Customized Controls

Touchscreen Operation Manual

Komatsu America International

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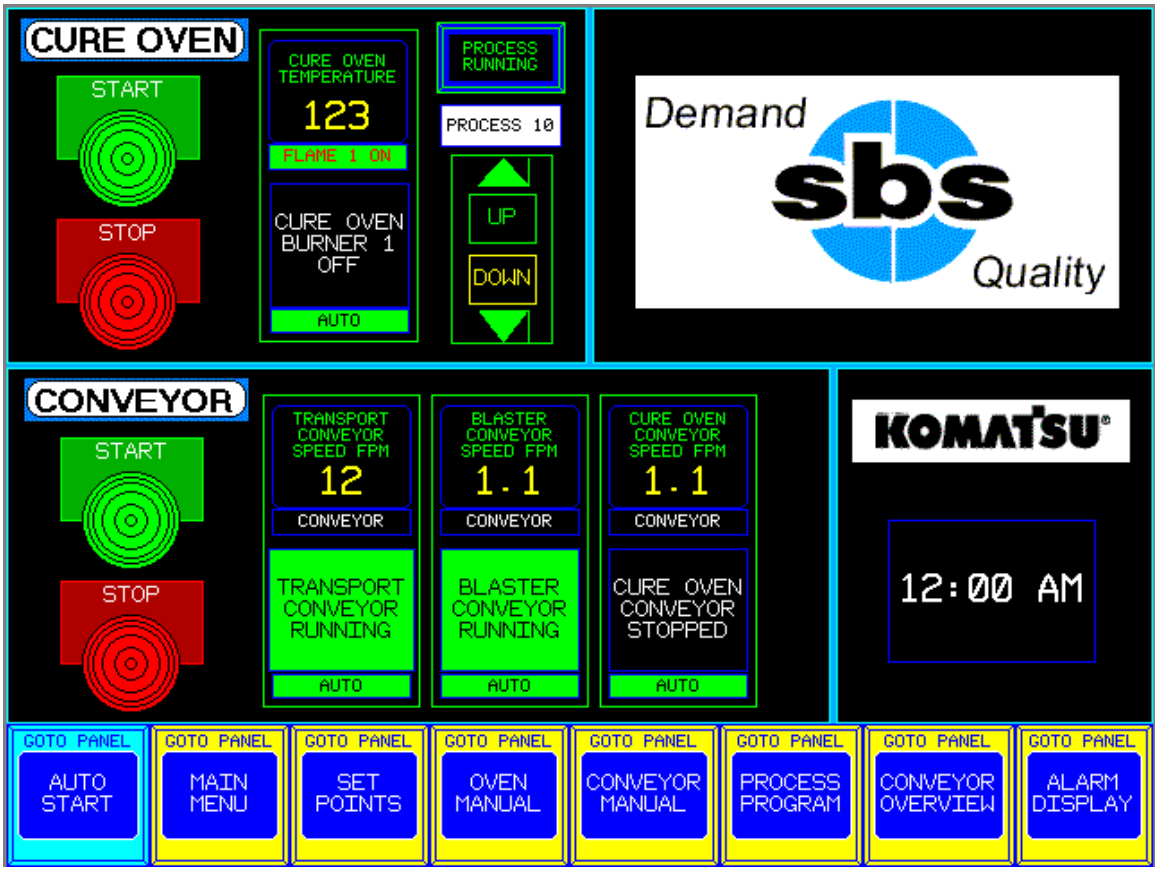
Automatic Mode-Starting of the SBS Powder Line System.

The System may be started from the **Auto Start Screen** accessed by depressing the **Auto Start** Function button in the bottom left corner of any screen.



The Oven or Conveyors must be in **Auto Mode** to be started Automatically.

If the Component is in **Auto** mode then the Burner Message will have a green box and say Auto, if it is in **Manual** mode then the Message will have a black box and will say Manual.
Auto and **Manual** modes must be toggled from their individual **Manual Start** screens.

The **Cure Oven** will start when the **Oven Start Button** is depressed if it is in **Auto** mode, all of the Oven components and fans will step start. The Honeywell controller will start the Burner Fan and following a Twelve-Minute Purge time, the burner will light.

The **Conveyors** will start when the **Conveyor Start Button** is depressed if it is in **Auto** mode. The Conveyor Horn will sound before a Conveyor starts to alert personnel to move from the Conveyor path.

Automatic Mode-Starting of the SBS Powder Line System.

All of the **Oven Indicators** will display the following States of their Oven Burners.

Oven Burner Off
Oven Burner Sequence Started
Oven Burner Purging
Oven Burner Lighting
Oven Burner Preheating
Oven Burner Temperature OK
Oven Burner Flame Disabled
Oven Burner Temp Out of Range
Oven Exhaust Cool Down
Oven Burner Honeywell Relay Alarm

The **Conveyor Indicator** displays the following States of the Conveyor.

Transport Conveyor Stopped
Transport Conveyor Running
Blaster Conveyor Stopped
Blaster Conveyor Running
Cure Conveyor Stopped
Cure Conveyor Running

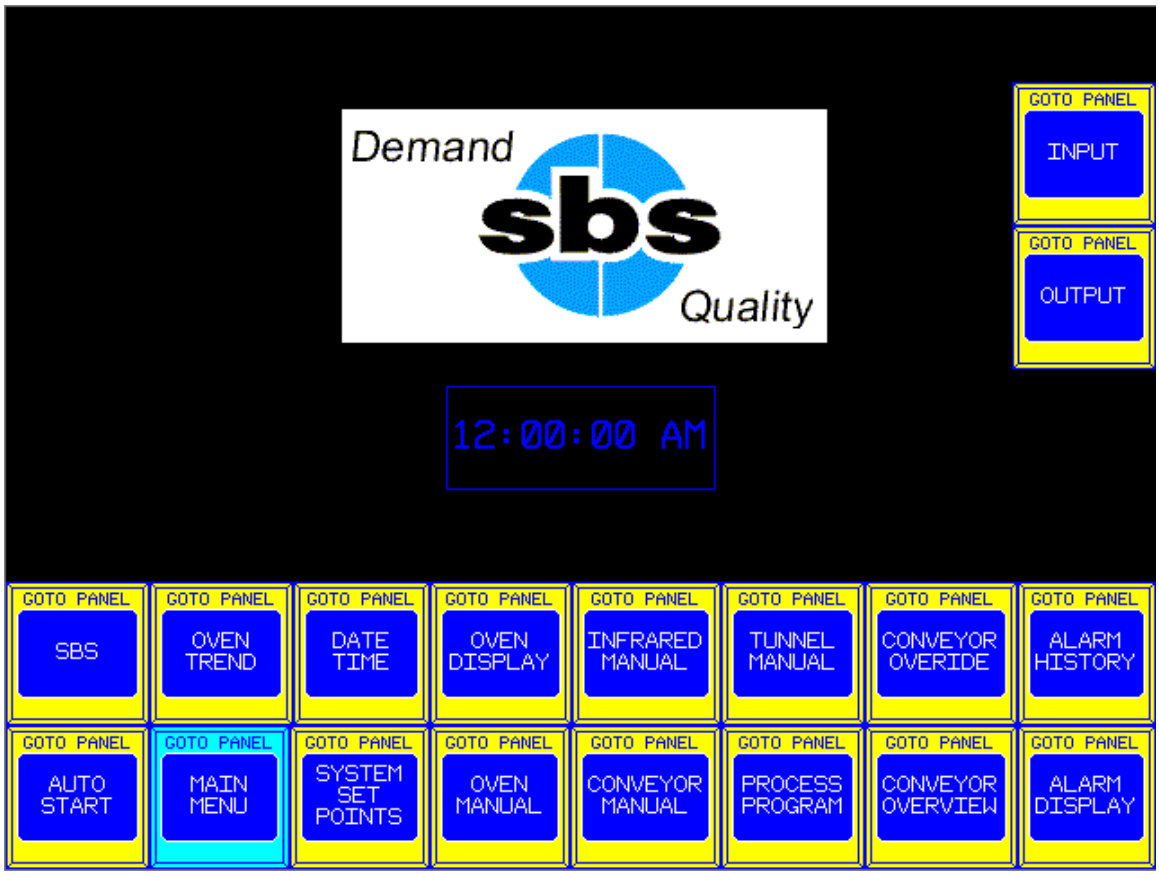
To Stop the **Cure Oven** in Automatic Mode:
Depress the **Oven Stop Button**, the Oven burner will turn off but all of the Oven Fans will continue running until the Oven Temperature is Below 200 Degrees. When the Oven has completed its Cool-Down all Fans and Motors will turn off.

To Stop the Conveyor in Automatic Mode:
Depress the **Conveyor Stop Button**, the three Conveyor Drives will coast to a stop. Individual Conveyors can be stopped from the Conveyor Manual Screen without stopping all three lines.
All of the Conveyor Stop Buttons will disengage the Conveyor whether they are in Auto or Manual Modes.
There are Conveyor Emergency Stop Buttons located at the Remote Push Button Stations located at the Hydraulic Lift Station, the Blow-Off Station, the Blast Unload Station and the Powder Booth Station.
The Emergency Stop on the Blast Booth will only stop the Blast Conveyor.
The Emergency Stop on the Infrared Heater Panel will only stop the Cure Oven Conveyor.

Main Menu- Navigating to Different Screens

The function Keys are Located at the bottom of every screen.
They are used to navigate to all of the screens available.

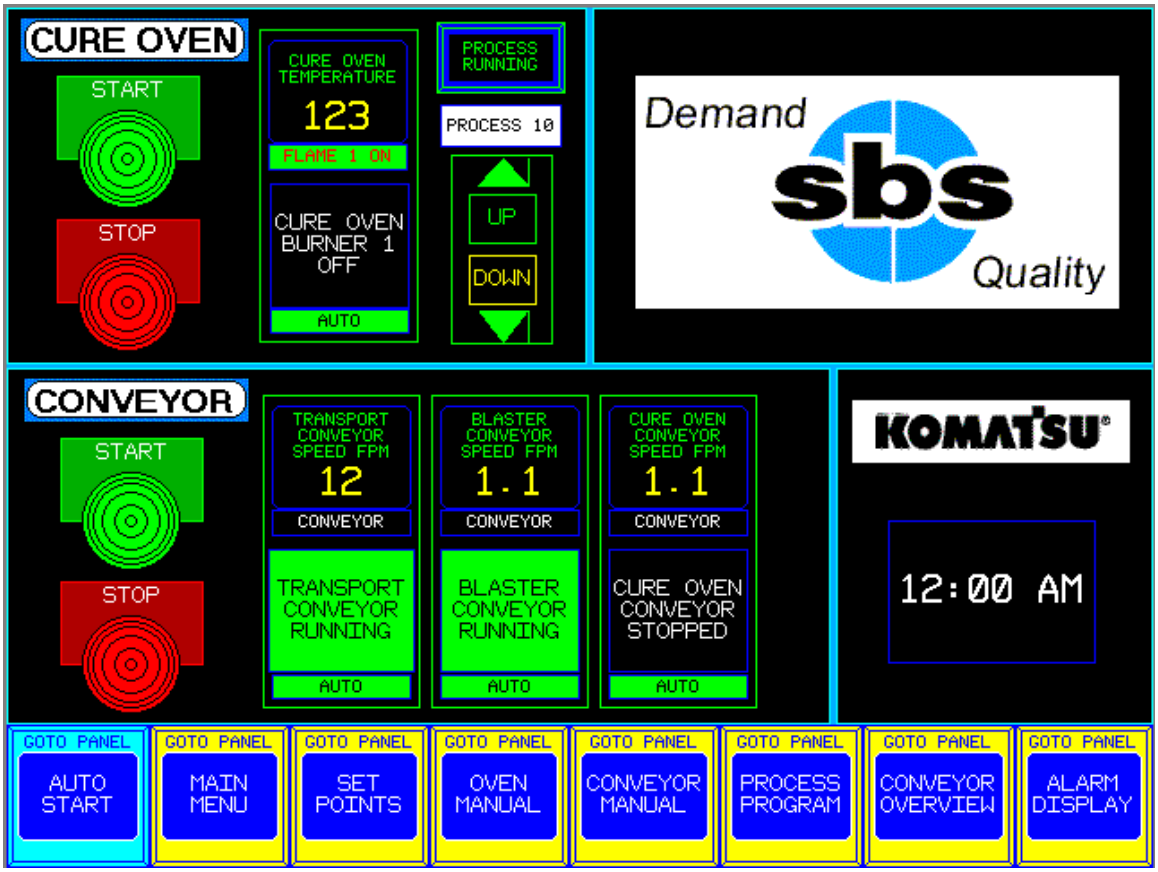
The Main Menu Function Key will display a new window with 16 Function Keys.



The **Auto Start** Selection will display the **Auto Start** Screen
The **Main Menu** Selection is the currently displayed Screen
The **System Setpoints** Selection displays **Setpoint Temperatures** and **Conveyor Speed.**
The **Oven Manual** Selection will display the **Oven Manual** Screen
The **Conveyor** Selection will display the **Conveyor Manual** Screen.
The **Process Program** Selection will display the **Process Programming** Screen.
The **Conveyor Overview** Selection will display the **Conveyor Overview** Screen.
The **Alarm Display** Selection will display the **Alarm Display** Screen.
The **SBS** Selection will display the **SBS Contact Information** Screen.
The **Oven Trend** Selection displays the **8-Hour Trend** Screen for the Cure Oven.
The **Date/Time** Selection displays the **Touchscreen Settings** Screen.
The **Oven Display** Selection will display the **Oven Flame Safety Display** Screen.
The **Infrared Manual** Selection displays the **Infrared Manual Display** Screen**.**
The **Tunnel Manual** Selection displays the **Tunnel Manual** Screen.
The **Conveyor Override** Selection displays the **Conveyor Override** Screen.
The **Alarm History** Selection will display the **Alarm History** Screen.
The **Input** Selection will display the **PLC Digital Input** Screen.
The **Output** Selection will display the **PLC Digital Outputs** Screen.

Automatic Mode-Starting of the Powder Line Cure Oven

The Cure Oven may be started from the **Auto Start Screen** accessed by depressing the **Auto Start** Function button in the bottom left corner of any screen.



The Cure Oven must be in **Auto Mode** to be started automatically.
If **Auto** is not displayed to the right of the **Stop Button** then it must be toggled from **Manual** to **Auto** from the **Oven Manual** Screen.

The **Oven Start Button** is depressed to **Automatically** start all of the Oven components.

Started will be displayed on the **Oven Start Button** and the burner will light following a **Twelve-Minute Purge**.

Automatic Mode-Starting of the Powder Line Combo Oven

The **Cure Oven Indicator** displays the following States of the Oven Burner.

Oven Burner Off
Oven Burner Sequence Started
Oven Burner Purging
Oven Burner Lighting
Oven Burner Preheating
Oven Burner Temperature OK
Oven Burner Flame Switch is Off
Oven Temp Setpoint Change
Oven in 200 Degree Cool-Down
Oven Honeywell Burner Relay Faulted

To Stop the Oven in Automatic Mode:
Depress the **Oven Stop Button**, the Oven burner will turn off but all of the Oven Fans will continue running until the Oven Temperature is Below 200 Degrees.

When the Oven has completed its Cool-Down all Fans and Motors will turn off.

The Current Oven Burner Temperatures are displayed to the right of the Start Button.
The Oven Range of Temperature is 0 to 500 Degrees Fahrenheit.

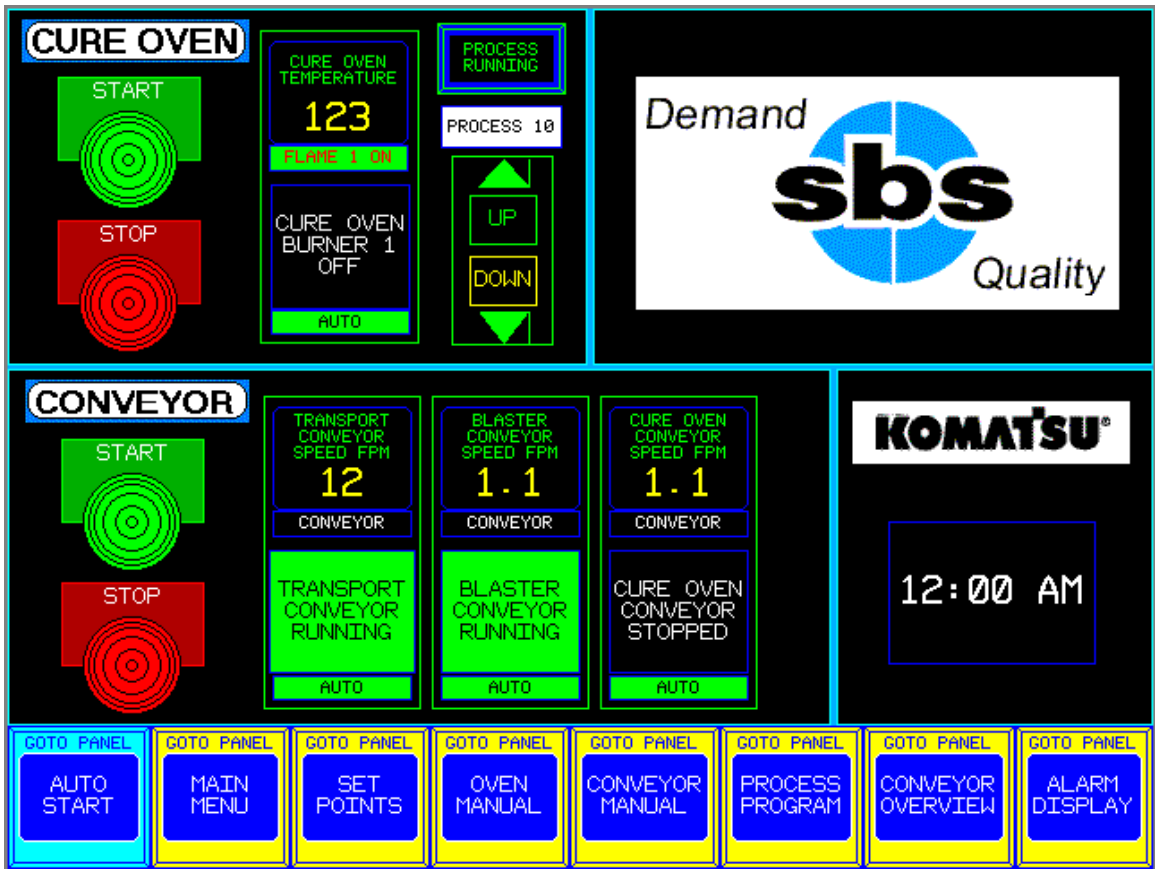
After the Oven is started, all of the individual Fan Start Switches will display **Running**.
When the Oven is Stopped all of the individual Fan Stop Switches will display **Stopped**.

Automatic Mode-Starting of the Powder Line Conveyor

The Conveyors may be started from the **Auto Start Screen** accessed by depressing the **Auto Start** Function button in the bottom left corner of any screen.

The Conveyors can also be started from the **Conveyor Overview Screen** accessed by depressing the **Conveyor Overview** Function button in the bottom right corner of any screen.

The Conveyors will operate in **Auto Mode** or **Manual Mode** and may be started by depressing the **Start Button** on the **Conveyor Overview Screen** or the **Auto Start Screen**.



Automatic Mode-Starting of the Powder Line Conveyor

The **Conveyor Indicators** display the following States of the Conveyors.

Transport Conveyor Stopped
Transport Conveyor Running
Blaster Conveyor Stopped
Blaster Conveyor Running
Cure Conveyor Stopped
Cure Conveyor Running

To Stop the Conveyors in Automatic Mode:

Depress the **Conveyor Stop Button**, the Conveyors will Coast to a Stop in 5 Seconds.

To Stop the Conveyors in an Emergency:

Depress any of the **Conveyor Stops** at their remote locations or at the Control Panel, the Conveyors will come to an immediate Stop. The **Stop Switch must then be Released** and the **Conveyor Contactor must be Reset** at the Control Panel before restarting the Conveyor.

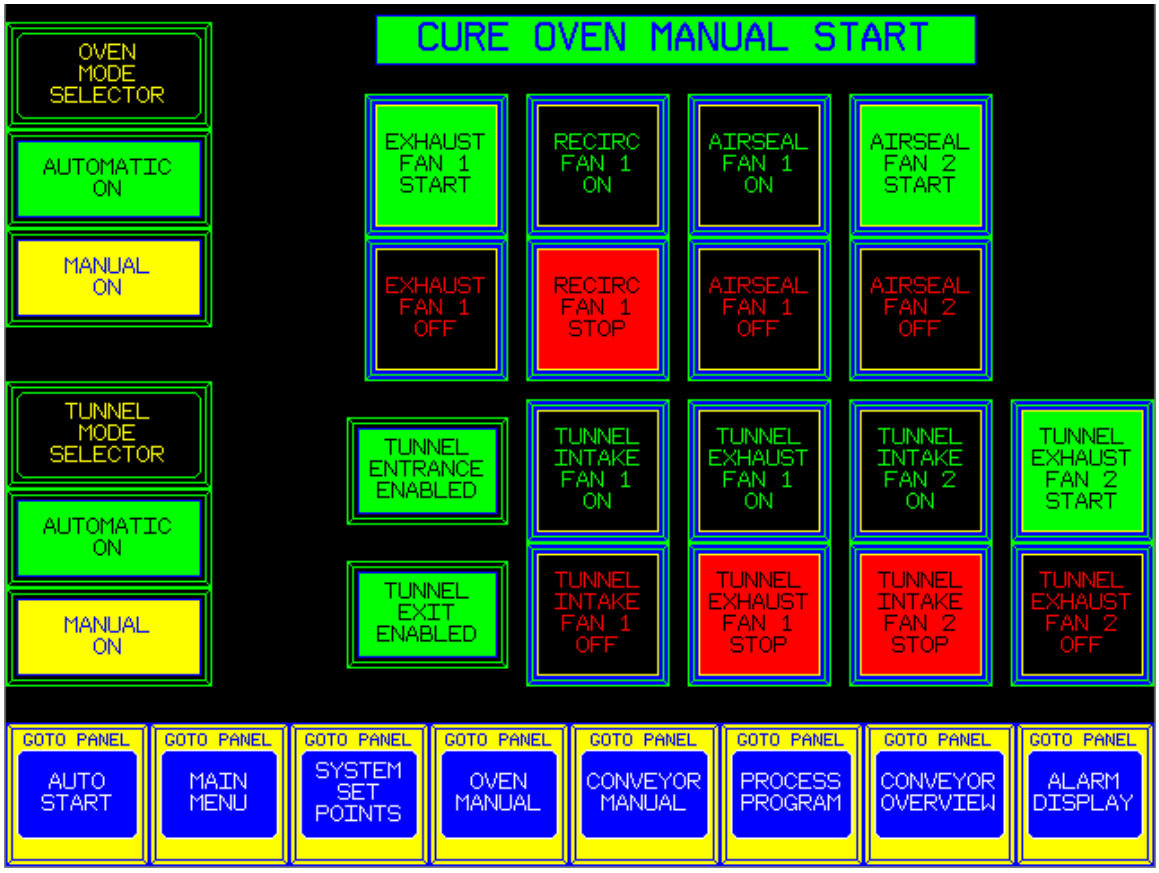
The Current Conveyor Speeds are displayed on the **Auto Start Screen**, the **Conveyor Manual Screen** or the **System Setpoints Screen**.

The Transport Conveyor Range of Speed is a constant 30 FPM.
The Blaster Conveyor Range of Speed is 1.3 FPM to 7.5 FPM.
The Cure Conveyor Range of Speed is 1.0 FPM to 6.0 FPM.

After the Conveyors are running, the Conveyor Message Boxes will Display **Conveyor Running** and the **Conveyor Speed Display** will change from 0.0 to the Actual Running Speed.

Manual Mode-Starting of the Powder Line Cure Oven

The Cure Oven must be started from the **Auto Start Screen** accessed by depressing the **Auto Start** Function button in the bottom left corner of any screen.
Individual motors may then be started from the **Cure Oven Manual Start Screen** accessed by depressing the **Oven Manual** Function button on the bottom of any screen.



All components must be in **Manual Mode** to be started Manually.
If **Manual** is not displayed and flashing on the left side of the screen then it must be toggled from the **Auto** to **Manual.**

The **Oven Start Button** on the **Auto Start Screen** must already be depressed to enable all of the Motors to be Manually toggled On or Off.

After the individual Fans have started all of the individual Fan Start Switches will display **Running**.
When the Oven is Stopped all of the individual Fan Stop Switches will display **Stopped**.

Manual Mode-Starting of the Powder Line Cure Oven

Recirculation Fan 1 can be started when the button is green and the word **Start** is displayed.
Recirculation Fan 1 can be stopped when the button is red and the word **Stop** is displayed.

Exhaust Fan can be started when the button is green and the word **Start** is displayed.
Exhaust Fan can be stopped when the button is red and the word **Stop** is displayed.

Airseal Fan 1 can be started when the button is green and the word **Start** is displayed.
Airseal Fan 1 can be stopped when the button is red and the word **Stop** is displayed.

Airseal Fan 2 can be started when the button is green and the word **Start** is displayed.
Airseal Fan 2 can be stopped when the button is red and the word **Stop** is displayed.

Tunnel Intake Fan 1 Starts when the button is green and the word **Start** is displayed.
Tunnel Intake Fan 1 Stops when the button is red and the word **Stop** is displayed.

Tunnel Exhaust Fan 1 Starts when the button is green and the word **Start** is displayed.
Tunnel Exhaust Fan 1 Stops when the button is red and the word **Stop** is displayed.

Tunnel Intake Fan 2 Starts when the button is green and the word **Start** is displayed.
Tunnel Intake Fan 2 Stops when the button is red and the word **Stop** is displayed.

Tunnel Exhaust Fan 2 Starts when the button is green and the word **Start** is displayed.
Tunnel Exhaust Fan 2 Stops when the button is red and the word **Stop** is displayed.

To Stop the Oven in Manual Mode:

Depress the **Oven Stop Button**, *all of the Oven Fans will continue running until the Oven Temperature is Below 200 Degrees.*

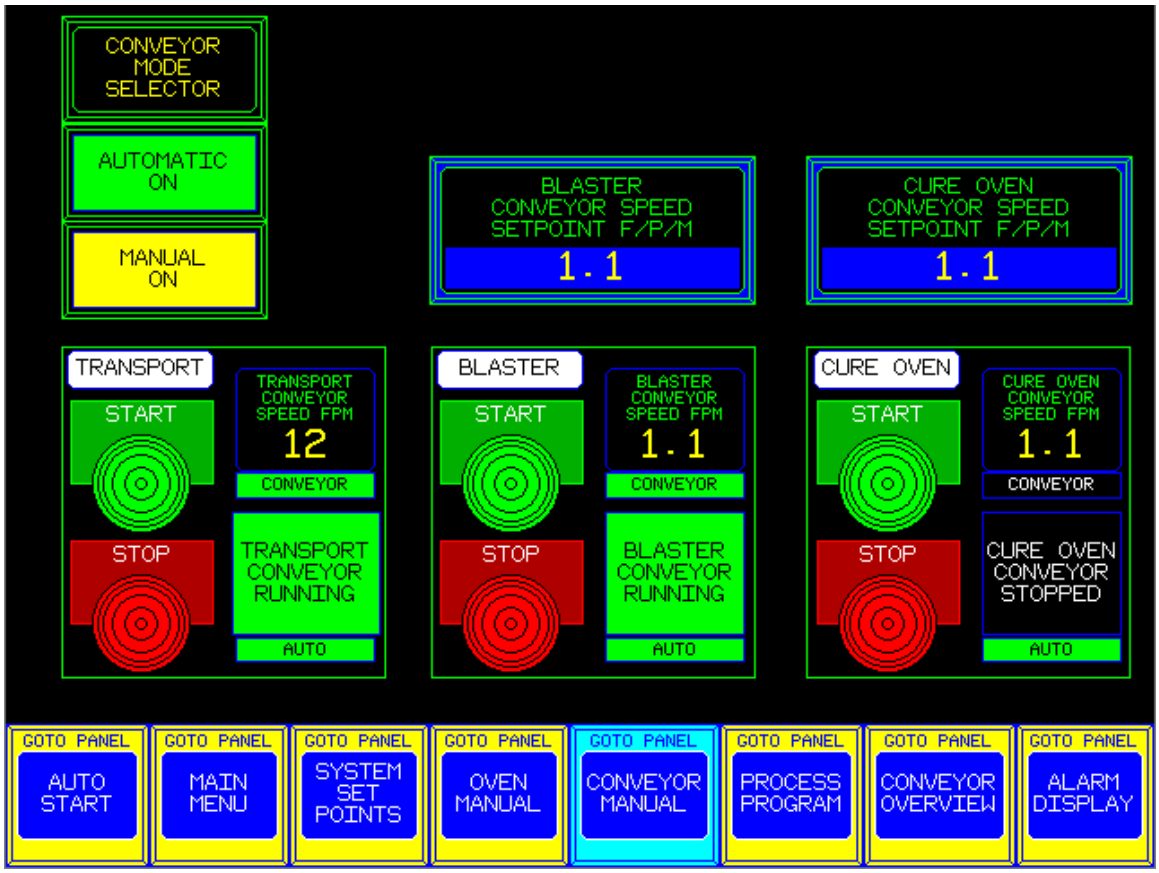
When the Oven has Completed its Cool-Down all Fans and Motors will turn off.

The Current Oven Temperature is displayed below the Start/Stop Buttons.
The Oven Range of Temperature is 0 to 500 Degrees Fahrenheit.

After the Oven is started, all of the individual Fan Start Switches will display **Running**.
When the Oven is Stopped all of the individual Fan Stop Switches will display **Stopped**.

Manual Mode-Starting of the Powder Line Conveyors

The Conveyors can be started individually from the **Conveyor Manual Screen** accessed by depressing the **Conveyor Manual** Function button in the bottom right corner of any screen.



The Current Conveyor Speeds are displayed on the **Auto Start Screen** or the **Conveyor Manual Screen**.
The Transport Conveyor Range of Speed is a constant 30 FPM.
The Blaster Conveyor Range of Speed is 1.3 FPM to 7.5 FPM.
The Cure Conveyor Range of Speed is 1.0 FPM to 6.0 FPM.

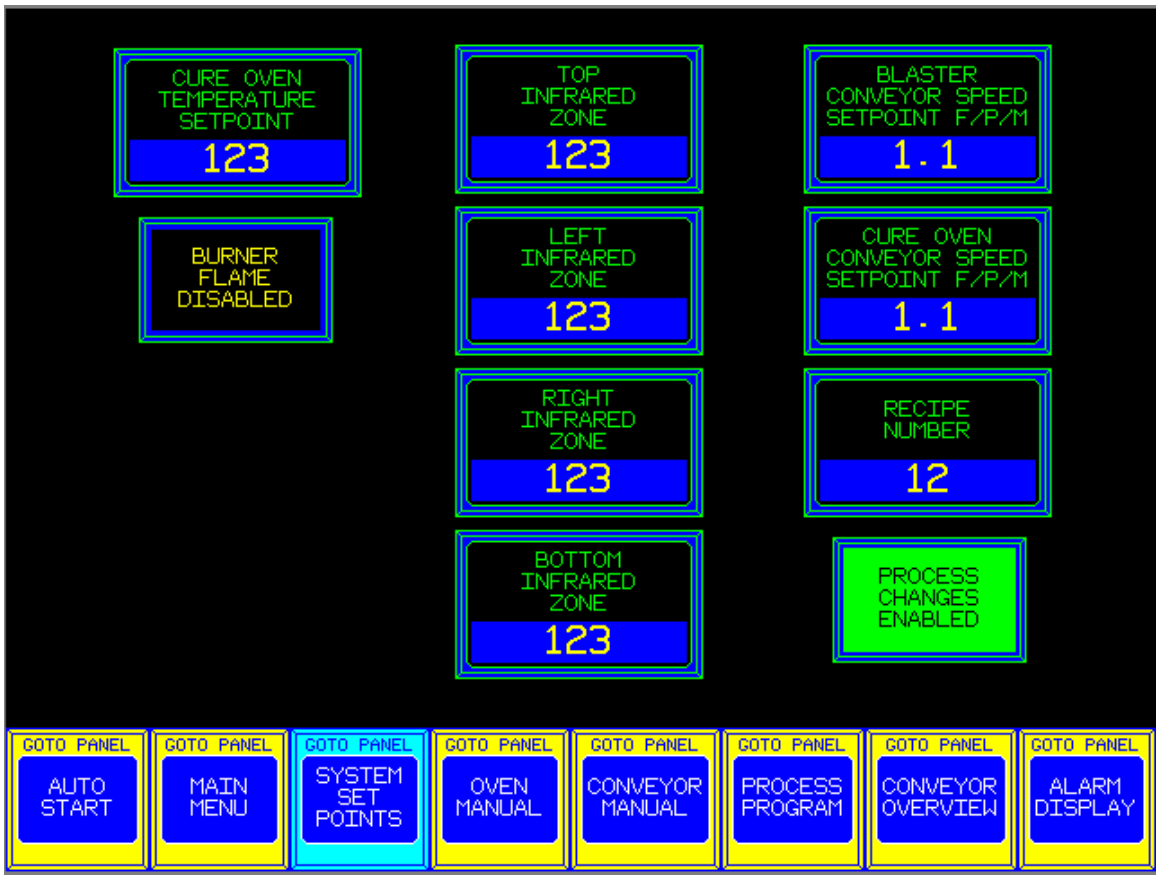
After the Conveyors are running, the Conveyor Message Boxes will Display **Conveyor Running** and the **Conveyor Speed Displays** will change from 0.0 to the Actual Running Speed.

The **Conveyor Indicators** display the following States of the Conveyors.

Transport Conveyor Stopped
Transport Conveyor Running
Blaster Conveyor Stopped
Blaster Conveyor Running
Cure Conveyor Stopped
Cure Conveyor Running

System Setpoints-Entering New Setpoint Variables

The status of the System Temperature Setpoints and Current operating Temperatures are viewed by depressing the **System Setpoints** Button.



A new Temperature Setpoint Can be entered by depressing any of the Cure Oven or Infrared Zone Percent Setpoint buttons.

A new Setpoint can be entered when the Keypad window is displayed

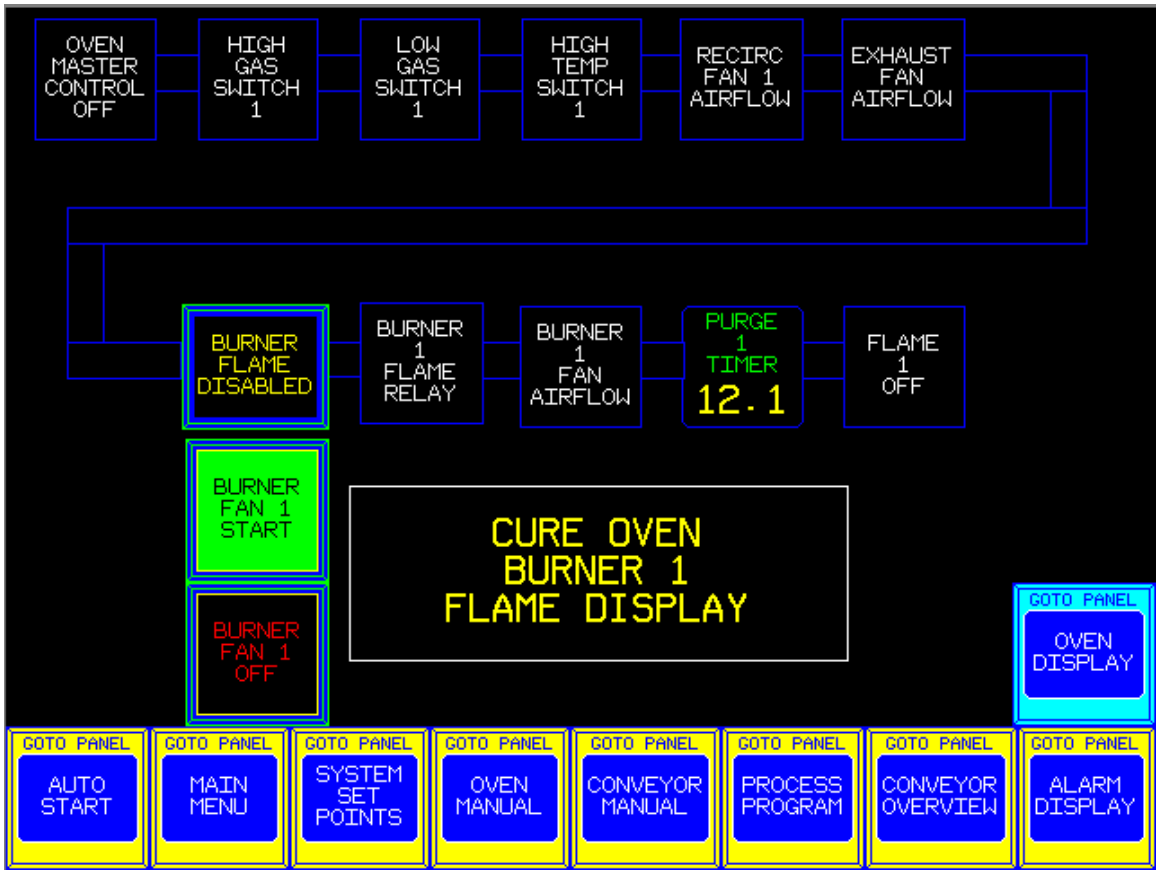
The Cure Oven Setpoint parameters are between 0 and 500 Degrees Fahrenheit.

The Infrared Zone Setpoint parameters are between 20 and 100 Percent Output.

The Transport Conveyor Speed is a Constant 30 Feet Per Minute.
The Blaster Conveyor Setpoint parameters are between 1.3 and 7.5 Feet Per Minute.
The Cure Conveyor Setpoint parameters are between 1.0 and 6.0 Feet Per Minute.

Oven Display-Viewing the Combo Oven Burner Flame Safety

Pressing the **Oven Display** Selection from the **Main Menu** screen you can monitor the status of the **Cure Oven Burner Flame Safety**.



Each of the Flame Safeties are field wired in series, hence each must turn green on the Display Screen sequentially starting from the **Emergency Stop Input, Master Control**.

If both **Gas Pressures** are in range then the Display will be green up to the **High Temperature Switch**.

A Black **High Temperature Switch** indicates that it must be reset, it is located next to the Oven burner on top of the Oven.

As each Oven Fan is turned on its Airflow Switch will turn green.

Depressing the **Flame Enable button** will disable the Burner. With the Burner disabled the Burner Fan can be turned on and off with the Start/Stop buttons for maintenance.

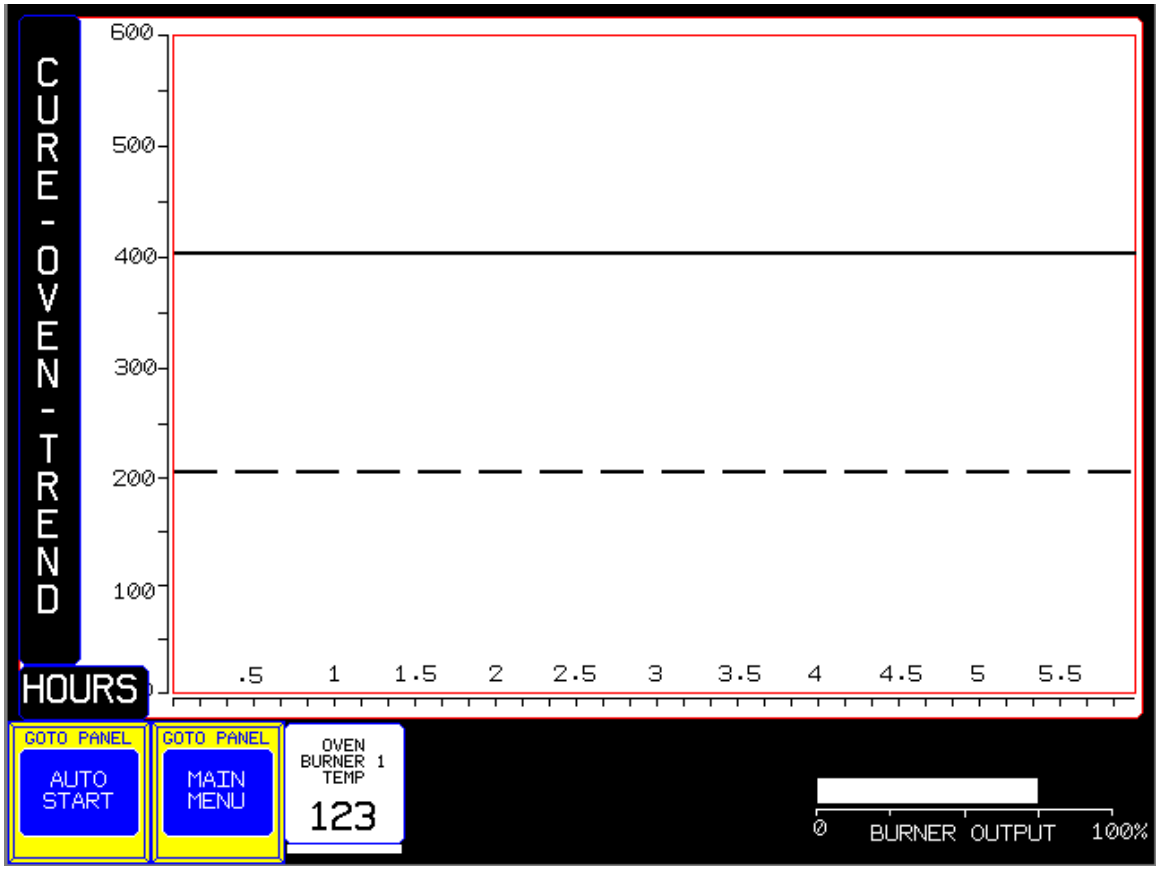
The Burner should be **Enabled** during normal operation.

The **Purge Time** remaining will be displayed when all of the **Flame Safeties** are made.

The **Oven Burner Flame Off** will turn green and display a Flame which indicates the Current Flame Output when a **Main Flame** is detected.

Oven Trend Display

The status of the Cure Oven Temperature and Setpoint is viewed on a Trend by depressing the **Oven Trend** Button from the **Main Menu** screen.



The recorded Temperatures move from **Right** to **Left** the way a Chart recorder operates.

The Temperature and Setpoint is displayed in a Six-Hour time span and may only be viewed while they are displayed.

The Trend Display will update every Two Minutes.

The **Burner 1 Temperature** is Displayed with a **Solid Black Line**.
The **Burner 1 Setpoint** Temperature is Displayed with a **Dashed Black Line**.

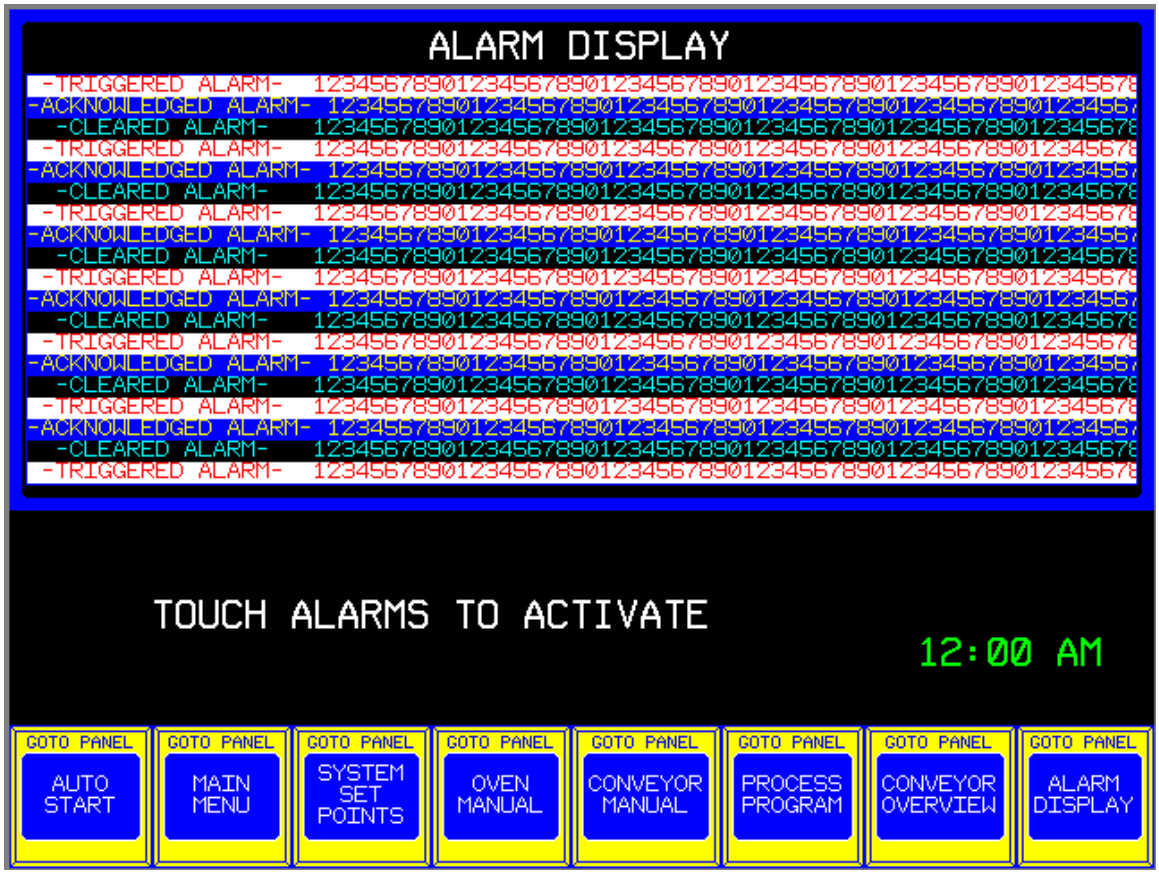
Alarms-Viewing Current and Acknowledged Alarms

When a new alarm is detected the Alarm Master Screen is Automatically Displayed. Depressing the **Alarm Master** from any screen will also access the Alarm Screen.

IMPORTANT!

If an Alarm is Acknowledged with the **Acknowledge All** Button the PLC will Ignore the Alarm and the Beacon will turn Off.

If an Alarm is Reset with the **Reset All** Button then if the Alarm is still Active it will reactivate the Alarm Screen and Beacon and will be displayed again, if it is not still Active then it will not be displayed again.



Alarm Messages- Currently Programmed Alarms

Currently Programmed Alarm are:

Cure Oven

Oven Recirculation Fan Loss of Airflow Alarm
Oven Exhaust Fan Loss of Airflow Alarm
Oven Recirculation Fan 1 Contactor Overload Alarm
Oven Airseal Fan 1 Contactor Overload Alarm
Oven Airseal Fan 2 Contactor Overload Alarm
Oven Exhaust Fan Contactor Overload Alarm
Oven Burner Fan 1 Contactor Overload Alarm
Oven High Gas Pressure Switch Tripped Alarm
Oven Low Gas Pressure Switch Tripped Alarm
Oven High Temperature Limit Switch Tripped Alarm
Oven Honeywell Burner Control Tripped Alarm
Oven Burner 1 Temperature Probe Error

Heat Dissipation Tunnel

Tunnel Entrance Intake Fan Contactor Overload Alarm
Tunnel Entrance Exhaust Fan Contactor Overload Alarm
Tunnel Exit Intake Fan Contactor Overload Alarm
Tunnel Exit Exhaust Fan Contactor Overload Alarm

Conveyor

Transport Conveyor Overload Tripped Alarm
Transport Conveyor Take-Up is Fully Extended Alarm
Transport Conveyor Take-Up Air Pressure Low Alarm
Transport Conveyor Torque Blast Conveyor Overload Tripped Alarm
Blast Conveyor Overload Tripped Alarm
Blast Conveyor Take-Up is Fully Extended Alarm
Blast Conveyor Take-Up Air Pressure Low Alarm
Blast Conveyor Overload Tripped Alarm
Cure Conveyor Overload Tripped Alarm
Cure Conveyor Take-Up is Fully Extended Alarm
Cure Conveyor Take-Up Air Pressure Low Alarm
Cure Conveyor Overload Tripped Alarm

Conveyor Frequency Drive Faulted (Must Reset)
Touchscreen Panel Emergency Stop Depressed (Must Reset)

Alarm Messages- Currently Programmed Alarms

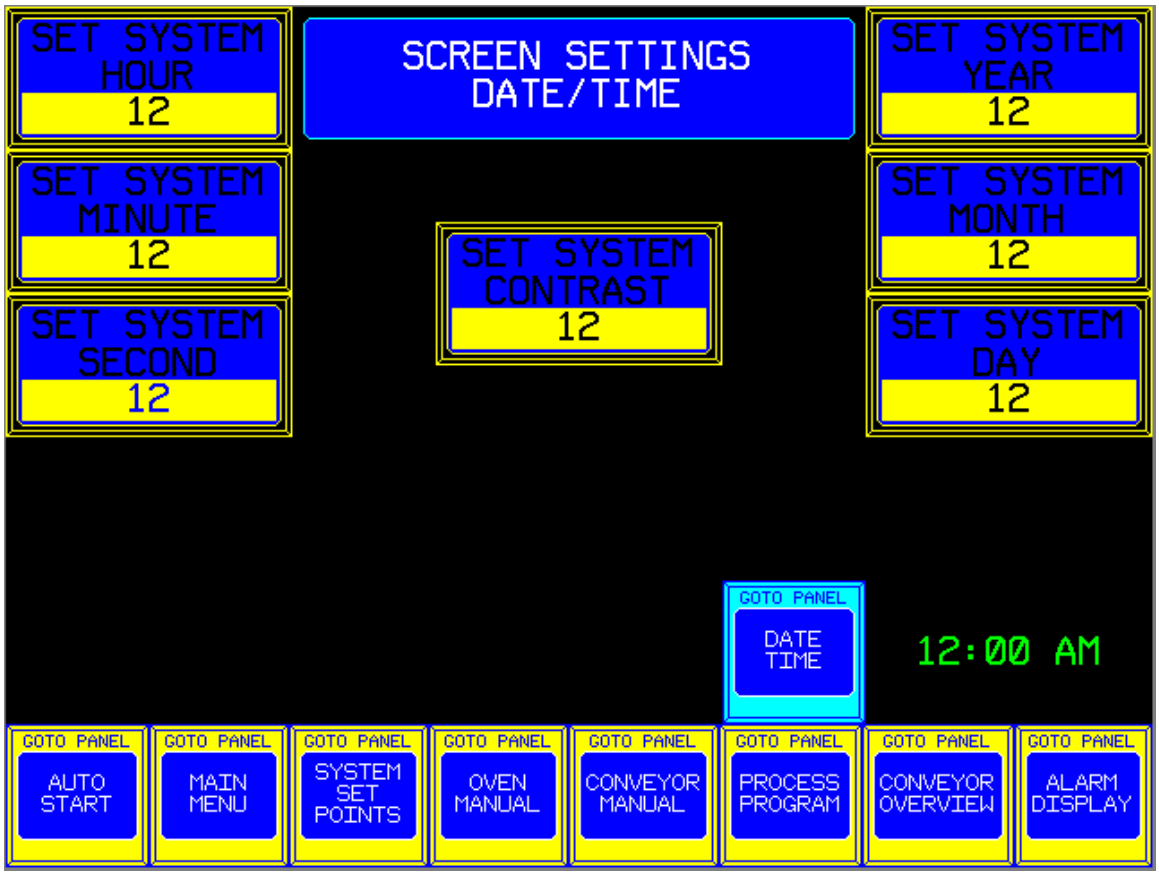
Currently Programmed Alarm are:

Washer

Washer Stage 1 Pump Contactor Overload Alarm
Washer Stage 2 Pump Contactor Overload Alarm
Washer Stage 3 Pump Contactor Overload Alarm
Washer Stage 4 Pump Contactor Overload Alarm
Washer Stage 5 Pump Contactor Overload Alarm
Washer Stage 1 Burner Fan Contactor Overload Alarm
Washer Stage 3 Burner Fan Contactor Overload Alarm
Washer Entrance Exhaust Fan Contactor Overload Alarm
Washer Exit Exhaust Fan Contactor Overload Alarm
Washer Stage 1 High Gas Pressure Alarm
Washer Stage 1 Low Gas Pressure Alarm
Washer Stage 1 Low Water Alarm
Washer Stage 1 Honeywell Control Relay Alarm
Washer Stage 1 Temperature Input Error Alarm
Washer Stage 3 High Gas Pressure Alarm
Washer Stage 3 Low Gas Pressure Alarm
Washer Stage 3 Low Water Alarm
Washer Stage 3 Honeywell Control Relay Alarm
Washer Stage 3 Temperature Input Error Alarm
Washer Stage 1 High Temperature Burner Off Alarm
Washer Stage 3 High Temperature Burner Off Alarm
Washer Panel Emergency Stop Depressed (Must Reset)

Setting Master-Touchscreen Settings

Pressing the **Setting Master** Selection from the **Main Menu** screen displays the settings for the Touchscreen.



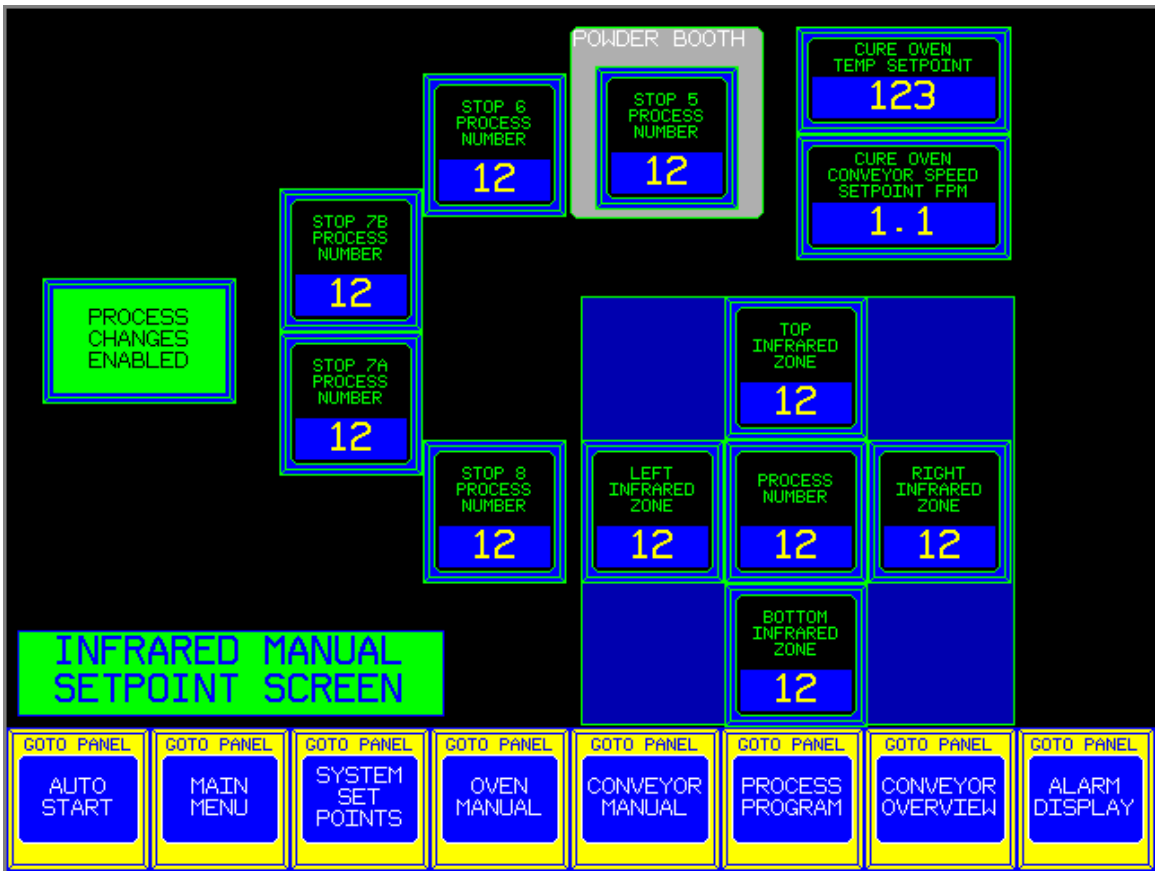
The Time used on the Touchscreen Displays as well as the Alarm Message Time Stamps are set using the **System Hour**, **System Minute** and **System Seconds** input buttons.

The Date used on the Touchscreen Displays as well as the Alarm Message Date Stamps are set using the **System Year**, **System Month** and **System Day** input buttons.

The Contrast used on all the Screens is set using the **System Contrast** input button.

Booth Display- Station Status for IR Preheat

Pressing the **Booth Display** Selection from the center of the function keys displays the **Booth Display screen.**



The **IR Oven Heat Enabled/Disabled** button must be in the **Enabled** position for the Infrared Heaters to heat up.
The **Oven Entrance Exhaust Fan** must be turned on for the Infrared Heaters to heat up.

The distance between **Booth 1-Station 1** and the **Infrared Oven-Station 10** is 100 feet. This distance is divided into 10 separate 10-foot stations.
Each station may have a different Infrared Setpoint assigned to it.

When the Infrared Mode Selector is in the **Automatic On** mode then the Infrared intensity will change as the station sequencer advances for each 10 foot station.
When the Infrared Mode Selector is in the **Manual On** mode then the Infrared intensity can be entered directly into the Setpoint and will not change.

Booth Display- Station Status for IR Preheat

Operating the Infrared in Automatic mode:

The **Station Counter** advances the Process setpoint to the next Station after each count of 10.
A Process number is entered by depressing buttons 1 through 4 in any of the booths, the yellow light will flash and may be changed at any time before the Station advances.
The Process number may be deleted by pressing the yellow button on the bottom before the Station Advances.
If a preceding booth has painted a part and entered a Process number then the yellow light will be On in the following booths.
The Process number can still be changed in any booth or from the Touchscreen.

From the Touchscreen all of the current pending and entered Process numbers can be viewed under their Station number.
If a Process number has been entered in a booth but has not yet advanced then the Station will be flashing green.
When a Process number has advanced into a Station then the Station will be Green.
The current Process number for each Station is below the Station number and can be changed at any time, even at the Infrared Station.

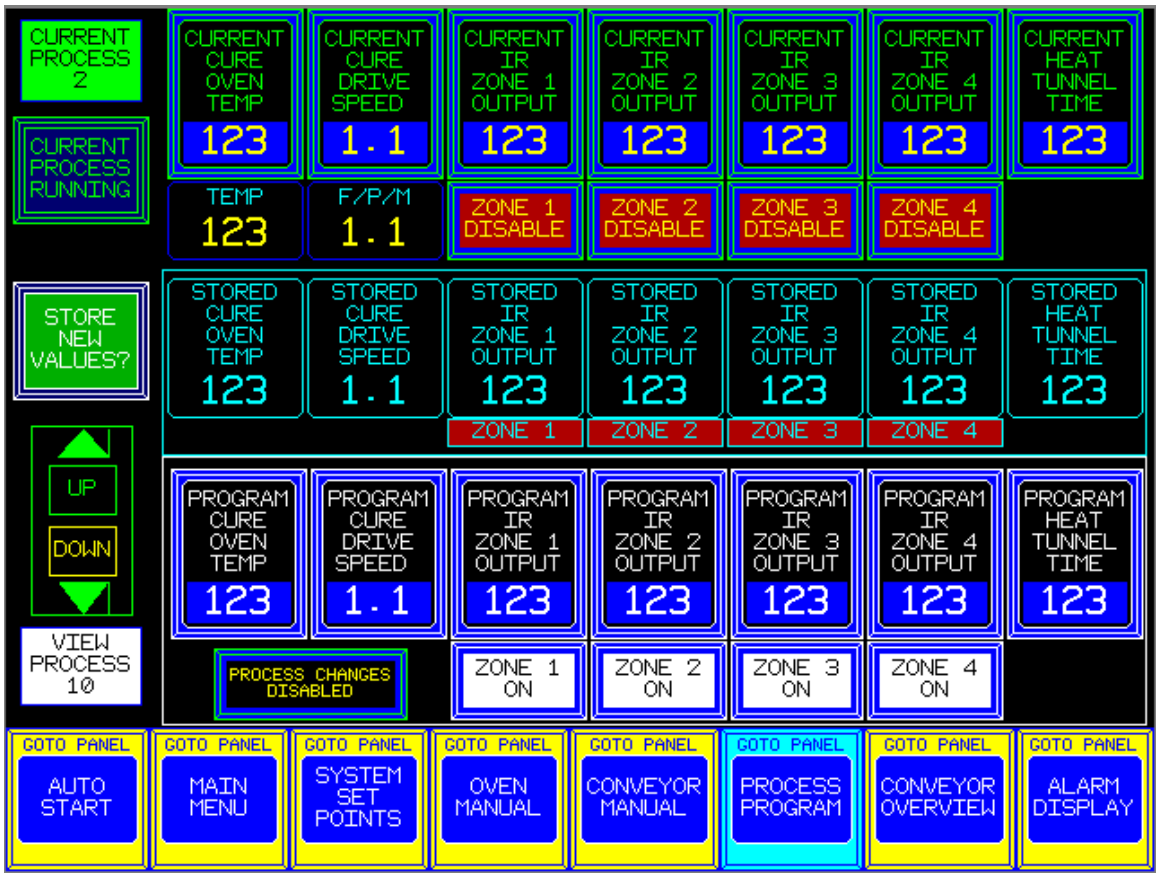
The Station Counter may be reset from the booth by depressing the Process 4 button and the Delete button simultaneously, the fourth black button and bottom yellow button.
The Station Counter may also be reset or advanced from the Touchscreen.
The Station Counter may be reset when the first part comes into the booth to synchronize the Conveyor with the part loading.

A Process number should be entered into the Station prior to the first part to preheat the Infrared Heaters.

The **IR Oven Heat Enabled/Disabled** button must be in the **Enabled** position for the Infrared Heaters to heat up.
The **Oven Entrance Exhaust Fan** must be turned on for the Infrared Heaters to heat up.

Process Program Screen

Pressing the **Process Program** Selection from the **Main Menu** screen displays the **Process Program** screen.



Each Process 1 through 4 may have a different Infrared Intensity programmed for it. These Process setpoints are then engaged from the Paint booths by depressing the black buttons or by entering a number from the **Booth Display** screen.

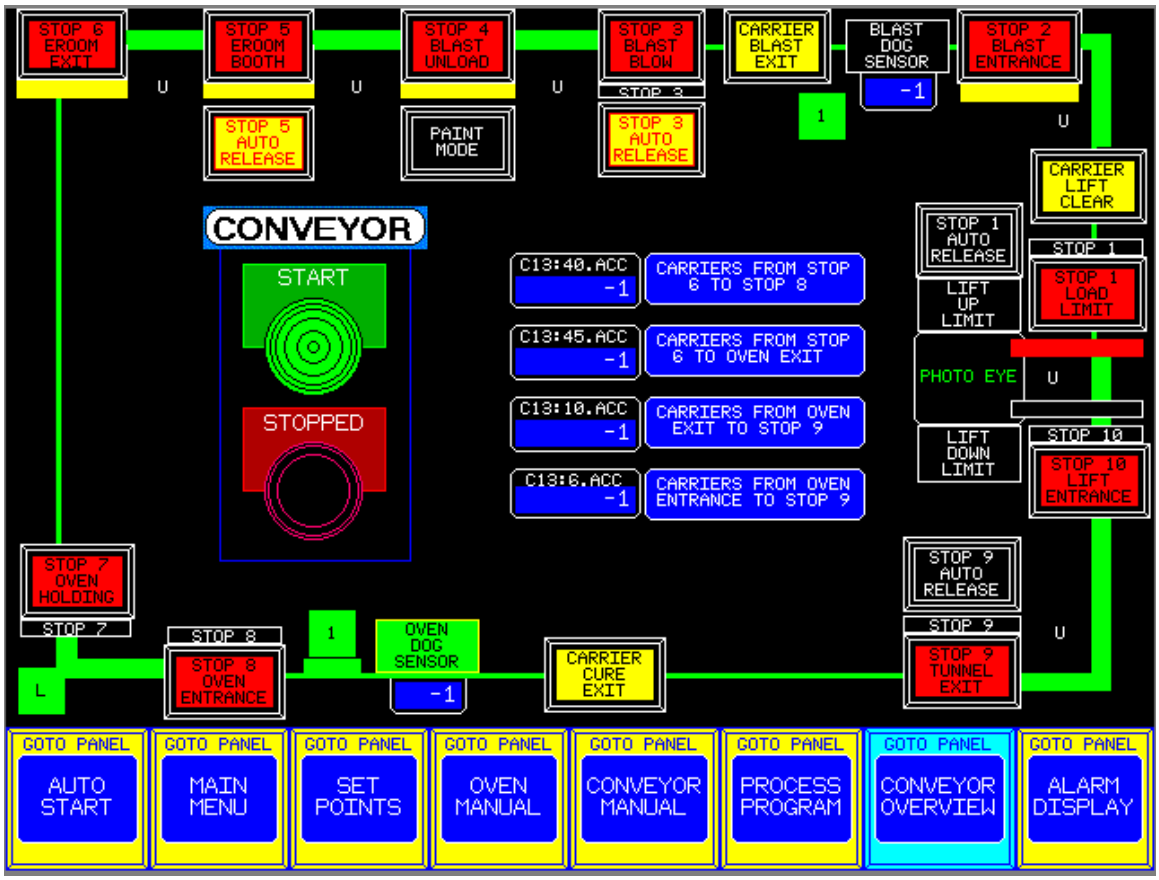
The Intensity ranges for the Infrared are from 20 to 100 percent.

When the Infrared Mode Selector is in the **Automatic On** mode then the Infrared intensity will change as the station sequencer advances for each 10 foot station.
When the Infrared Mode Selector is in the **Manual On** mode then the Infrared intensity can be entered directly into the Setpoint and will not change.

The **IR Oven Heat Enabled/Disabled** button must be in the **Enabled** position for the Infrared Heaters to heat up.
The **Oven Entrance Exhaust Fan** must be turned on for the Infrared Heaters to heat up.

Process Program Screen

Pressing the **Process Program** Selection from the **Main Menu** screen displays the **Process Program** screen.



Each Process 1 through 4 may have a different Infrared Intensity programmed for it. These Process setpoints are then engaged from the Paint booths by depressing the black buttons or by entering a number from the **Booth Display** screen.

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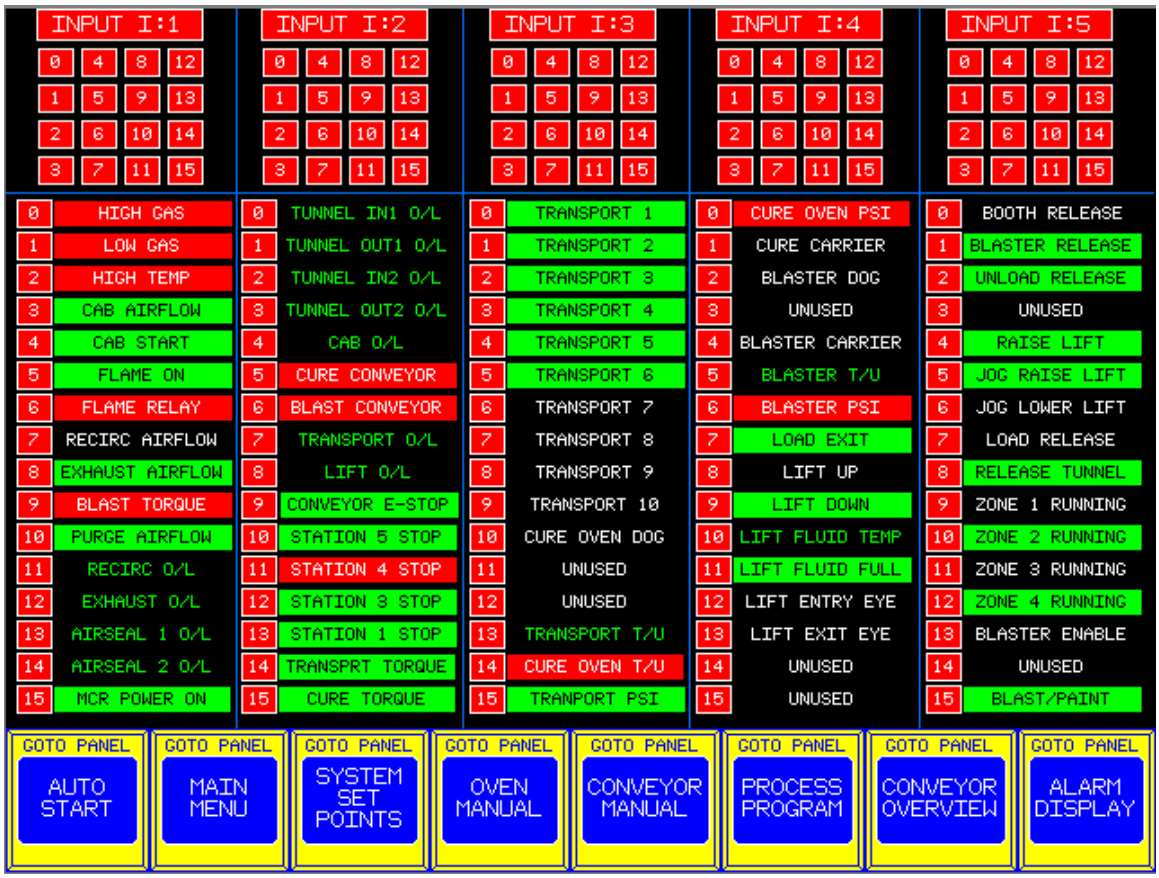
When the Infrared Mode Selector is in the **Automatic On** mode then the Infrared intensity will change as the station sequencer advances for each 10 foot station.
When the Infrared Mode Selector is in the **Manual On** mode then the Infrared intensity can be entered directly into the Setpoint and will not change.

The **IR Oven Heat Enabled/Disabled** button must be in the **Enabled** position for the Infrared Heaters to heat up.
The **Oven Entrance Exhaust Fan** must be turned on for the Infrared Heaters to heat up.

Process Program Screen

Pressing the **Process Program** Selection from the **Main Menu** screen displays the **Process Program** screen.



Each Process 1 through 4 may have a different Infrared Intensity programmed for it. These Process setpoints are then engaged from the Paint booths by depressing the black buttons or by entering a number from the **Booth Display** screen.

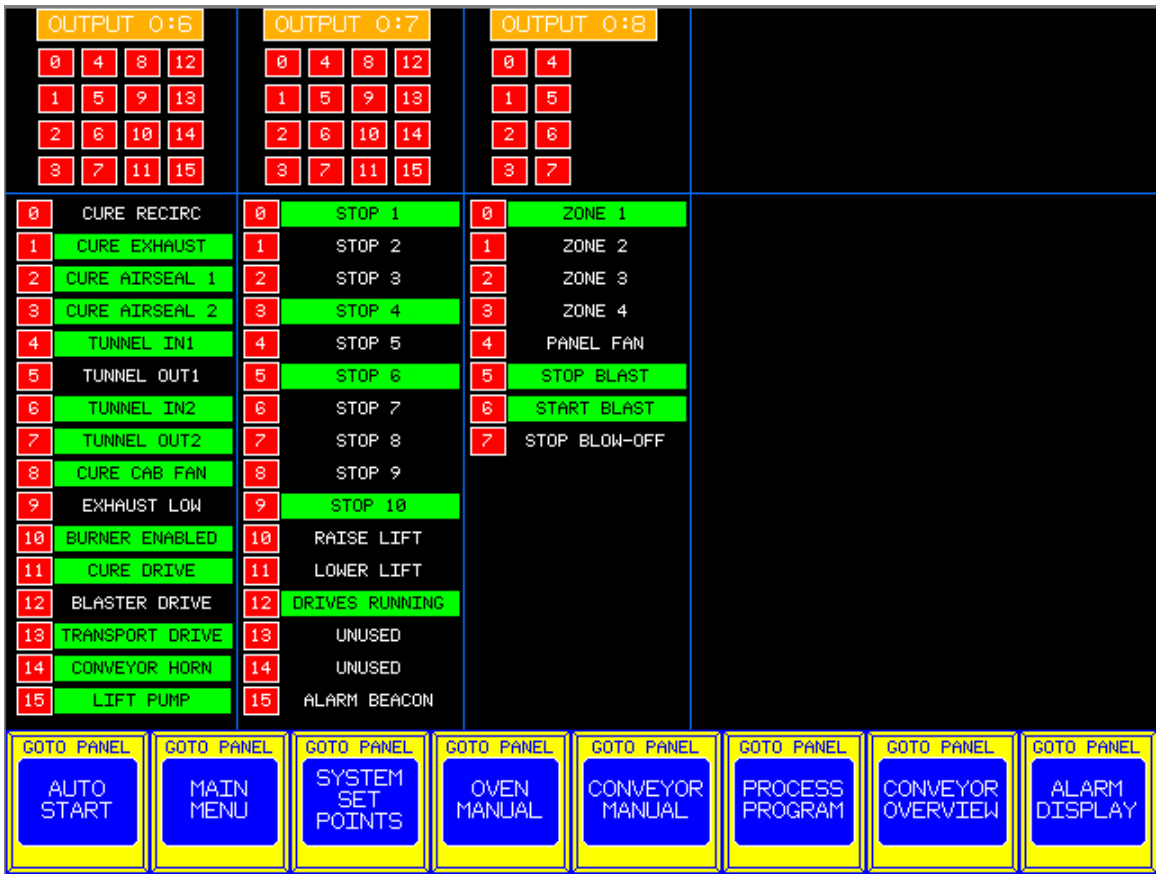
The Intensity ranges for the Infrared are from 20 to 100 percent.

When the Infrared Mode Selector is in the **Automatic On** mode then the Infrared intensity will change as the station sequencer advances for each 10 foot station.
When the Infrared Mode Selector is in the **Manual On** mode then the Infrared intensity can be entered directly into the Setpoint and will not change.

The **IR Oven Heat Enabled/Disabled** button must be in the **Enabled** position for the Infrared Heaters to heat up.
The **Oven Entrance Exhaust Fan** must be turned on for the Infrared Heaters to heat up.

Process Program Screen

Pressing the **Process Program** Selection from the **Main Menu** screen displays the **Process Program** screen.



Each Process 1 through 4 may have a different Infrared Intensity programmed for it. These Process setpoints are then engaged from the Paint booths by depressing the black buttons or by entering a number from the **Booth Display** screen.

The Intensity ranges for the Infrared are from 20 to 100 percent.

When the Infrared Mode Selector is in the **Automatic On** mode then the Infrared intensity will change as the station sequencer advances for each 10 foot station.
When the Infrared Mode Selector is in the **Manual On** mode then the Infrared intensity can be entered directly into the Setpoint and will not change.

The **IR Oven Heat Enabled/Disabled** button must be in the **Enabled** position for the Infrared Heaters to heat up.
The **Oven Entrance Exhaust Fan** must be turned on for the Infrared Heaters to heat up.