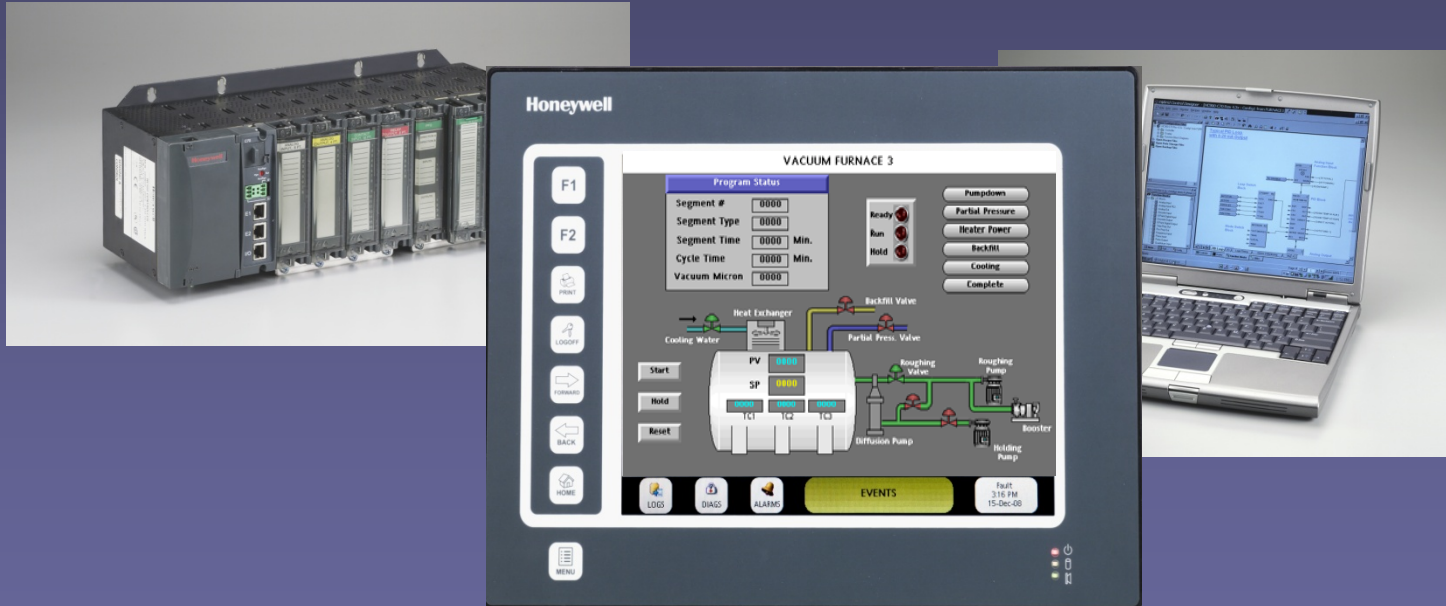


## 900 Control Station



**The Logical Choice for Managing HC900 Hybrid Controls**  
**Touch Screen Interface**  
**Graphic Presentations**  
**WEB Enabled**  
**Easy to Use Configuration Tools**

F1

F2



PRINT



LOGOFF



FORWARD



BACK



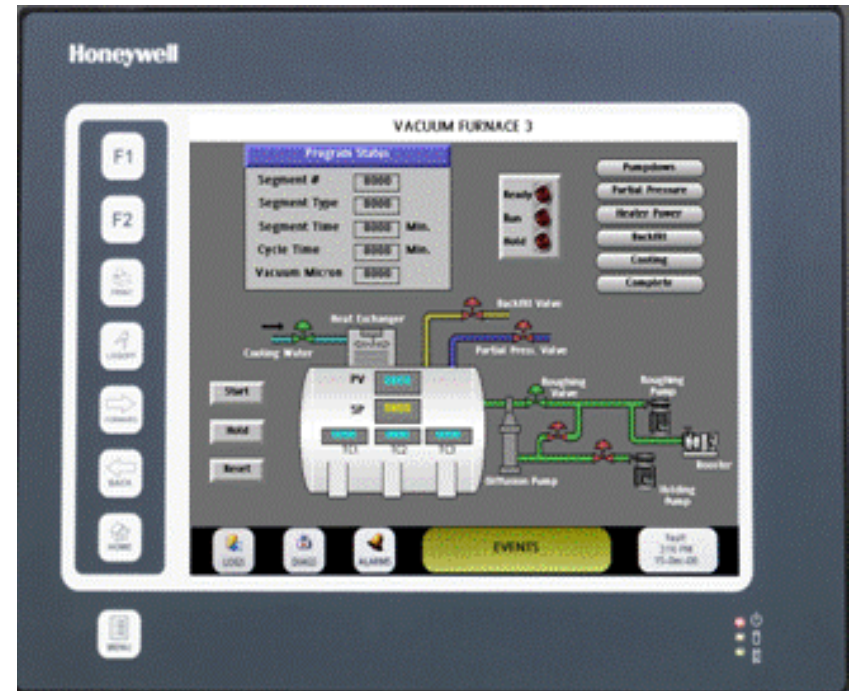
HOME

- Provide an industrially hardened operator interface to work as an integral part of the HC900 control system.
- Leverage this focused application approach to provide benefits in ease of use and optimized performance.
- Avoid penalizing those with less demanding requirements while satisfying those with more demanding needs.
- Provide functions that support controller features not available through 3<sup>rd</sup> party alternative products. (Controller Mode selection, I/O Rack status, I/O Calibration, etc.)
- Satisfy a broad range of needs and preferences through configuration flexibility.

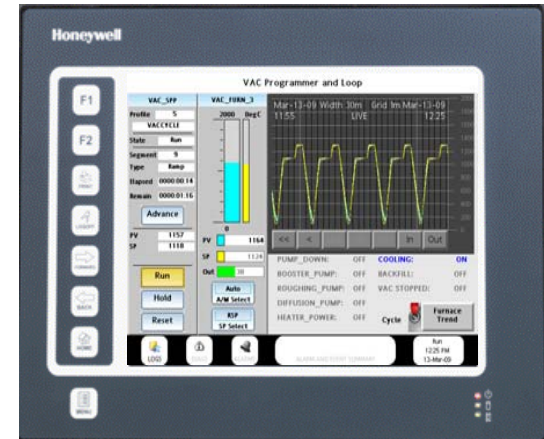


MENU

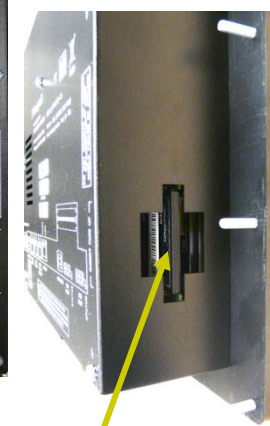
- 10" Display with touch screen and dedicated buttons
- Standard and Custom Graphic Displays
- Ethernet or Serial Connectivity
- Embedded Web Server
- Pre-built display tray for system status (*alarms, data logs, events, etc.*)
- Controller Status Displays
- Trending and Data Logging
- Alarm/Event history
- Recipe Selection
- Security
- Email Notifications
- Custom Graphic Development Tools
- Multiple interfaces per Controller (*Up to 3*)



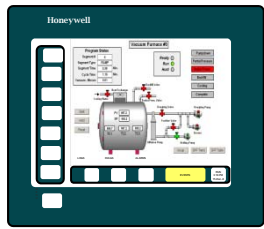
- Durable sheet metal case
  - Handles harsh environments
- Type 4X front panel ingress protection
  - Wash-down, corrosive atmospheres
- Dedicated membrane keys for frequently accessed functions
  - Frees up display space for improved process viewing
- Front panel LED indicators
  - Instrument power, memory access, active alarms
- Expandable memory with CompactFlash® card slot
  - Protected access behind the panel
  - Increased data logging capacity
  - Print screen to file support
- Ports – Ethernet, USB, RS485, RS232
  - ❑ Protocols: HC900, Modbus (Master/Slave), Modbus TCP
- 24Vdc operating voltage
  - Safe supply voltage



Power and Port Connections



Optional Flash Memory

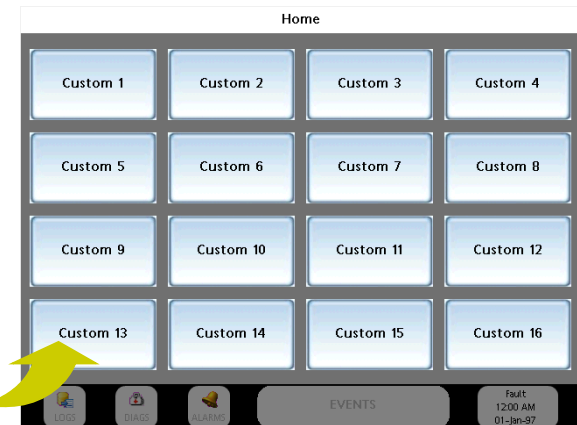


Ethernet or  
RS485 Serial



- Connects to a HC900 Controller via Ethernet or RS485 (One Controller per station)
- Requires the HC900 to have a configuration file (.cde)
- Uses Station Designer Configuration Software
- Create a 900 Control Station configuration using the controller database
- A Master template (common to all displays) defines buttons (Alarms, Events, etc.) soft-keys (Back, Forward, Print, etc.)

- Many standard displays for controller status and maintenance via the Menu soft-key.
- “Home” soft-key and display to get started.
- All pre-defined displays and navigation may be customized.

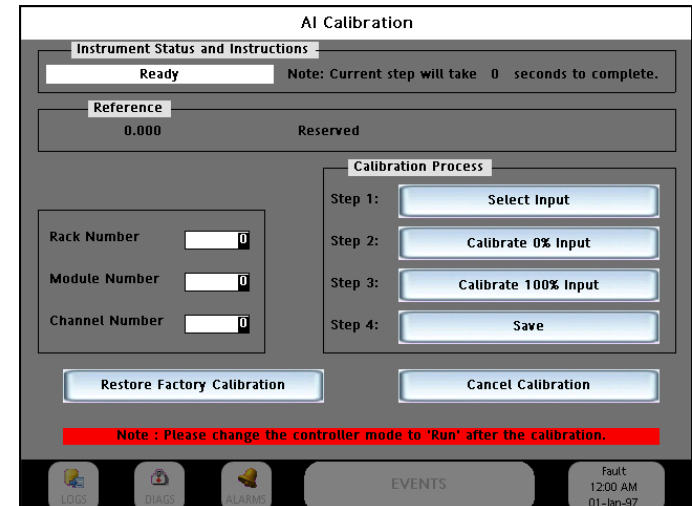
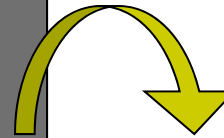
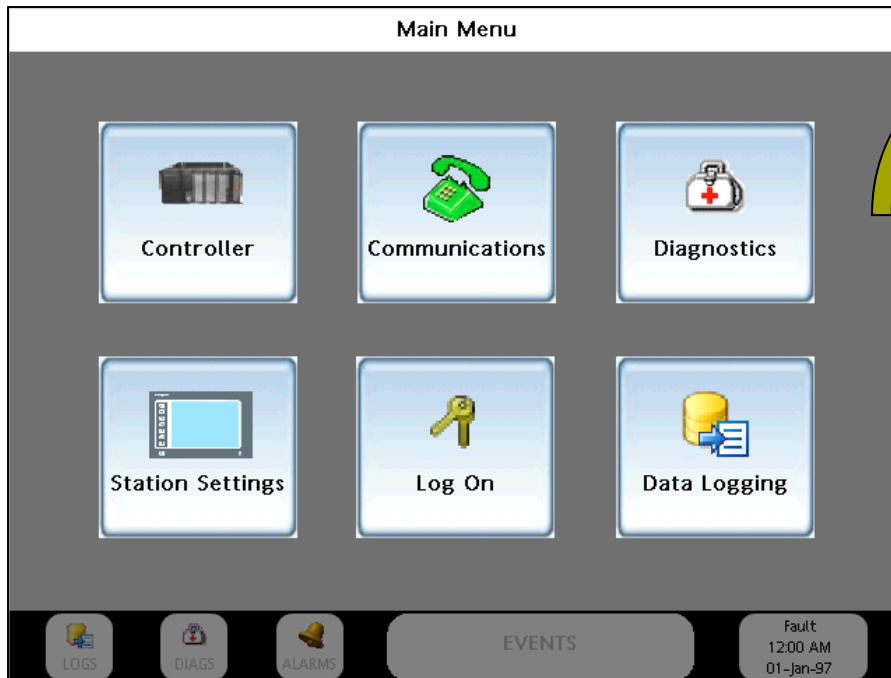


- Available via the Menu Soft-key



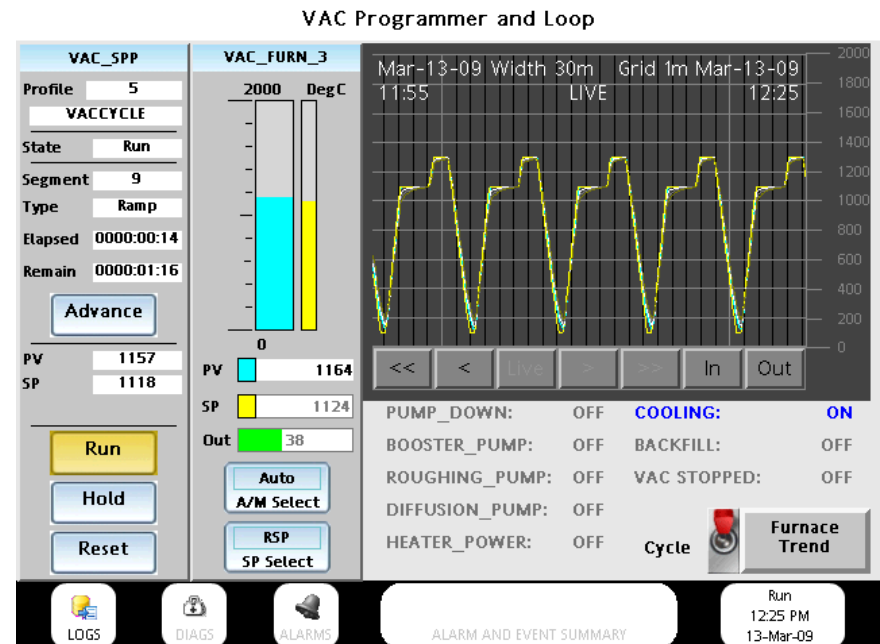
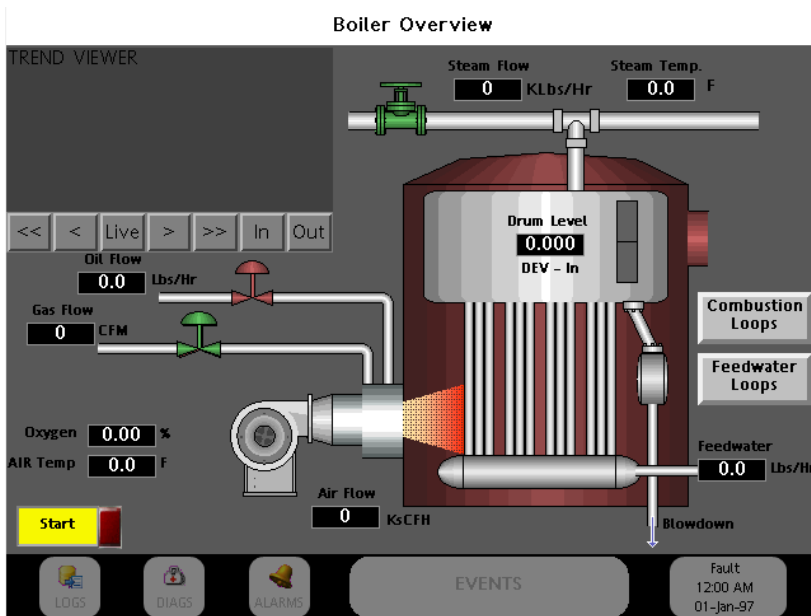
- Included in .sds file download – no setup required

- Access HC900 Controller and Station Status, perform maintenance



- More than 70 Standard Displays and Menus provided

- Use Station Designer Software (WYSIWYG) –What You See Is What You Get
- Incorporate data values, objects, symbols, bitmaps and animation to create custom presentations and navigation architectures







## Data Validity

Select signatures to allow validating log data

- Signatures add an additional data field to log data
- The signature is the output of an algorithm that uniquely identifies each group of data samples based on their values, somewhat like a checksum on software data
- All data is presented in CSV format for convenient viewing
- A separate PC utility program compares the data values of a log file to the signature data and validates the data has not been altered.
- Changing any value in a CSV log file will cause all data following the change to be identified as altered data.

**options**

Path Name:

Update Rate:  seconds

Each File Holds:  samples

Retain At Most:  files

Allow Comments:

**Apply Signatures:**

Include in Batch:

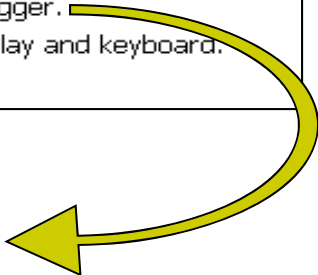
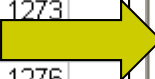
	D	E	F	G	H	I
	Setpoint	TC1	TC2	TC3	Signature	
64	618	687	715	739	00-0001B84A-009111	
37	591	661	689	714	00-0001B84B-009111	
10	564	634	663	689	00-0001B84C-009111	
83	537	608	637	664	00-0001B84D-009111	
56	519	581	611	639	00-0001B84E-009111	
29	482	555	585	613	00-0001B84F-009111	

- Access Log files over the network via FTP server
- Automatically synchronize log files and PC files via FTP  
Station automatically sends data to client
- View data logs via the Web using a commercial browser

	A	B	C	D	E				
1	Date	Time	Pv	Setpoint	TC1	TC2			
2	2/26/2009	9:00:00	1301	1300	1273				
3	2/26/2009	9:00:02	1301	1300	1276				
4	2/26/2009	9:00:04	1301	1300	1277				
5	2/26/2009	9:00:06	1301	1300	1279	1258	1235	00-0001B083-00911	
6	2/26/2009	9:00:08	1301	1300	1280	1258	1236	00-0001B084-00911	
7	2/26/2009	9:00:10	1301	1300	1281	1260	1239	00-0001B085-00911	
8	2/26/2009	9:00:12	1301	1300	1282	1262	1242	00-0001B086-00911	
9	2/26/2009	9:00:14	1301	1300	1283	1264	1245	00-0001B087-00911	
10	2/26/2009	9:00:16	1301	1300	1284	1266	1248	00-0001B088-00911	
11	2/26/2009	9:00:18	1301	1300	1285	1268	1251	00-0001B089-00911	
12	2/26/2009	9:00:20	1301	1300	1286	1270	1253	00-0001B08A-00911	
13	2/26/2009	9:00:22	1301	1300	1287	1271	1255	00-0001B08B-00911	
14	2/26/2009	9:00:24	1301	1300	1287	1273	1258	00-0001B08C-00911	
15	2/26/2009	9:00:26	1301	1300	1288	1274	1260	00-0001B08D-00911	
16	2/26/2009	9:00:28	1300	1300	1288	1274	1260	00-0001B08D-00911	
17	2/26/2009	9:00:30	1300	1300	1289	1276	1262	00-0001B08E-00911	

### CS Web Server

Option	Description
<a href="#">View Data</a>	Display a list showing available data pages.
<a href="#">View Logs</a>	Download files from the data logger.
<a href="#">Remote View</a>	Display a view of the HMI's display and keyboard.



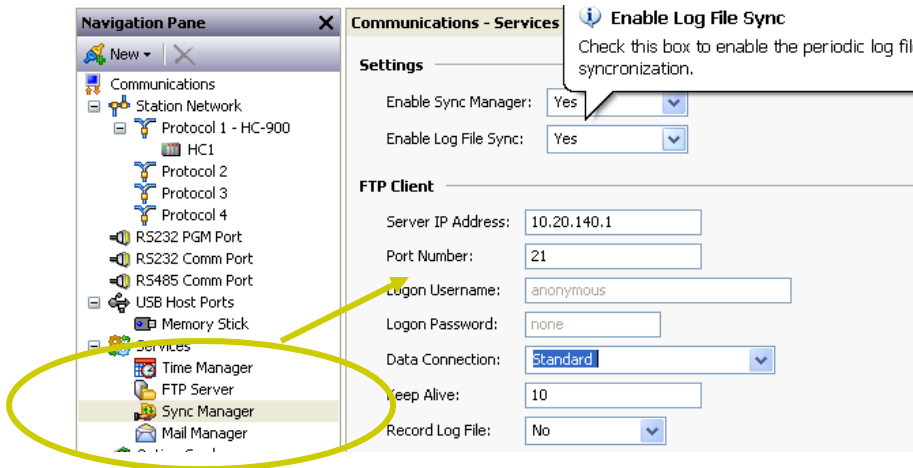
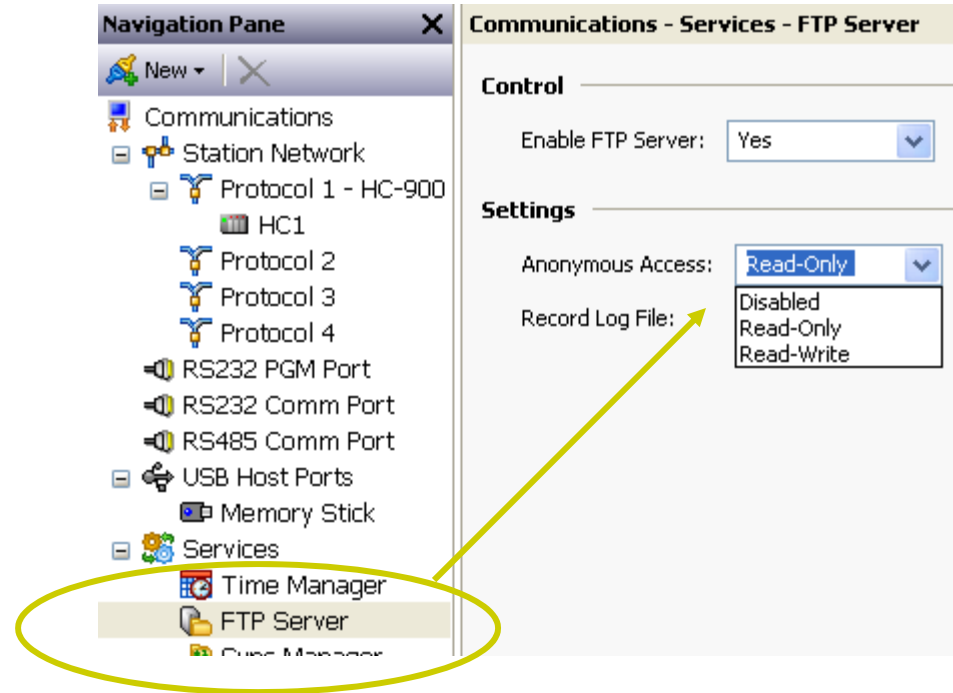
- Transfer data logs from Flash memory to USB memory

**View USB Memory Status**

**Export all data logs or select a log to transfer**

**Select files to be transferred**

- Access data files on the optional flash memory module using the standard FTP server
- Files may include data logs, batch logs or printed screens
- Access may be read-only or read-Write
- IP data, IP mask and password security available to prevent unauthorized access



## Data Synchronization

- Have the station periodically send log data to a PC via FTP.

- View 900 Control Station displays on your PC Web browser anywhere around the world
- Allow user actions to change displays, enter values and view log data.
- Have the Station serve custom HTML pages built using commercially available HTML editors
- Use IP data, IP mask and password security to prevent unauthorized access

## CS Web Server

Option	Description
<a href="#">View Data</a>	Display a list showing available data pages.
<a href="#">View Logs</a>	Download files from the data logger.
<a href="#">Remote View</a>	Display a view of the HMI's display and keyboard.

The screenshot shows a web browser window displaying a remote monitoring interface for a furnace. The browser title is "Remote Monitoring - Microsoft Internet Explorer" and the address bar shows "http://192.168.1.15/remote/default.htm?0". The interface is titled "VAC\_FURNACE\_3" and features a "Program Status" panel with fields for Segment # (7), Segment Type (Ramp), Seg Time Rem (0000:00:10), Cycle Time (0021:05:55), and Vacuum Micron (500.00). It includes status indicators for Ready, Run, Hold, and End, and control buttons for Pumpdown, Partial Pressure, Heater Power, Backfill, Cooling, and Complete. A schematic diagram shows a furnace with a Heat Exchanger, Cooling Water, Backfill Valve, Partial Press. Valve, Roughing Valve, Roughing Pump, Diffusion Pump, Holding Pump, and Booster. The furnace has three temperature controllers (TC1, TC2, TC3) with values 1002, 1019, and 1034 respectively. The interface also has a "Start" button, "Hold" button, "Reset" button, and "Profile Number: 5". At the bottom, there are icons for LOGS, DIAGS, ALARMS, EVENTS, and a "Run" status showing "01:18 PM 26-Feb-09".

- Alarm actions may be assigned to tagged data in the station.
- Active alarms are annunciated with a flashing red status button in the tray of the station.
- Selecting the Siren action for high priority alarms causes the entire display to flash when the active alarm is not acknowledged.
- Pressing the Alarm Button calls the Alarm Console display for viewing alarm detail and performing acknowledgement
- Alarms may be configured to send an email message to specified recipients
- The Alarm/Event Summary button displays Event messages for active events and provides access to the Alarm/Event Summary display to view a history of alarms and events.



Data Tags - CDE.Blocks.Loops.VAC\_FURN\_3.Pv

Data Format Colors Alarms Triggers Security

**Alarm 1** **Alarm Setup**

Event Mode: Absolute High

Event Name: Data Match

Value: Absolute High

Hysteresis: Rise in Value

Enable: General

Trigger: Level Triggered Alarm

Accept: Manual

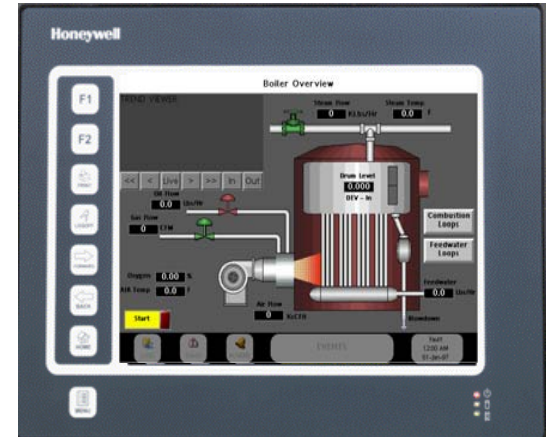
Siren: Yes

**Alarm Console**

- 09:01:06 27/02/2009 Hi Hi Vac 3 Temp
- 09:00:51 27/02/2009 High Vac 3 Temperature

**End of Vacuum Cycle-Unload Furnace and Go to Lunch**

- Send email messages to a list of recipients upon alarm or event activation
- Use fixed server IP addresses or DHCP
- Include a Station (or process) name to identify the source of the mail
- Authentication support included





- Object based security applies security to display pages or to tagged parameters
- Tags protected by security are protected throughout the configuration
- No limit on number of Users
- Setup individual users or user groups (Jim, Joe, Oper, Engr, Maint.)
- Protect local and/or remote access
- Use programs for custom access rights
- Log user access and changes

**Navigation Pan** X

- Security
  - user1
  - User2
  - User3
  - User4
  - User5
  - User6
  - User7

**Security - user1**

**User Details**

Real Name:

**Credentials**

Password:   Override Existing

**System Rights**

<input type="checkbox"/> Change Own Password	<input type="checkbox"/> Change All Passwords
<input checked="" type="checkbox"/> FTP Server Read Access	<input type="checkbox"/> FTP Server Write Access
<input checked="" type="checkbox"/> Web Server Access	<input type="checkbox"/> Maintenance Access

**Custom Rights**

<input checked="" type="checkbox"/> User Right 1	<input checked="" type="checkbox"/> User Right 2
<input type="checkbox"/> User Right 3	<input type="checkbox"/> User Right 4
<input checked="" type="checkbox"/> User Right 5	<input type="checkbox"/> User Right 6
<input type="checkbox"/> User Right 7	<input type="checkbox"/> User Right 8

**Navigation Pan** X

- Security
  - user1
  - User2
  - User3
  - User4
  - User5
  - User6
  - User7

**Security**

**Security Options**

Inactivity Timeout:  secs

Clear Logon Name:

**Default Access**

Mapped Tags:

Internal Tags:

Display Pages:

**Default Logging**

Mapped Tags:

Internal Tags:

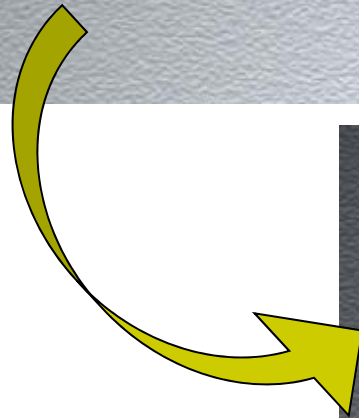
**Logging Control**

Enable Logging:

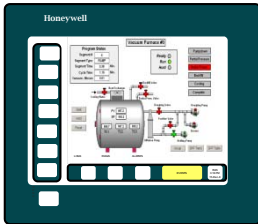




Configuration Software

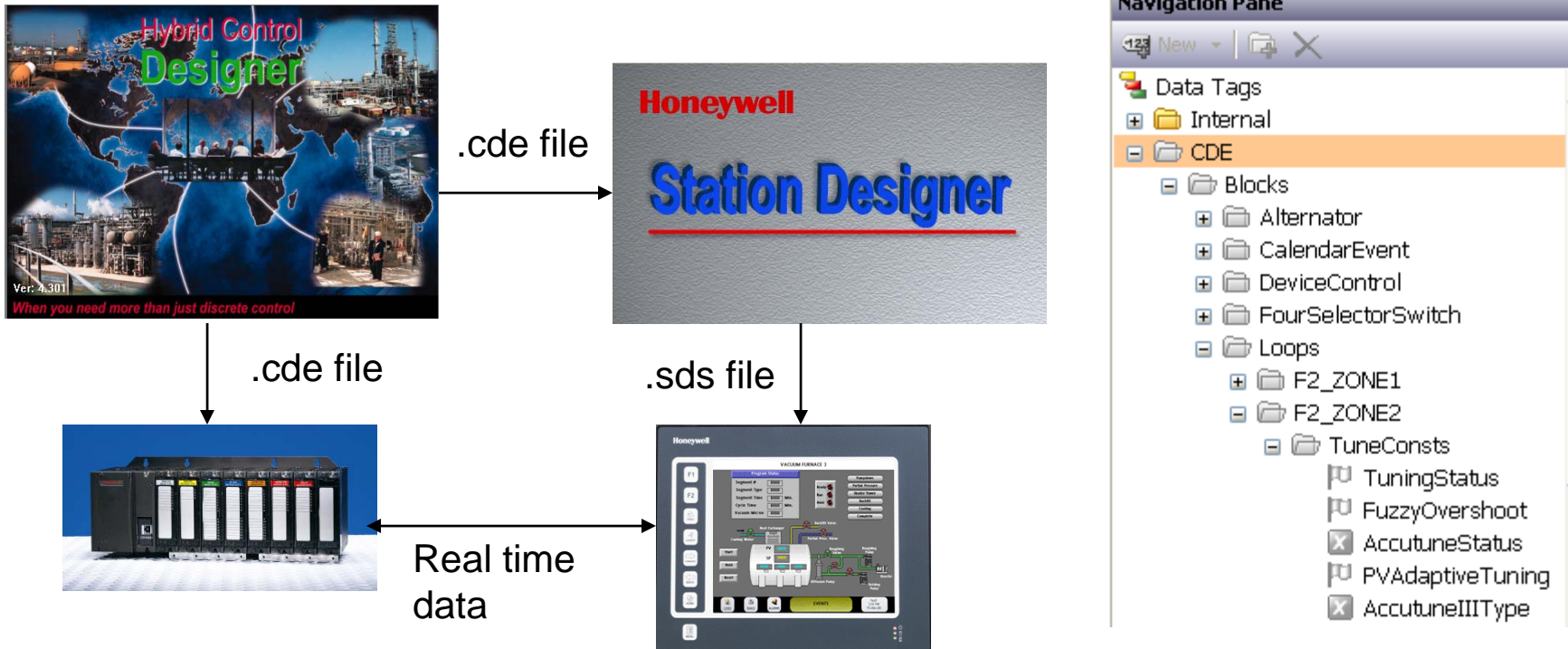


- A PC Window® application for off-line configuration development and editing (performs incremental edits to existing station configuration file)
- Checks station firmware version and automatically updates the station to the PC's version if necessary
- Opens a database file created by Hybrid Control Designer (.cde file) and creates a configuration file for the 900 Control Station (.sds file)

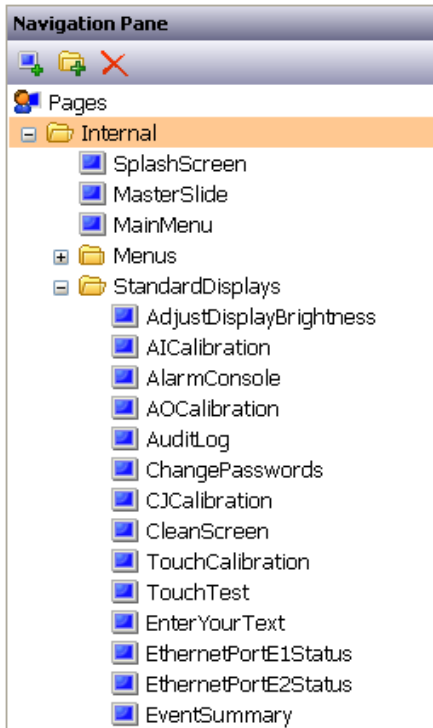
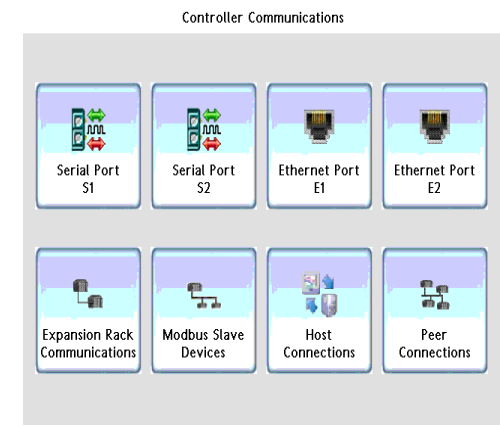


- Display buttons (Alarms, Events, etc.) and panel soft-keys (back, forward, print, etc.) are assigned by the .sds file using a Master template (common to all displays)
- Multiple instances of the Station Designer software may be opened simultaneously to allow copying between configuration files
- Uses a USB device port or Ethernet port to download configuration data to a 900 Control Station

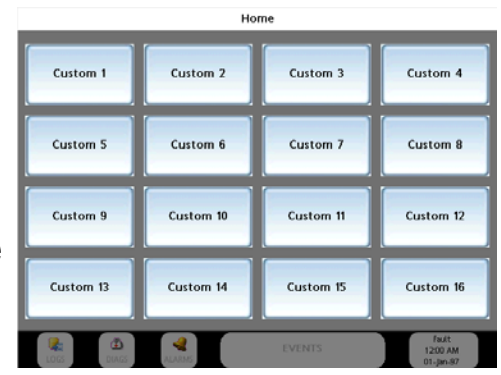
- Station Designer reads data tags directly from a HC900 configuration file, eliminating data entry errors and reducing configuration time
- Communications via HC900 protocol links tags directly to controller data – no address referencing required
- Database mismatch between the HC900 Controller and 900 Control Station is detected automatically



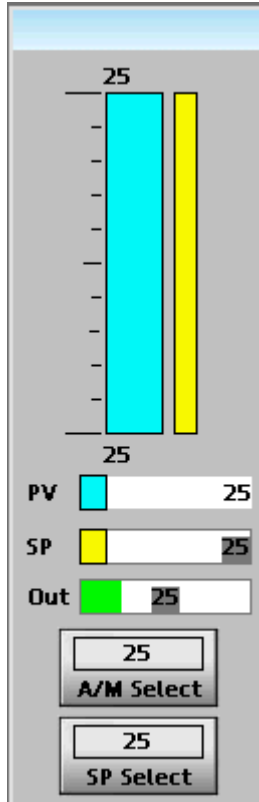
- Large assortment of pre-defined Standard Displays included in every 900 Control Station configuration – no user setup required
- Standard displays support:
  - Viewing controller status
  - Performing controller & station maintenance
  - Managing files and moving data
  - Monitoring communication status
  - More...



- Menus provide organizational structure and simplify navigation
- Home display offers 16 buttons linked to 16 blank displays to support custom display development
- Alarm Console and Alarm/Event Summary displays allow viewing active and cleared alarms and events
- Many standard displays are highly integrated to match the controller's hardware and configuration database



## PID Widget



- Widgets are grouped objects with known actions and data sources based on the widget type.
- For the HC900 Controller, widgets are provided for all principle function blocks (PID, SPP, SPS, etc.).
- Widget objects get bound to controller data sources by referencing their associated function blocks.
- Widgets that have a blue tag field also have “Zoom Widgets” to provide more detail for the function block. (In operation, touch the tag field to access more detail.)  
*Zoom Widget Example: The Zoom Widgets for a setpoint programmer widget provide access to profile (Recipe) selection displays.)*
- Widgets and Zoom Widgets save significant configuration time and reduce errors without compromising flexibility

# Station Designer Software – Widget Examples **Honeywell**

25

Pushbutton

25

25 seconds

Run Request

Failed

Reset

Device Control

Status 25

State 25

On Delay 25 Secs

Off Delay 25 Secs

Alternator

XYR5000 Base Radio

Status 25

Transmitters Communicating 25

XYR5000 Base Radio

Digital Variable

25

PV1 25

PV2 25

Status 25

Output 25

Override 25

Stage

Status 25

Output 25

Override 25

Status 25

Output 25

Override 25

Profile 25

State 25

Segment 25

Type 25

Elapsed 25

Remain 25

Advance

25

Hand BYPASS Auto

Auto

Hand/Off/Auto

PV 25

Run

Hold

Reset

Setpoint Pgrm

SP Profile Information

Profile Number: 25

Profile Name:

Profile Description:

Total Elapsed Time: 25

State: 25

Load From Profile List:

Start at Segment: 0000

View/Edit Profile

Save To Profile Number:

Segment Information

Segment Number: 25

Elapsed Time: 25

Time Remaining: 25

Segment Type: 25

PV 25

SP 25

Run

Advance

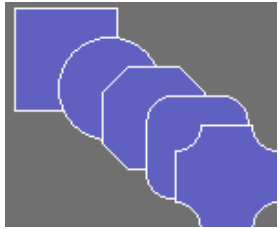
Hold

Reset

Setpoint Pgrm Operate

INVALID STATE TO LOAD PROFILE

INVALID STATE TO EDIT SEGMENT



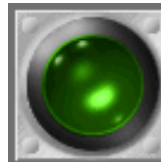
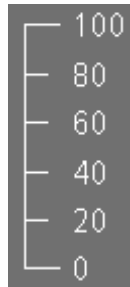
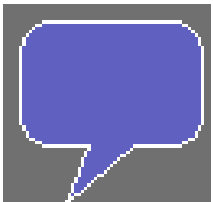
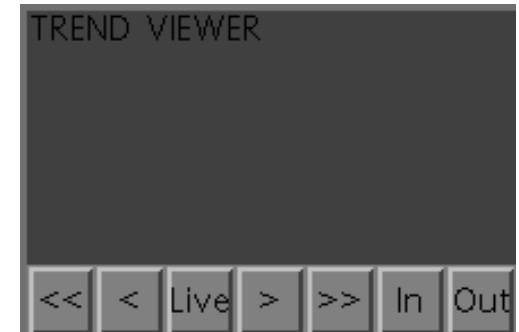
- Primitive objects are the basic elements used in custom display development (circle, square, panel, value, text, etc.)



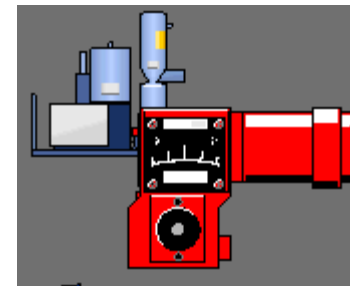
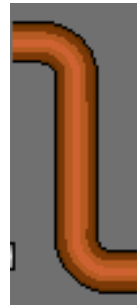
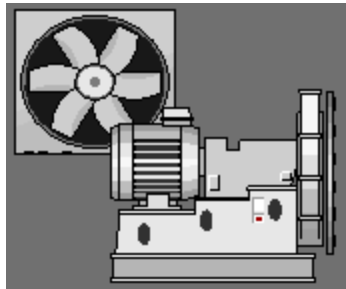
- Primitive objects support actions and writes to the controller: (buttons, switches, selectors, sliders, etc.)

- Primitive objects support data viewing: (indicators, trending, file viewers, bar indicators, etc.)

- Widgets are listed as Primitives

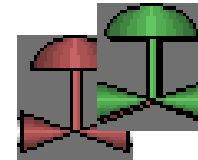


- Symbols are graphic objects that may be used in custom displays to depict industry specific equipment, objects, signs, etc.
- More than 4000 objects are provided in the Symbol Library segmented by industry or application
- Many symbols are offered in multiple color schemes
- Symbols may be visible or hidden based on controller data or status
- Symbols may be sized, rotated, and flipped horizontally and vertically





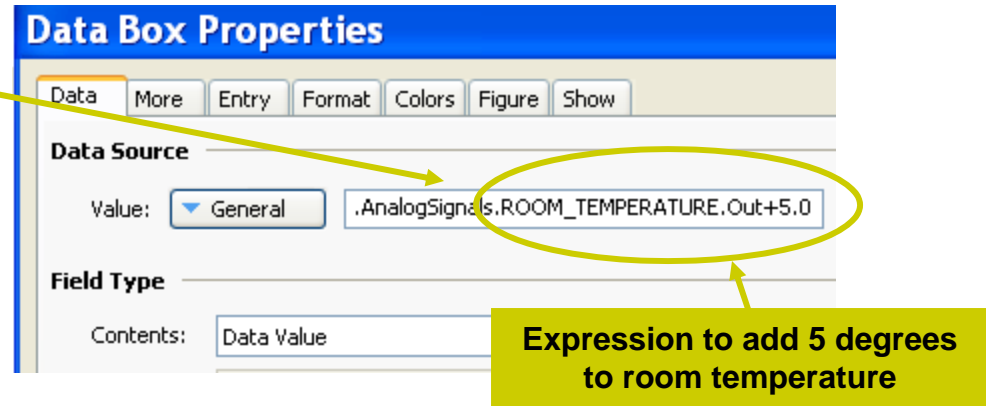
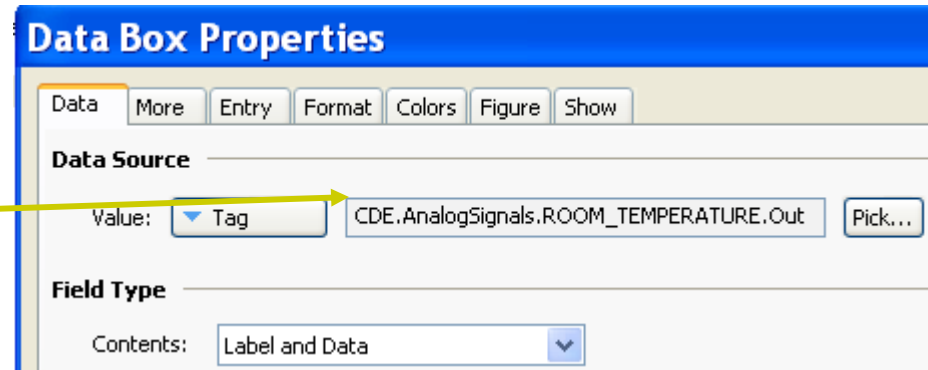
- Make displays come alive by using animation features and techniques
- Alert operators to off-normal conditions
- Provide verification of proper process operation
- Increase security by providing controls only when conditions permit
- Use object filing to show relationships, capacity etc.



Animation resources include: (Based in signal states or values)

- Visible, Not-visible
- Background color change
- Foreground color change
- Flashing facilities
- Bar and object filling
- Overlaying object

- Data presented on displays typically use a HC900 or internal signal tag reference as a data source.
- Data sources may also be a combination of tags, or tags and constants that display the results of a mathematical Expression.
- Expressions may contain math operators, comparisons ( $<$ ,  $>$ ,  $=$ ,  $)$ , logical 1 or 0, strings, perform type conversions (float to integer), and may include multiple conditions in one expression.



Programs; not always needed but nice to know they're there when required!

- When you need to perform an action that is too complex to fit on a single line , or one that demands more complex decision-making logic, you can use the Programming category to create and manipulate programs.
- Programs can run when activated or continuously in the background.
- Programs can return values or dictate actions.
- If-then-else, switch, loop, while loop, do loop are typical constructs.

```
Programs - Internal.RecipeFormatAll
Source Properties
Data Types
Prototype: cstring Internal.RecipeFormatAll(int RecipeType, int LoadOrSave, float Number) Edit...
Program Code
// Program is used to display the currently loaded or saved recipe.
int num = (int)Number;
switch(RecipeType)
{
// case 0: // Recipes
// break;

case 1: // Profiles
if(LoadOrSave==0) // Load Profile
{
if(num==0) // Clear Profile
return "<Profile Cleared>";
else
return IntToText(num, 10, 4) + " " + Mid(CDE.System.Rec

}
else // Save Profile
{
if(num==0) // Select Position
return "<Select Position to Save Profile>";
else
return IntToText(num, 10, 4) + " " + Mid(CDE.System.Rec
```

Example of a program

To order, specify separately:

	Model/Part Number
1. 900 Hybrid Control Station	900CS10-00
2. Station Designer Software	900SDS-01-44-00
3. Flash Memory Module (optional)	50040636-002*

Accessories:

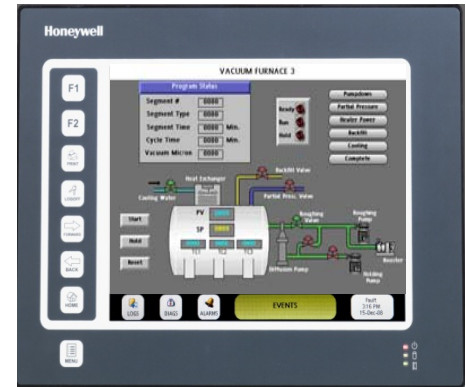
USB Programming cable	50038817-501
Ethernet cable 10 ft	51451432-010
Screen Protect Films	50038816-501
24Vdc Power Supply	51452041-501
Adapter Plate (replacing 1042 OI)	50039118-501

- \* UL approved, industrially rated flash memory module (UL requires an approved module to maintain safety approvals. Memory module required for historical data logging, print screen functions, configuration via Ethernet and custom web pages.

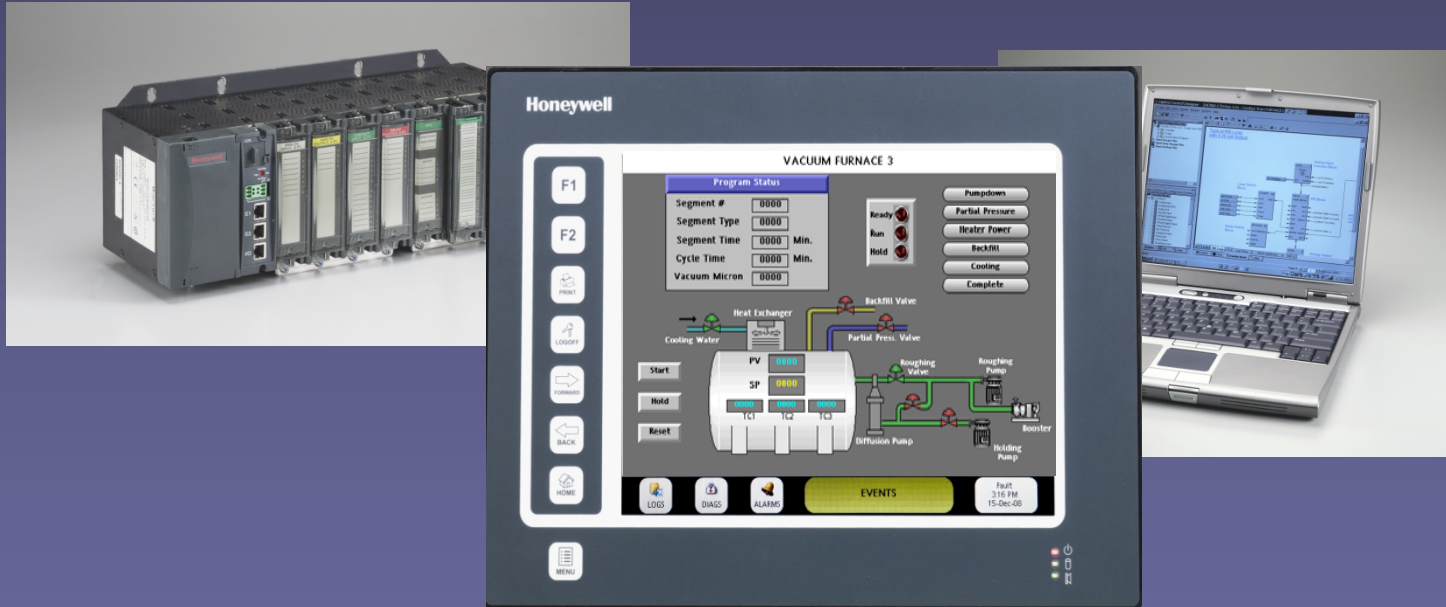
## Honeywell's

### HC900 Controller and 900 Control Station

- Provides an industrially hardened operator interface to work as an integral part of the HC900 control system. *(A rugged interface to match a rugged controller.)*
- Leverages a focused application approach to provide benefits in ease of use and optimized performance. *(Designer to work exclusively with the HC900 Controller)*
- Avoids penalizing users with less demanding requirements by blending ease of use with high flexibility. *(Pre-built objects and displays get you on-line quickly)*
- Provides functions that support controller features not available through 3<sup>rd</sup> party alternative products. *(Comm. Status, Recipe selection, I/O Calibration, Mode selection etc.)*
- Satisfies a broad range of needs and preferences through powerful performance with configuration flexibility. *(Graphics, bitmaps, web access, FTP, etc.)*



## 900 Control Station



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