screen below.
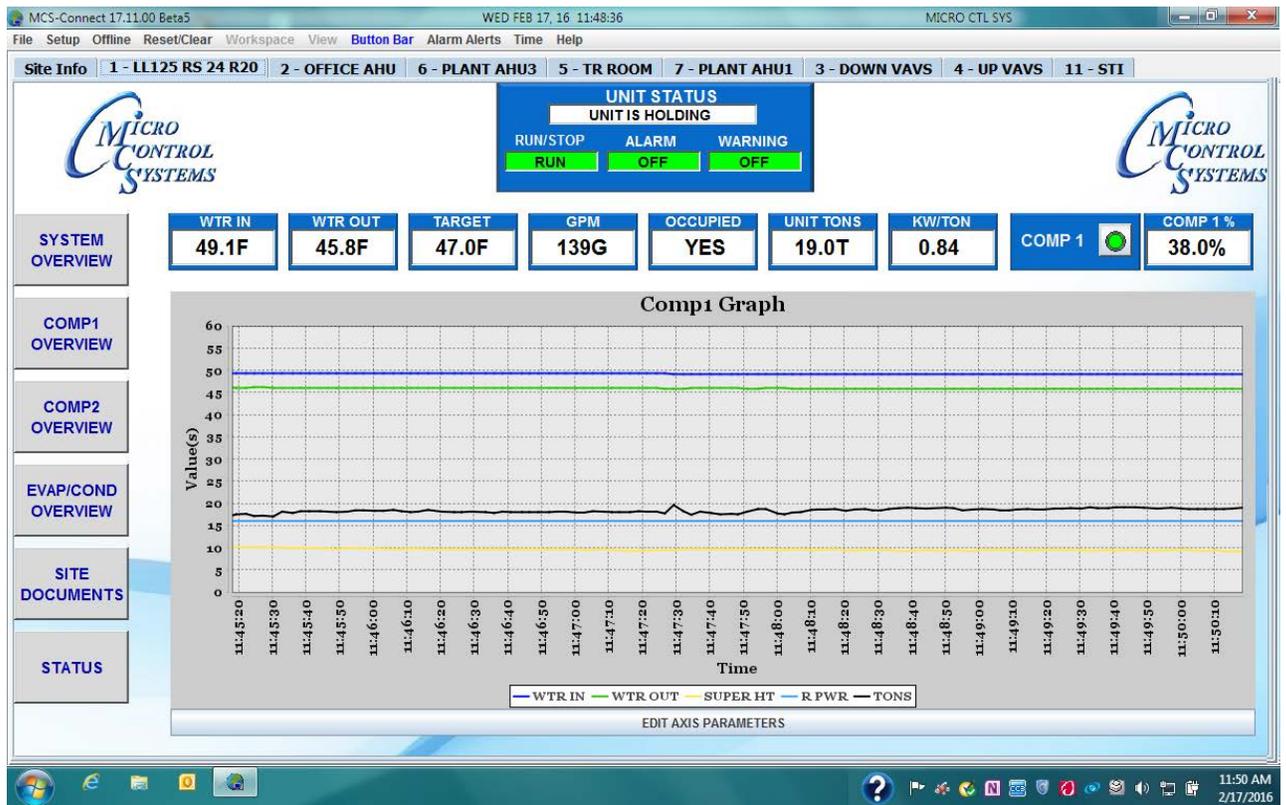
Menu Tabs Continued

1. **'BUTTON LIST TAB' -** allows you to change the box background and type color on your buttons. You also can set authorization. See inset sample.
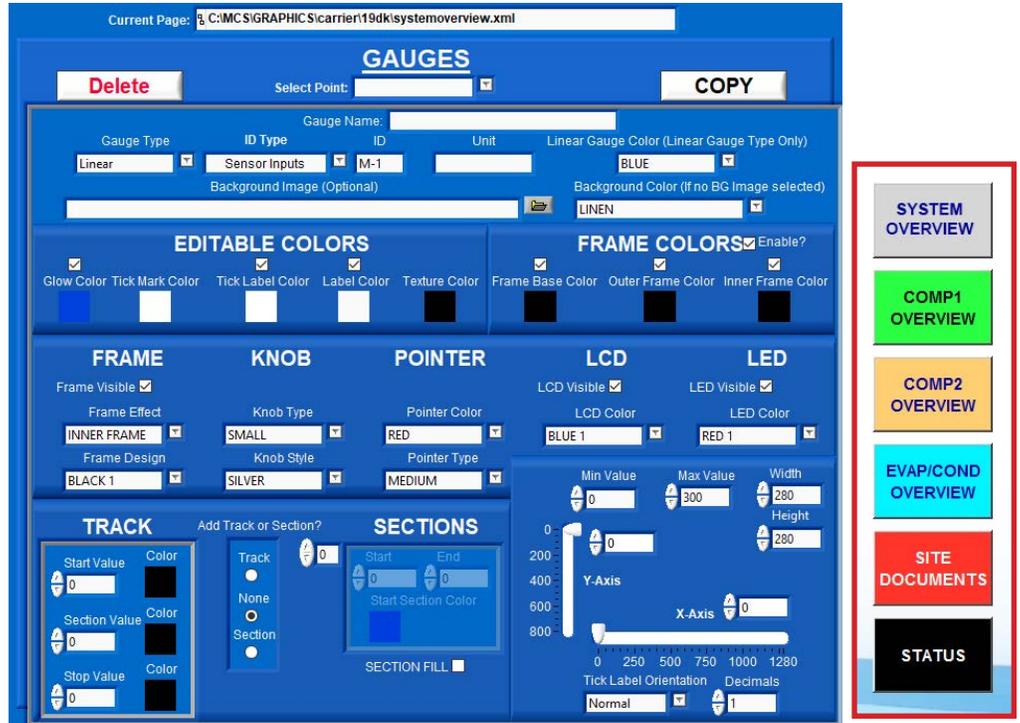
- **Button Name** - Name of the button being created.

- **XML File File** - location of the xml file to link button to. Only used for Page Type – Page (default).

- **Button Color, Enable?** - Color of the button being created. If Enable? is unchecked then default color scheme is used.

- **Font Color, Enable? -** Font color of the button being created. If Enable? is unchecked then default font color is used.
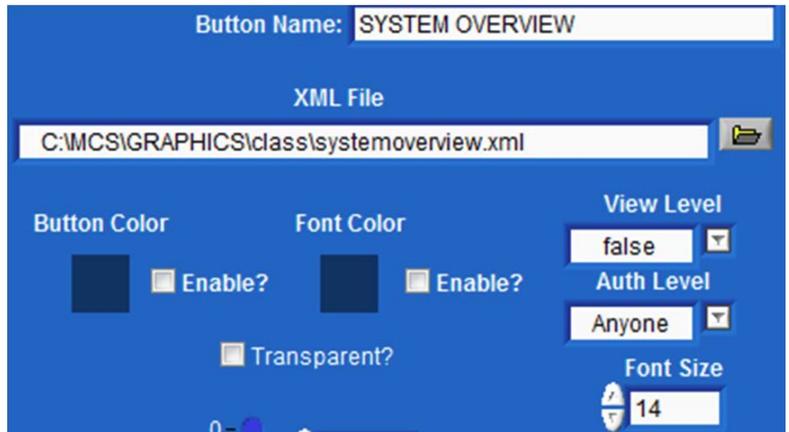
- **Transparent?** - Makes the button transparent if checked

- **Font Size** - Font size of the text inside the button

- **View Level -** Authorization level to be able to view button. Default is set to Anyone

- **Auth Level** - Authorization level to be able to press button. Default is set to Anyone

2. **PAGE TYPE (Button List continued)**

- **Page(Default)** - Sets button to navigate to .xml file specified.

- **Authorization** - Creates Authorization button that can be accessed from the graphics screen.

- **Site Documents** - Creates button that opens Site Documents folder on MCS-TOUCH.

- **Lockout Reset** - Creates button that will navigate to another chillers graphics. Nav Address must be a specified network address for controller.

- **Navigation** - Creates button that will navigate to another chillers graphics. Nav Address must be specified network address for controller.

NEW in 3.3.0 ▶

- **Multiboard Page Nav** - Creates button that will navigate to another chillers specific graphic screen. Nav address and XML file must be set. Nav Address must be specified network address for controller.

- **Status** - Creates button that will navigate back to the MCS-Connect Status screen.

NEW in 3.4.2 ▶

- **Alarms** - Create a Button which will pop up the Alarms on unit you are monitoring.

- **SI Toggle** - Create an ON/OFF button using a Sensor

- **Site Doc-Subfolder** - Similar to the Site documents button, can access other sub folders in the Site Documents folder on the MCS-TOUCH. Must fill in box with sub folder path. Example on the next page.

NEW in 3.3.0 ▶

- **Force Enable/Disable** - Allows you to force a button to stay enabled (clickable), or disabled (greyed out). This overrides the is current page tag when set to Enable or Disable. None is the default (normal operation).

Menu Tabs Continued

MCS-Graphics-Builder
Background
Image List
Animated Image
Points to Display
Color Change Points
RO Change Points
SI Change Points
Gauges
4-Part Images
Graphs
Button List
CPM Addresses
Code Review

Keep Changes

Undo Changes
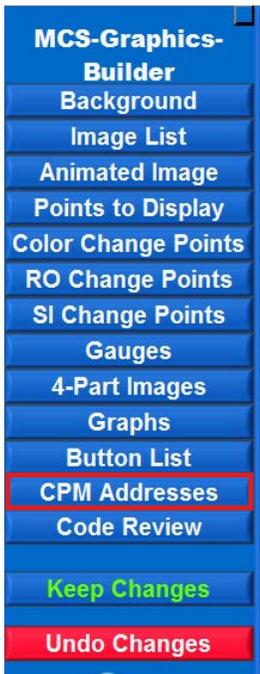
1.   **'CPM ADDRESSES'** - enter addresses of each controller you are connected to. Leave blank if you are only connected to one controller.

Current Page: C:\MCS\GRAPHICS\MCS CHILLER\comp1Overview.xml

CPM ADDRESSES

Enter Network Address for each Magnum

1   11
     12
     0
     0   Leave empty if only connected
     0   to one Magnum
     0
     0
     0
To delete, right   ress to remove
then select 'De   ent'   0

Menu Tabs Continued

MCS-Graphics-Builder
Background
Image List
Animated Image
Points to Display
Color Change Points
RO Change Points
SI Change Points
Gauges
4-Part Images
Graphs
Button List
CPM Addresses
Code Review

Keep Changes

Undo Changes

1. **'CODE REVIEW TAB' -** XML code used. Must be authorized to make changes.
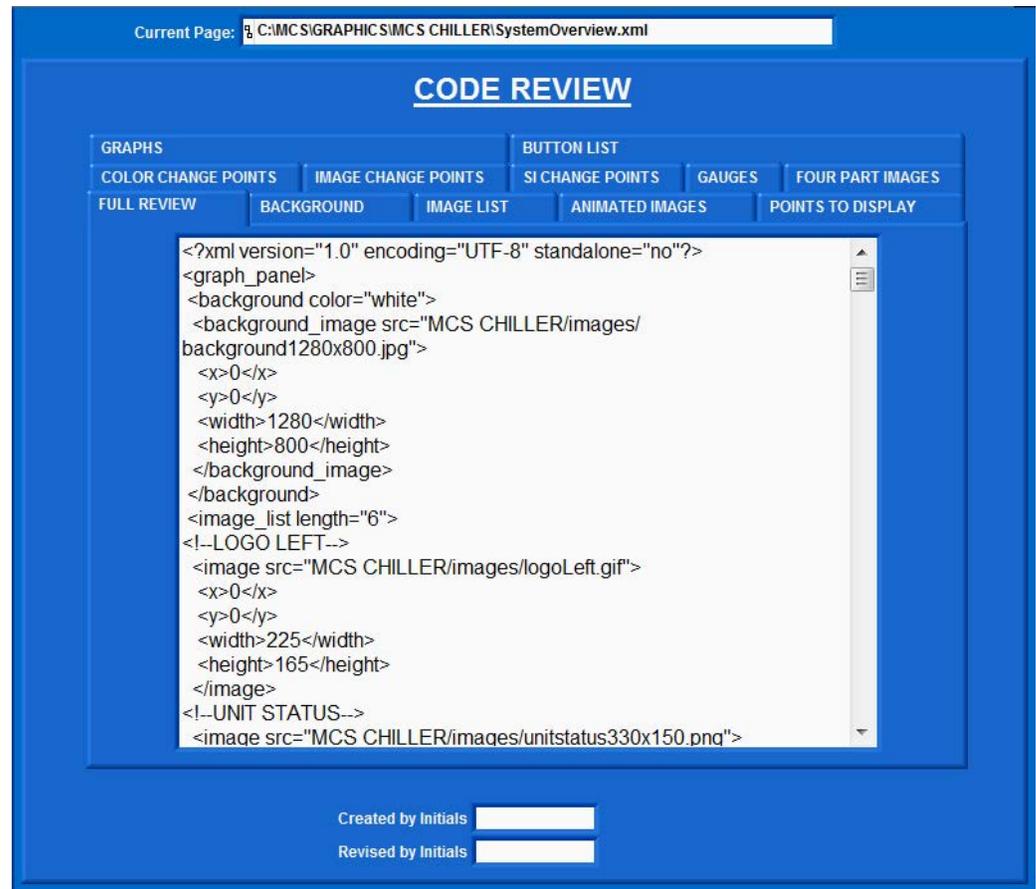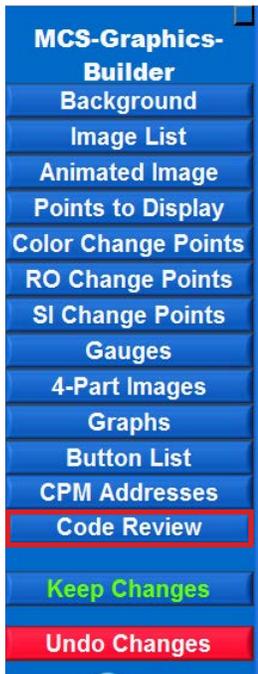
Current Page: C:\MCS\GRAPHICS\MCS CHILLER\SystemOverview.xml

CODE REVIEW

GRAPHS		BUTTON LIST		
COLOR CHANGE POINTS	IMAGE CHANGE POINTS	SI CHANGE POINTS	GAUGES	FOUR PART IMAGES
FULL REVIEW	BACKGROUND	IMAGE LIST	ANIMATED IMAGES	POINTS TO DISPLAY

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<graph_panel>
 <background color="white">
  <background_image src="MCS CHILLER/images/
background1280x800.jpg">
   <x>0</x>
   <y>0</y>
   <width>1280</width>
   <height>800</height>
  </background_image>
 </background>
 <image_list length="6">
<!--LOGO LEFT-->
  <image src="MCS CHILLER/images/logoLeft.gif">
   <x>0</x>
   <y>0</y>
   <width>225</width>
   <height>165</height>
  </image>
<!--UNIT STATUS-->
  <image src="MCS CHILLER/images/unitstatus330x150.png">
```

Created by Initials _____
Revised by Initials _____

Chapter - 11.   MAKING CHANGES TO THE TEMPLATE

11.1. OPEN THE SUPPLIED TEMPLATE TO MAKE CHANGES

Lets make some changes in the placement of some of the points and buttons.
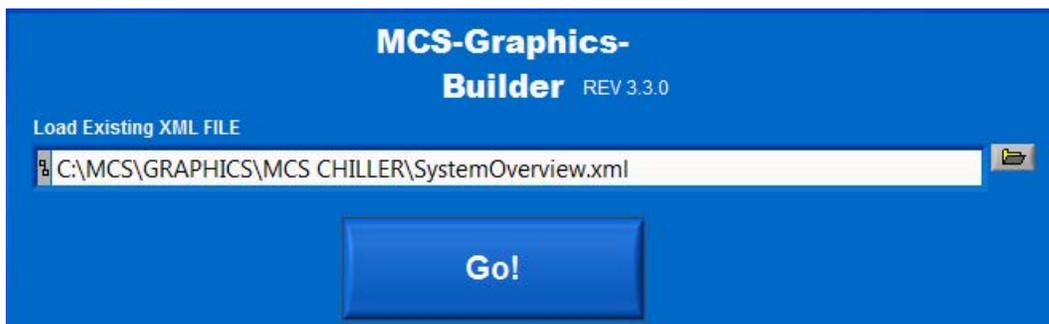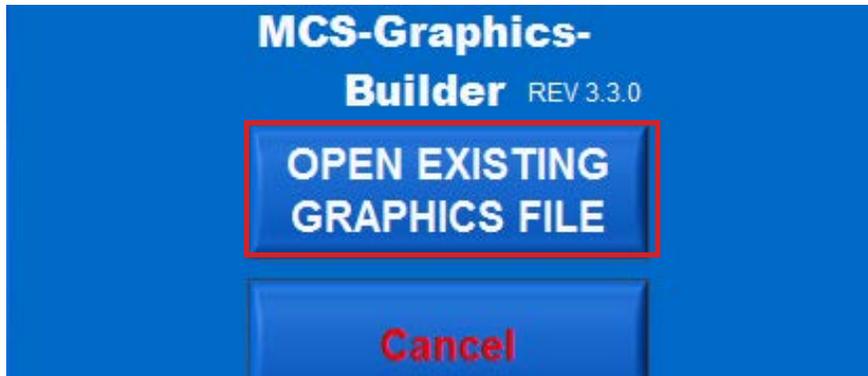
1. CLICK TO OPEN IMAGE LIST - Choose 'Left logo' and browse in the file folder for 'Company Logo.png' or use your own Logo.
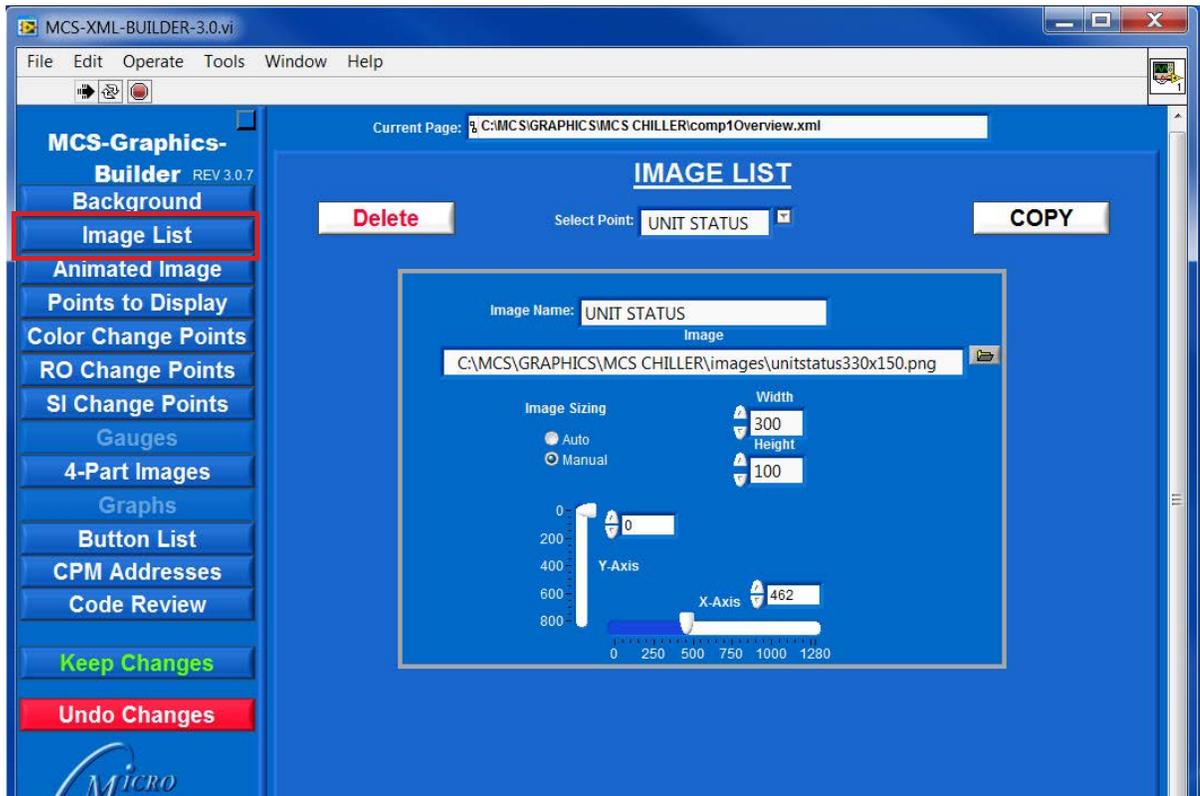
2. **VIEW PLACEMENT AND SIZE IN MCS-CONNECT GRAPHICS.** The new logo size is smaller than the MCS logo that was in the sample template.

3. Using the width and length arrows, make the logo larger and re-position if necessary using the slide bar or arrows for the X and Y position. (Note: the size you made this logo (W x L) so we can make the right logo the same size).

4. CHANGE TO THE 'LOGO RIGHT' AND USE THE SAME LOGO FILE (Company Logo.png).

5. Use the same X and Y values that you used for 'Logo Left'

6. Both logos should now be replaced. On the screen below you will notice that the Left Logo is over lapping the left top button.

45

7. **CLICK ON BUTTON LIST TO MAKE THIS ADJUSTMENT.** The calculation used to adjust was 40 points down. The six buttons were each moved that distance to move away from the new logo. See screen below after adjustment.
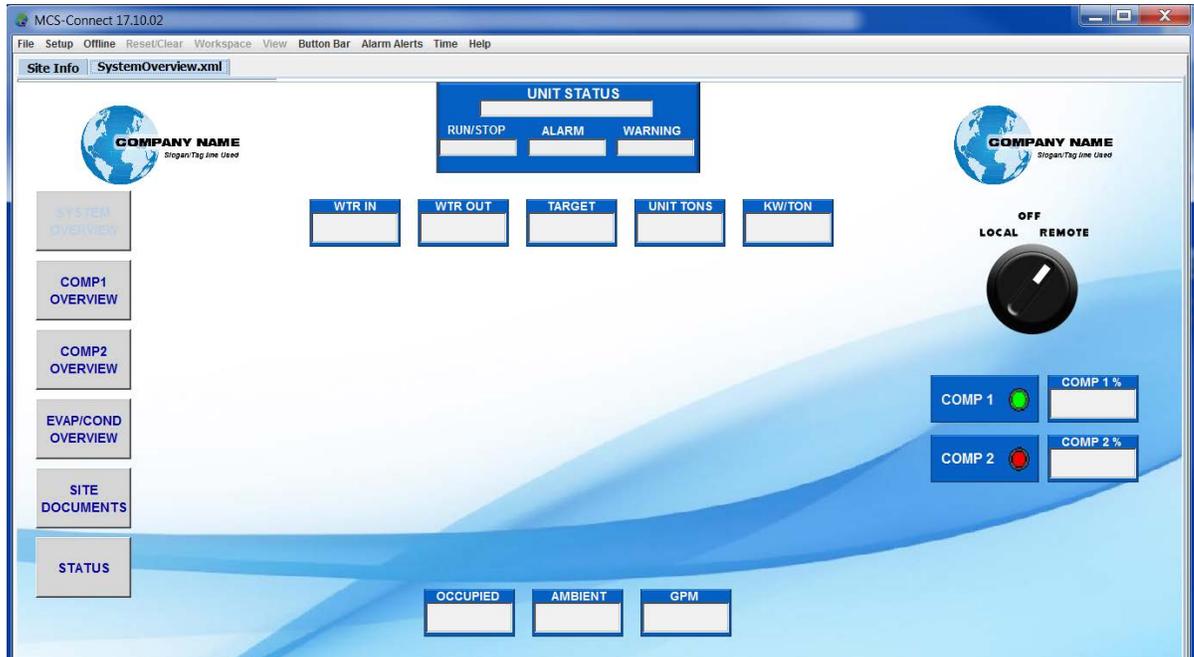
8. Now lets make a another change to our template, adding a new chiller image.

9. CLICK ON 'IMAGE LIST' AGAIN. Change the chiller to "TRANE' image supplied with your images.

Screen below shows placement of the TRANE image.

10. We only have one compressor to monitor, so lets drop the second comp2.

THIS WILL REQUIRE 5 STEPS TO REMOVE THE COMP2

1. Open 'POINTS TO DISPLAY', CLICK ON 'COMP2%' AND DELETE.

2. OPEN 'IMAGE LIST', CLICK ON 'COMP2' AND DELETE.

3. OPEN 'IMAGE CHANGE POINTS', CLICK ON 'COMP2' AND DELETE.

4. OPEN 'BUTTON LIST', CLICK ON 'COMP2 OVERVIEW' AND DELETE.

5. NOW WE NEED TO MOVE THE BUTTONS UP OR DOWN TO FILL THE MISSING AREA.

Screen below shows changes made to your graphics
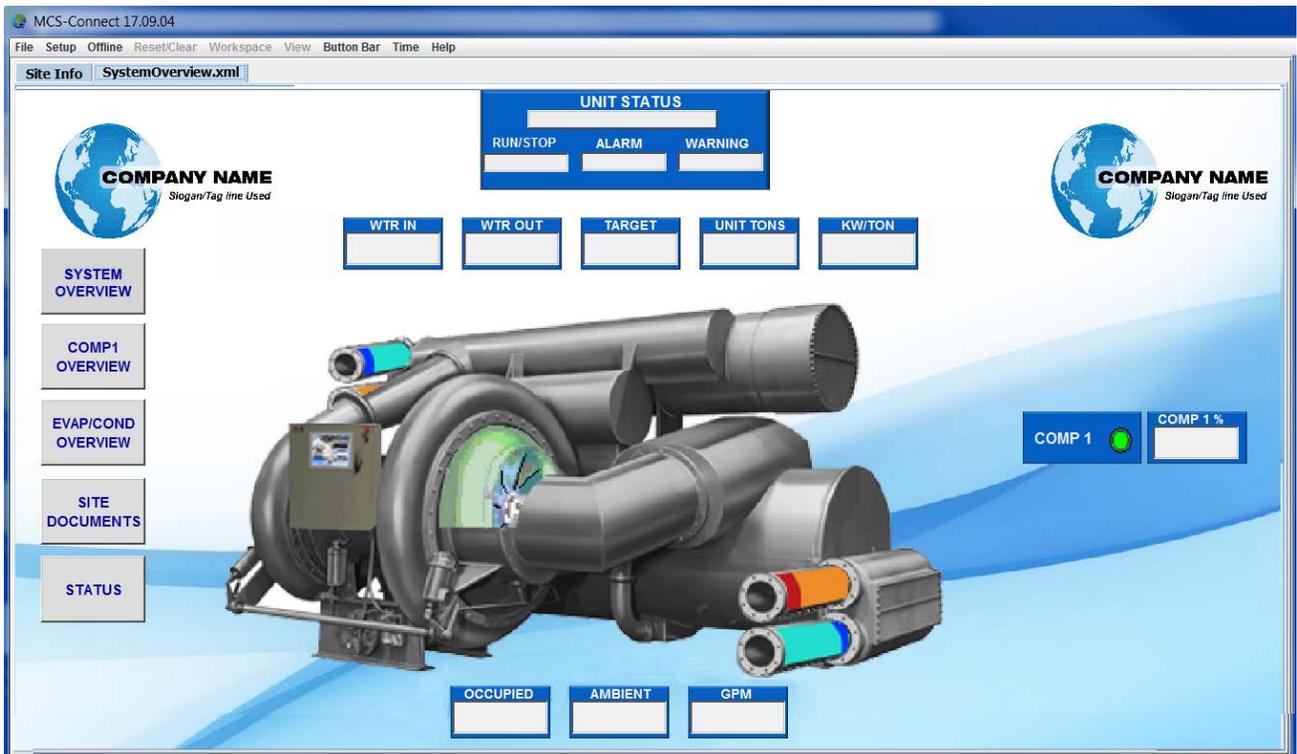
Chapter - 12. POINTS TO DISPLAY

12.1. CHANGING POINTS THAT ARE DISPLAYED IN THE GRAPHICS

Each point that we display can be linked to the following:

Sensor Inputs	**Relay Outputs**
Analog Outputs	**Setpoints**
States	**Dynamic Variable**
Relay Run Hours	**Relay Total Cycles**

In the screen below you will see how the actual link is established and how the GRAPHIC BUILDER allows complete control of the point displayed.

1. CLICK ON 'SELECT POINT' AND CLICK ON 'UNIT STATUS'.

2. CLICK ON THE SMALL DOWN ARROW ON THE 'ID TYPE' TO OPEN UP THE BOX.

3. CHOOSE 'STATES' TO DISPLAY THE STATE OF THE UNIT.

4. NEXT BOX TO THE RIGHT WILL BE THE **ID** OF THAT SENSOR. (see ID list from the MCS-CONFIG PROGRAM FOR ID OF THAT SENSOR - addendum A)

5. CHOOSE TO MAKE THIS POINT EDITABLE, **TRUE OR FALSE**.

6. ADD AN **AUTHORIZATION LEVEL** TO THIS POINT.

7. YOU ALSO COULD MAKE CHANGES TO THE TYPE HEADER OR TYPE COLOR, BUT WE'LL LEAVE THE COLORS AS IS.
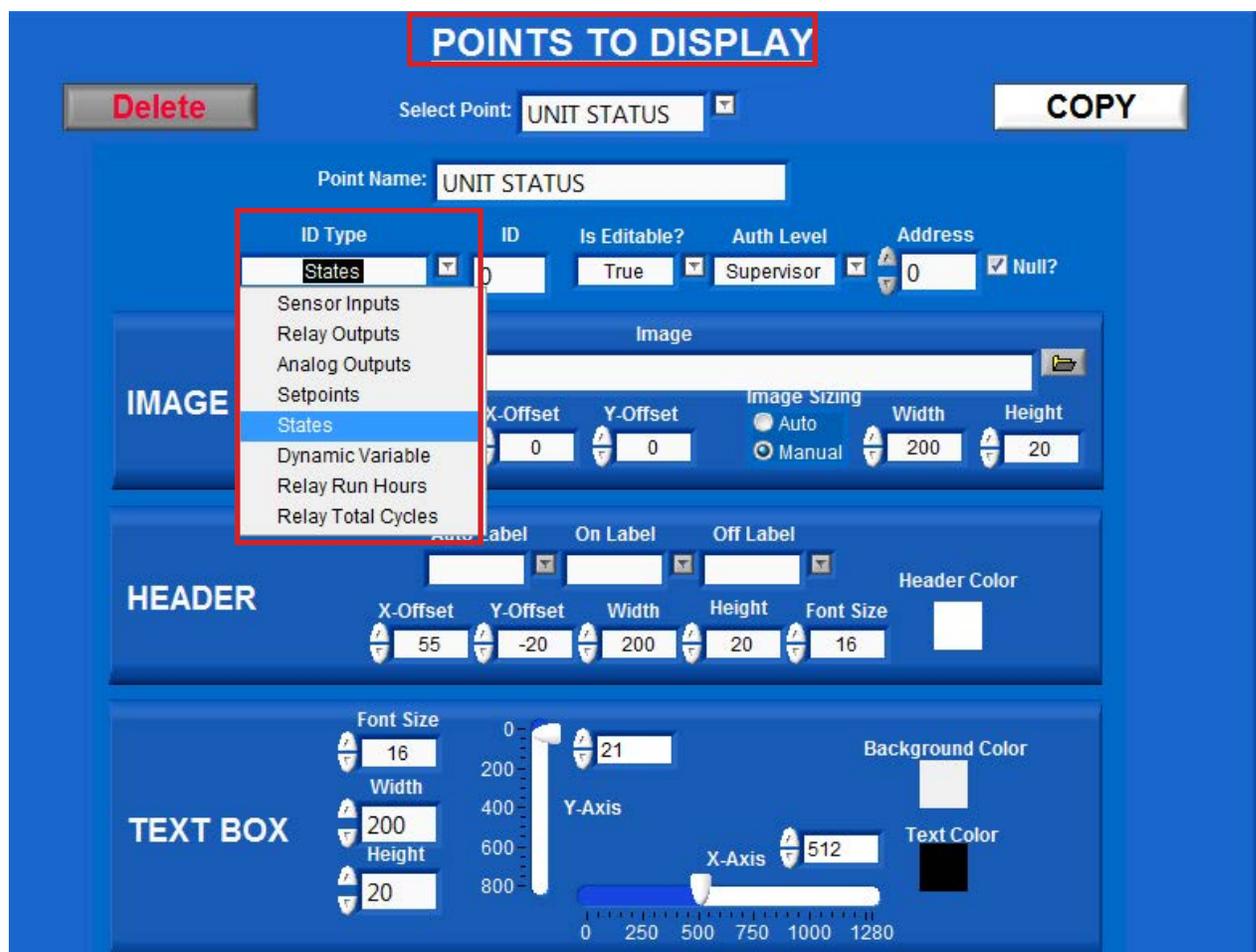
Chapter - 14.   STORING DOCUMENTS

13.13.   SITE DOCUMENTS (Button shown on right)

You can setup a button as shown on the screen above, so that when clicked will link you to a file stored on your computer's hard drive. This can be used for storing the manuals, electrical drawings, etc.

NOTE: YOU MUST BE CONNECTED TO A LIVE CONTROLLER TO SEE THESE DOCUMENTS.
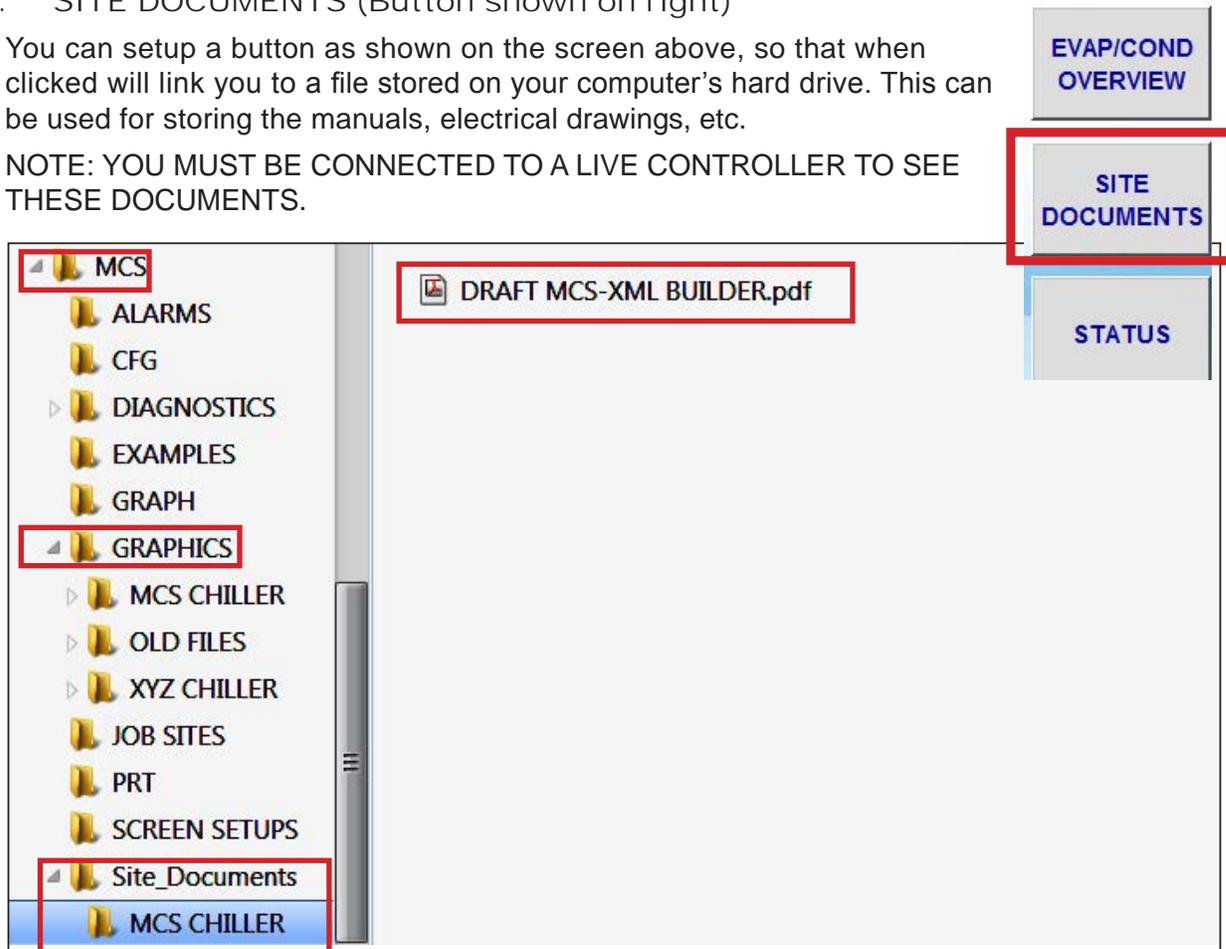
FOLDERS AND SUB FOLDERS MUST BE SETUP AS THE SCREEN ABOVE.

1. Site Documents is stored in the **MCS FOLDER**, IN THE SUB FOLDER '**GRAPHICS**' AND IN THE SUB FOLDER '**Site Documents**'.

2. THIS IS WHERE ALL YOUR DOCUMENTS SHOULD BE PLACED.

NOTE: Site_Document sub folder has an underscore.

IT IS IMPORTANT TO FOLLOW THE GUIDELINE ABOVE FOR NAMING OF FILES
THE TOUCHSCREEN USES LINUX FOR THE OPERATING SYSTEM

Chapter - 15.   STATUS BUTTON

15.1. CLICKING ON STATUS BUTTON

The 'STATUS' button on the left side of our template, when clicked, will redirect you to ***MCS-CONNECT STATUS OF THE UNIT YOU ARE CONNECTED TO***.

Chapter - 16. ADDENDUM A

16.1. MCS CONFIG SUMMARY REPORT FOR INPUT AND OUTPUT SENSORS

Output and Input Information for Magnum

#	Output Name	Type	#	Input Name	Type	Digital or OffSet	#	AO Name
M-1	COMP 1	Step w\ EXV	M-1	WTR IN	MCST100	0	M-1	COMP1 SPD%
M-2	CHAM INJ 1	Standard	M-2	WTR OUT	MCST100	0	M-2	COMP2 SPD%
M-3	REV VLV 1	Standard	M-3	SUCT PSI 1	MCS-200	0	M-3	EXV 1%
M-4	MTR INJ 1	User Logic	M-4	DISC PSI 1	MCS-500	0	M-4	EXV 2%
M-5	SPAREM-5	Standard	M-5	OIL PSI 1	MCS-500	0		
M-6	SPAREM-6	Standard	M-6	AMPS 1	CT-300	0		
M-7	CHW PUMP 1	Standard	M-7	S-TpRvVlv1	MCST100	0		
M-8	CHW PUMP 2	Standard	M-8	DISC TMP 1	MCST100	0		
M-9	VEST FAN	Standard	M-9	MTR TMP 1	PT1000	0		
M10	SPARE M-10	Standard	M10	MTR FLT 1	DIGITAL	Closed=OFF		
			M11	OIL LVL 1	DIGITAL	Closed=OFF		
			M12	Cmp1VfdFlt	DIGITAL	Closed=OFF		
			M13	HI PSI SW1	DIGITAL	Closed=OFF		
			M14	DISABLE 1	DIGITAL	Open=OFF		
			M15	RUN/STOP	DIGITAL	Open=OFF		
			M16	EMG/STOP	DIGITAL	Closed=OFF		
1-1	COMP 2	Step w\ EXV	1-1	SUCT PSI 2	MCS-200	0	1-1	CND1 VFD%
1-2	CHAM INJ 2	Standard	1-2	DISC PSI 2	MCS-500	0	1-2	CND2 VFD%
1-3	REV VLV 2	Standard	1-3	OIL PSI 2	MCS-500	0	1-3	BLD PUMP1%
1-4	MTR INJ 2	User Logic	1-4	AMPS 2	CT-300	0	1-4	BLD PUMP2%
1-5	CMP2 SV1	User Logic	1-5	S-TpRvVlv2	MCST100	0		
1-6	CMP2 SV2	User Logic	1-6	DISC TMP 2	MCST100	0		
1-7	CND FAN1-1	Standard	1-7	MTR TMP 2	PT1000	0		
1-8	CND FAN1-2	Standard	1-8	MTR FLT 2	DIGITAL	Closed=OFF		
1-9	CND FAN2-1	Standard	1-9	OIL LVL 2	DIGITAL	Closed=OFF		
1-10	CND FAN2-2	Standard	1-10	Cmp2VfdFlt	DIGITAL	Closed=OFF		
			1-11	HI PSI SW2	DIGITAL	Closed=OFF		
			1-12	DISABLE 2	DIGITAL	Open=OFF		
			1-13	PHASELOSS	DIGITAL	Open=OFF		
			1-14	AMBIENT	MCST100	0		
			1-15	VEST TMP	MCST100	0		
			1-16	UNIT AMPS	CT-500	0		
2-1	Cmp2@2.4Vi	User Logic	2-1	WATER GPM	User Defined	0		
2-2	Cmp2@3.0Vi	User Logic	2-2	BLDPMP IN	MCS-200	2		
2-3	Cmp2@3.5Vi	User Logic	2-3	BLDPMPOUT	MCS-500	0		
2-4	SPARE2-4	Standard	2-4	BPVFD1 FLT	DIGITAL	Closed=OFF		
2-5	SPARE2-5	Standard	2-5	BPVFD2 FLT	DIGITAL	Closed=OFF		
2-6	SPARE2-6	Standard	2-6	CND1 COIL	MCST100	0		
2-7	SPARE2-7	Standard	2-7	CND2 COIL	MCST100	0		
2-8	SPARE2-8	Standard	2-8	CND1 V FLT	DIGITAL	Closed=OFF		
2-9	SPARE2-9	Standard	2-9	CND2 V FLT	DIGITAL	Closed=OFF		
2-10	SPARE2-10	Standard	2-10	Cmp2DltPsi	User Logic	0		
			2-11	SPARE2-11	SPARE	0		
			2-12	SPARE2-12	SPARE	0		
			2-13	SPARE2-13	SPARE	0		
			2-14	SPARE2-14	SPARE	0		
			2-15	SPARE2-15	SPARE	0		
			2-16	HEAT ENABL	BMS_SI	0		
3-1	SPARE3-1	Standard	3-1	CMP1 L-TMP	MCST100	0		
3-2	SPARE3-2	Standard	3-2	CMP1 L-PSI	MCS-500	0		
3-3	SPARE3-3	Standard	3-3	CMP2 L-TMP	MCST100	0		
3-4	SPARE3-4	Standard	3-4	CMP2 L-PSI	MCS-500	0		
3-5	SPARE3-5	Standard	3-5	MCS VOLT A	600VAC4	0		
3-6	SPARE3-6	Standard	3-6	MCS VOLT B	600VAC4	0		
3-7	SPARE3-7	Standard	3-7	MCS VOLT C	600VAC4	0		
3-8	SPARE3-8	Standard	3-8	COOL+OCCUP	User Logic	0		
3-9	SPARE3-9	Standard	3-9	HEAT+OCCUP	User Logic	0		
3-10	SPARE3-10	Standard	3-10	COOL/HEAT	User Logic	0		
			3-11	SV1 ON>	User Logic	0		
			3-12	SV1 ON<	User Logic	0		
			3-13	SV2 ON>	User Logic	0		
			3-14	SV2 ON<	User Logic	0		
			3-15	EVP PSI IN	User Defined	0		
			3-16	EVP P-OUT	User Defined	0		
4-1	SPARE 4-1	Standard	4-1	SUCT SH 1	User Logic	0		
4-2	SPARE 4-2	Standard	4-2	SUCT SH 2	User Logic	0		
4-3	SPARE4-3	Standard	4-3	DISC SH 1	User Logic	0		
4-4	SPARE4-4	Standard	4-4	DISC SH 2	User Logic	0		
4-5	SPARE4-5	Standard	4-5	EVP IN-OUT	User Logic	0		
4-6	SPARE4-6	Standard	4-6	SPARE4-6	SPARE	0		
4-7	SPARE4-7	Standard	4-7	SPARE4-7	SPARE	0		
4-8	SPARE4-8	Standard	4-8	EVAP DIFF	User Defined	0		
4-9	SPARE4-9	Standard	4-9	R PWR 1+2	User Logic	0		
4-10	SPARE4-10	Standard	4-10	UNIT TONS	TONS-1Dec	0		
			4-11	KW/TON	User Logic	0		
			4-12	E TMP DIFF	User Logic	0		
			4-13	PUMP DIFF	User Logic	0		
			4-14	WATER FLOW	User Logic	0		
			4-15	COOL ENABL	BMS_SI	0		
			4-16	OCCUPIED	BMS_SI	0		

EACH MCS CONFIG WILL BE DIFFERENT DEPENDING HOW YOUR CONTROLLER IS SETUP.

THIS SAMPLE IS THE MCS CONFIG FOR THE TEMPLATE OF THE UNIT WE ARE CONTROLLING FOR THIS EXAMPLE.

Chapter - 17.   ADDENDUM B

17.1. CODES NEEDED FOR MCS GRAPHICS BUILDER

The following pages contain the necessary codes to identify the point you are displaying in your overview screens. These are standard codes and can be used on your setup for your graphics.

17.2. MCS GRAPHICS BUILDER SET POINT ADDRESSES

Setpoint #	Graphics BLD	Setpoint #	Graphics BLD	Setpoint #	Graphics BLD	Setpoint #	Graphics BLD	Setpoint #	Graphics BLD
1	0	53	120	105	172	157	224	209	398
2	1	54	121	106	173	158	225	210	399
3	2	55	122	107	174	159	226	211	400
4	71	56	123	108	175	160	227	212	401
5	72	57	124	109	176	161	228	213	402
6	73	58	125	110	177	162	229	214	403
7	74	59	126	111	178	163	230	215	404
8	75	60	127	112	179	164	231	216	405
9	76	61	128	113	180	165	232	217	406
10	77	62	129	114	181	166	233	218	407
11	78	63	130	115	182	167	234	219	408
12	79	64	131	116	183	168	235	220	409
13	80	65	132	117	184	169	236	221	410
14	81	66	133	118	185	170	237	222	411
15	82	67	134	119	186	171	360	223	412
16	83	68	135	120	187	172	361	224	413
17	84	69	136	121	188	173	362	225	414
18	85	70	137	122	189	174	363	226	415
19	86	71	138	123	190	175	364	227	416
20	87	72	139	124	191	176	365	228	417
21	88	73	140	125	192	177	366	229	418
22	89	74	141	126	193	178	367	230	419
23	90	75	142	127	194	179	368	231	643
24	91	76	143	128	195	180	369	232	644
25	92	77	144	129	196	181	370	233	645
26	93	78	145	130	197	182	371	234	646
27	94	79	146	131	198	183	372	235	647
28	95	80	147	132	199	184	373	236	648
29	96	81	148	133	200	185	374	237	649
30	97	82	149	134	201	186	375	238	650
31	98	83	150	135	202	187	376	239	651
32	99	84	151	136	203	188	377	240	652
33	100	85	152	137	204	189	378	241	653
34	101	86	153	138	205	190	379	242	654
35	102	87	154	139	206	191	380	243	655
36	103	88	155	140	207	192	381	244	656
37	104	89	156	141	208	193	382	245	657
38	105	90	157	142	209	194	383	246	658
39	106	91	158	143	210	195	384	247	659
40	107	92	159	144	211	196	385	248	660
41	108	93	160	145	212	197	386	249	661
42	109	94	161	146	213	198	387	250	662
43	110	95	162	147	214	199	388	251	663
44	111	96	163	148	215	200	389	252	664
45	112	97	164	149	216	201	390	253	665
46	113	98	165	150	217	202	391	254	666
47	114	99	166	151	218	203	392	255	667
48	115	100	167	152	219	204	393		
49	116	101	168	153	220	205	394		
50	117	102	169	154	221	206	395		
51	118	103	170	155	222	207	396		
52	119	104	171	156	223	208	397		

Chapter - 18.   ADDENDUM C

18.1. MCS GRAPHICS BUILDER STATE ADDRESSES

(CONFIG V 12)

UNIT STATE	GPH BLD #	COMPRESSOR STATE	GPH BLD #	CONDENSER STATE	GPH BLD #	HEATING STATE	GPH BLD #
UNIT	0	CIRCUIT 1	20	CIRCUIT 1	40	HEATING	60
OCCUPPIED	1	CIRCUIT 2	25	CIRCUIT 2	45	REHEAT	65
EVAP FAN	10	CIRCUIT 3	30	CIRCUIT 3	50	CIRCUIT 1	70
COOLING	15	CIRCUIT 4	35	CIRCUIT 4	55	CIRCUIT 2	75
						CIRCUIT 3	80
						CIRCUIT 4	85
						PRE COOL	90

MCS GRAPHICS BUILDER MAGNUM STATE ADDRESS
(CONFIG V 11, 14 AND 17)

UNIT STATE	GPH BLD #	COMPRESSOR STATE	GPH BLD #	C OMPRESSOR STATE	GPH BLD #	C OMPRESSOR STATE	GPH BLD #
UNIT	0	CIRCUIT 1	0	CIRCUIT 8	7	CIRCUIT 15	14
LWC	9	CIRCUIT 2	1	CIRCUIT 9	8	CIRCUIT 16	15
		CIRCUIT 3	2	CIRCUIT 10	9	CIRCUIT 17	16
		CIRCUIT 4	3	CIRCUIT 11	10	CIRCUIT 18	17
		CIRCUIT 5	4	CIRCUIT 12	11	CIRCUIT 119	18
		CIRCUIT 6	5	CIRCUIT 13	12	CIRCUIT 20	19
		CIRCUIT 7	6	CIRCUIT 14	13		

Chapter - 19.   ADDENDUM D- Troubleshooting

19.1. Gauges - Track and Sections

- To delete extra 'ELEMENTS' - if you have too many Tracks or Sections - right click with your mouse - 'DELETE ELEMENT"

19.2. Using the Copy Button

- Use the copy button to make an additional image. When you click the copy button you will see the word 'NEW' in the 'POINT NAME FIELD'. Rename new to the name you want for the point.
- Remember the copy is under the original position, Change the X and Y coordinates to the new position.

19.3. Graphs

- When you are viewing your graph in MCS-CONNECT overview screen, you can right click on the graph and click on 'PROPERTIES' to make changes to the background color, etc.

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