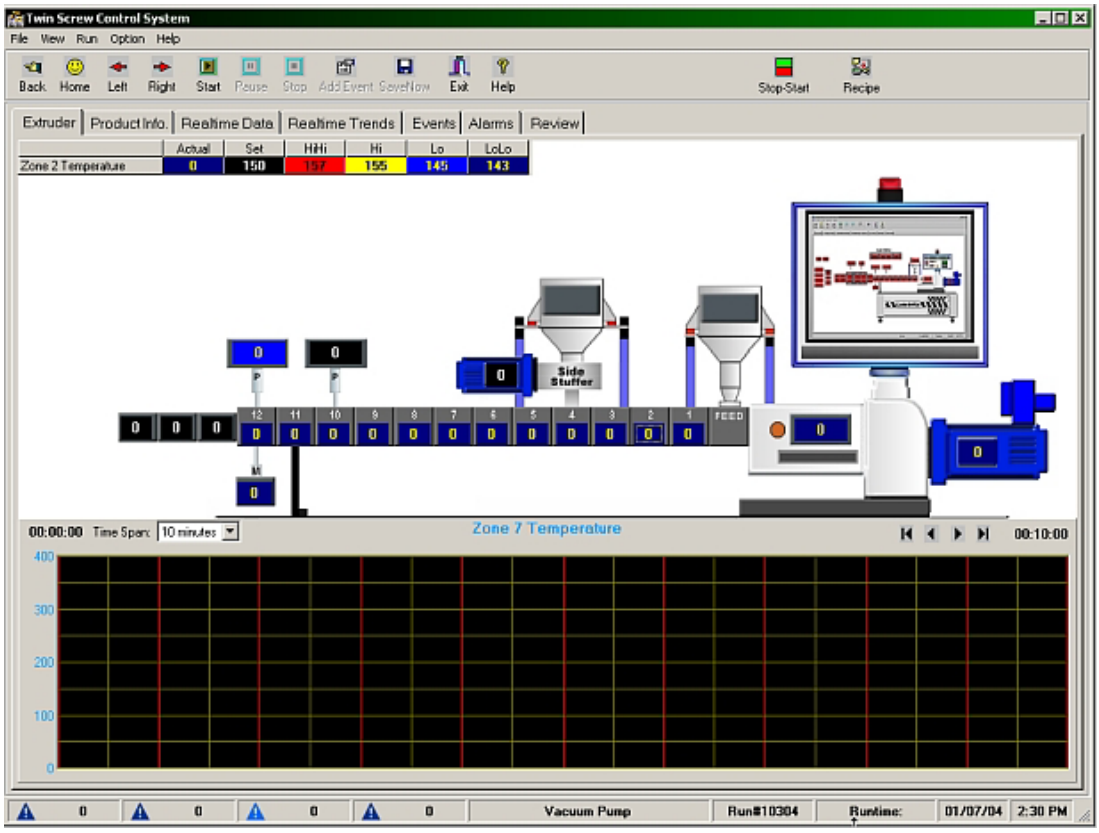
Operators Manual

MACROMATEX™ Leistritz

TSCS Extrusion Technology



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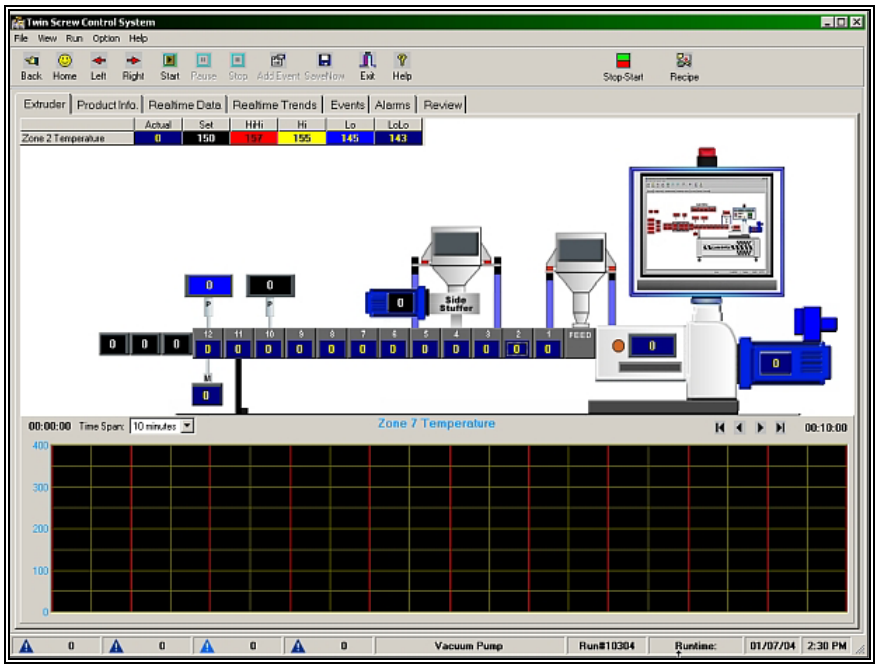
TSCS, insight to your extrusion process



The Macromatex Twin Screw Control System (TSCS) is a powerful PC based control/data acquisition software package designed to operate with the complete line of Leistritz Twin Screw extruders. The system controls, monitors and archives all process parameters of your operation including:

- Control temperatures
- Screw speed
- Motor Drive amps
- Melt pressure
- Melt temperature
- Auxiliary devices

TSCS comes complete with the following features:

- Unlimited Recipe storage
- Administrator/User access levels
- Digital and Graphic representations of real time process data
- Analog meter display of any selected parameter
- Event markers with user comments
- Automatic alarm logging
- Integrated Data Review package with advanced report generator
- Data file backup routine
- Data Review package for analysis of TSCS data

Along with this manual TSCS contains a comprehensive on-line help system to assist you in getting the most from this powerful system.

The information in this manual is laid out in 3 major sections:

1. **TSCS Component Overview** provides a brief introduction to the various navigation tools and data presentation pages of the TSCS software package
2. **Running a test** provides a detailed step by step look at the procedure and tools available to you during a typical run.
3. **Data Review** covers all the tools that are available in the TSCS Data Review package including opening and viewing data files and generating reports of your data.

System wiring

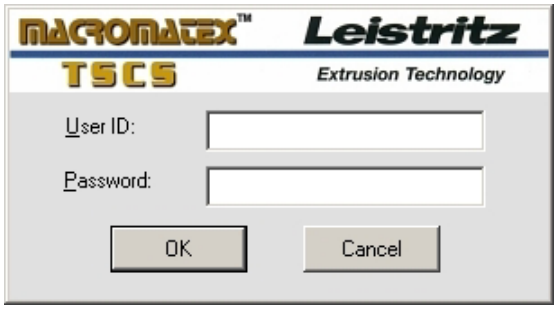
Extruder/Computer connections

The communication between your extruder and the TSCS computer is achieved via DeviceNet. The DeviceNet cable is pre-wired at the extruder end and needs only be connected to the DeviceNet connector located at the rear of the computer. No other connections are required.

Overview of TSCS components

Starting the TSCS software

To start the TSCS software choose Start | Programs | TSCS | TSCS (note: generally a shortcut is on the desktop). The login screen will appear as shown:



TSCS Login

You can Login to TSCS without using a User ID or Password. This method allows you "standard user" access to the system. When logged in as a standard user, you do not have access to Interlock functions and Recipe "save" functions. Consult your system administrator for information regarding access to "Administrator" mode.

The software will load and the Extruder Page will be displayed. You're now ready to start using TSCS. **Note that the setpoints for temperature and RPM from your previous TSCS session will automatically be loaded.**

The following sections of this manual will guide you through the use of the TSCS.

The Leistritz Twin Screw Control System is made up of four main components:

- The Menu bar
- The Icon Toolbar
- 7 data presentation pages
- The Status Bar

The following section will present an overview of these components. If you are working with the system for the first time it is highly recommended that you read this section thoroughly to gain insight into the various tools and navigation features available in the system.

The Menu Bar

The menu bar (shown above) provides keyboard access to many of the navigation and display tools of TSCS software. To access the commands available on the menu bar via the keyboard press and hold the alt key and type the underlined letter of the menu command you wish to access.

(i.e. ALT | F accesses the File command while ALT | V accesses the View command). Once a menu bar command has been accessed you need only type the underlined letter of the command you wish to execute in the pull down menu. (i.e. ALT | V opens the View pull down menu. If you then type A you will move to the alarm page and ALT | V | X will return you to the Extruder page). All commands available on the menu bar can generally be executed quicker using the Icon Bar (discussed in the next section), or by right clicking on the various TSCS components.

The Icon Toolbar

The icon bar (shown above) provides quick access tools for navigating the various display pages of the TSCS along with tools to start a run and save data during a run. Below is a brief description of each icon bar command.

Back

The Back button is used to toggle between two data display pages. When you click the back button you will move back to the previous page that you had viewed.

Home

The Home button will always bring you to the Extruder Page.

Left

The Left button will move you one page to the left.

Right

The Right button will move you one page to the right.

Start

The Start button is used to start data acquisition during a run.

Pause

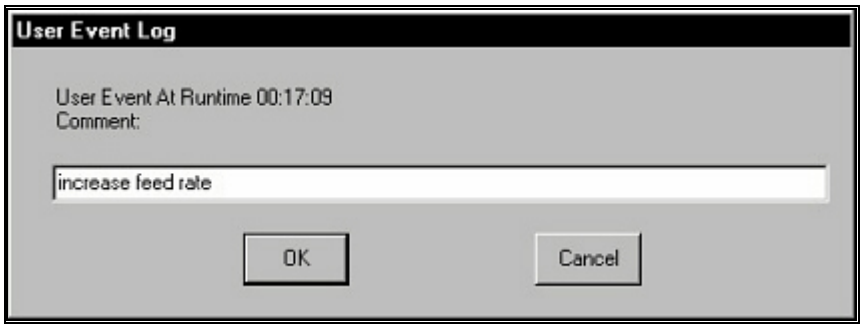
The Pause button is used to temporarily stop data acquisition during a run. The pause button does not terminate the run, it simply pauses data acquisition. Once pause is clicked the icon will switch to "Resume". When "Resume" is clicked data acquisition will continue.

Stop

The Stop button will terminate data acquisition during a run. When Stop is clicked all data is stored under the current run number and then the run number is incremented by one to prepare for the next run.

Add Event

The Add Event button is used to log comments during a run. When the Add Event button is clicked the User Event Log window (shown below) will open. At this point you can enter comments about the current run. Once the comment is entered click OK to log the event. All event comments can be viewed on the Events page.



Save now

The Save Now button allows you to save data, during a run, so you can view it using data review. Save now does not terminate the current run. The run continues but all data is stored under the current run number and is available to be viewed using data review.

Exit

The Exit button is used to close the TSCS software. If you attempt to exit the software while a run is in progress you will be prompted to save your data as shown below.

Click OK to save your data and exit the program. If you click Cancel you will return to the program.

Help

The Help button gives you access to the on-line help system.

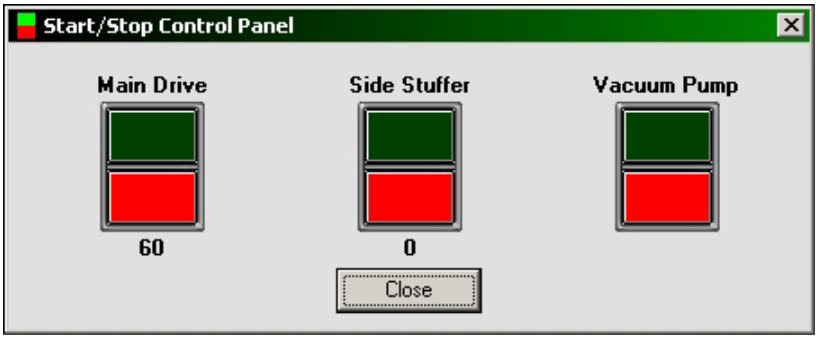
Stop-Start

The Stop-Start button opens the Stop-Start dialog.

Recipe Button

The Recipe Button opens the Recipe Dialog.

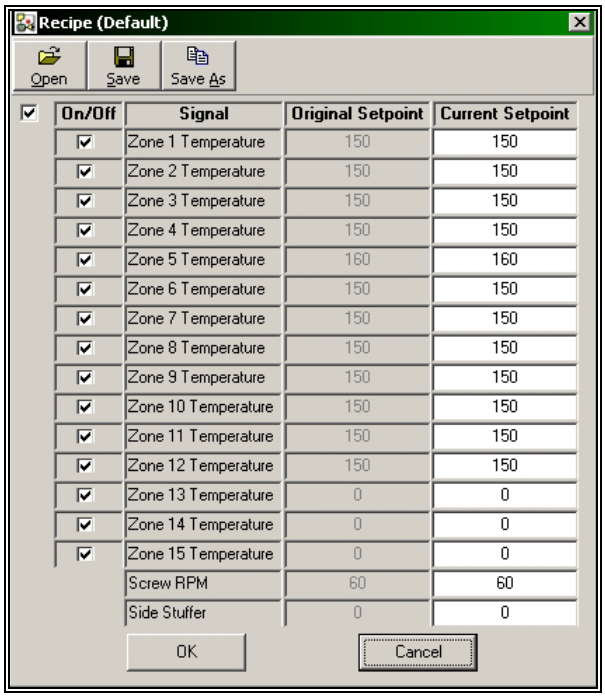
The Stop-Start Dialog



The Stop-Start Dialog

The Stop-Start Dialog allows access to the various Stop-Start functions of your system. Clicking the green "Start" button will start the associated drive. The Setpoint for any variable-speed drive will be shown directly below that drives Stop-Start buttons. Clicking the red Stop button will stop the associated drive.

The Recipe Dialog



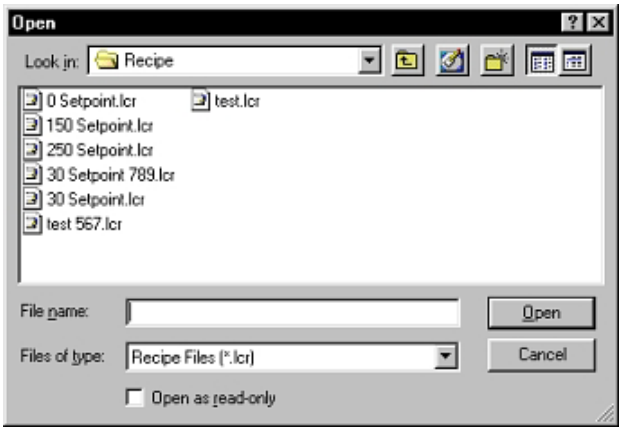
The Recipe Dialog (shown in Administrator mode)

The Recipe dialog allows you to load and save recipes to and from the hard drive. The dialog is split into 4 columns. The **On/Off check boxes** are used to turn individual heat zones on and off. The check box to the left of the On/Off column header will turn all zones on and off with one click.

The **Signal** column shows all temperature zones along with all variable speed drives. The **Original Setpoint** column shows setpoint values for the currently loaded recipe. This column is read only. The **Actual Setpoint** column shows the setpoints that are currently running. These values can be modified. Changes made in this column will be applied to the process when the OK button is clicked.

Loading a Recipe

When you first start TSCS, the setpoints for temperature, feed rates and RPM from your last TSCS session will automatically be loaded. To load a stored recipe, open the recipe dialog and click the "Open" button. The open recipe dialog will be displayed as shown below.



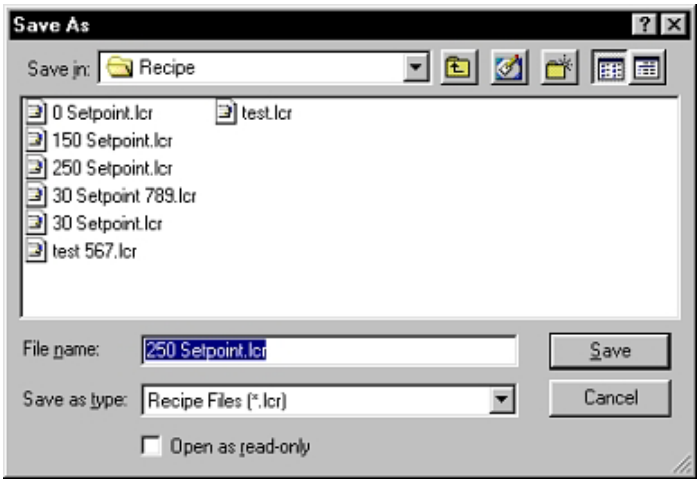
The Open Recipe dialog

Click on the desired recipe and then click the Open button to load the recipe. The recipe file name along with the recipe setpoints will be displayed in the Recipe dialog. The recipe will be applied to the process when the OK button is clicked.

Creating & Saving a Recipe

Note: The Save Recipe functions are only enabled if you have logged onto TSCS in Administrator mode.

To create a new recipe, simply fill the "Current Values" column with the desired setpoints for temperature and RPM. Once the values have been entered, click the "Save As" button. The Save As dialog will open as shown.

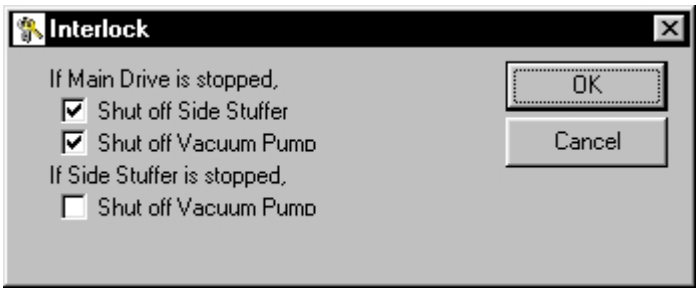


The Recipe "Save As" dialog

Enter the Recipe file name and then click save to store the recipe for later recall.

Interlocks

TSCS provides a tool that allows you to establish relationships between the various drives in your system (ie Main Drive, Side Stuffers, Feeders, etc.). You must log in as an administrator to gain access to interlock functions. Note: you can always gain access to the login screen by clicking on View|Login from the menu bar. Once logged in as administrator select View|Interlocks from the menu bar. The Interlock dialog will appear as shown.



The Interlock Dialog

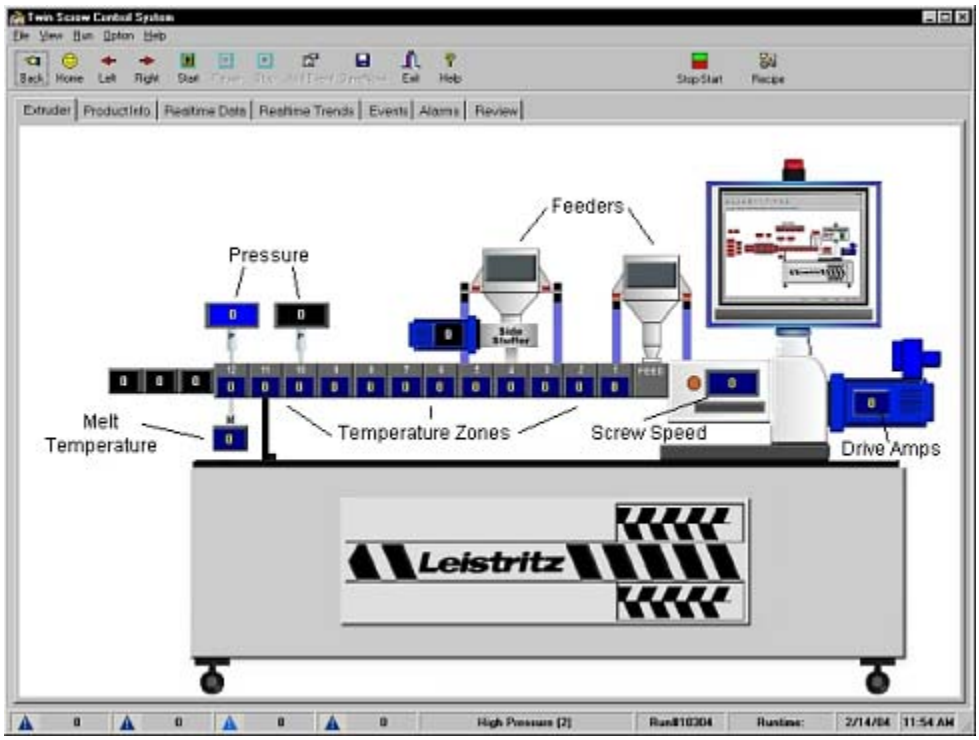
Use the check boxes on the interlock dialog to set up relationships between the various drive in your system. In the figure above, the Side Stuffer and Vacuum Pump are dependant on the Main Drive. This means that the Main drive must be in Start mode before the Side Stuffer or Vacuum pump can be started. Also, if the Main drive is stopped (Stop button or alarm condition) the Side Stuffer and Vacuum Pump with also stop. Further relationships (ie Vacuum Pump to Side Stuffer) can also be established.

Once you have setup the desired interlocks, click the OK button to apply them to your process. Note that these interlocks will stay in effect until they are modified again using the Interlock dialog.

The Status Bar

The Status Bar, located at the bottom of the TSCS window displays the status of the system (Idle, Running, Pause, E-stop) along with the current Run Number, the Runtime for the test in progress, the date and the time of day. The left hand pane of the status bar contains 4 "hotValues". These values are preset per system (usually main drive amps, melt temperatures and melt pressure). These parameters are placed here so that they are visible to the operator from any TSCS screen. The alarm status (Hi-Lo) of each "hot value" is indicated by a color-coded alert icon.

The Extruder Page



The Extruder page is the opening screen, which is presented when you first start the TSCS software. This page provides an overview of your complete process. The Extruder page provides you with information on:

1. Temperature control
2. Color coded alarm status
3. Melt pressure
4. Melt temperature
5. Screw speed
6. Motor drive amps

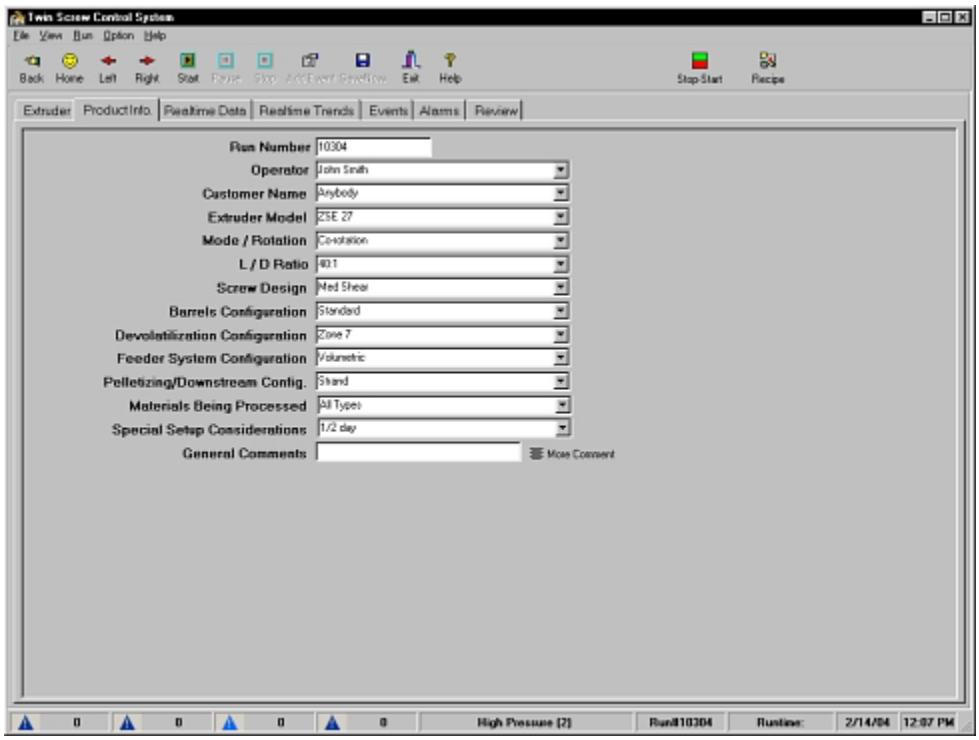
7. Feeders & Auxiliary devices

In this section of the manual we'll take a quick "first look" at the Extruder Page.

The Extruder Page, shown above, provides an overview of your complete process. Each process variable is displayed in a color-coded cell. The color codes correspond to the alarm settings that have been entered on the Realtime Data page. (see "Setting Alarm Values on the Realtime Data Page" on page 22.)

Notice that when the mouse pointer is placed on any variable a text balloon will appear showing the variable name. The Extruder Page also provides tools for viewing process variables in Graphic, Analog Meter & Data Strip form. For more information see "Viewing Process Data on the Extruder Page" on page 24.

The Product Info. Page

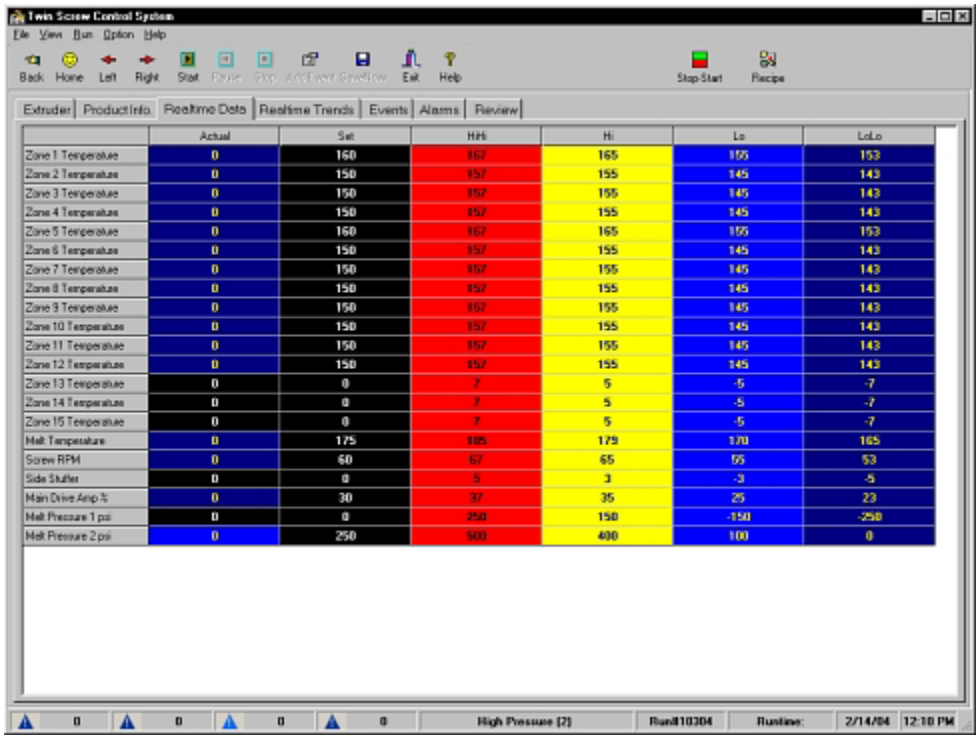


The Product Info. Page allows you to enter descriptive information about a particular run. All fields on this page with the exception of Run Number and Company Name are designed to allow you to build customized pull down lists that you can use for quick and accurate data entry.

About Run numbers

Run Numbers are automatically assigned by the TSCS software. When data acquisition is initiated using the Start button all data is acquired in a temporary disk file until the "Stop" button is clicked. In this case all data is stored under the current Run Number and the Run Number on the Product Info page is incremented by 1, which prepares the system for your next run.

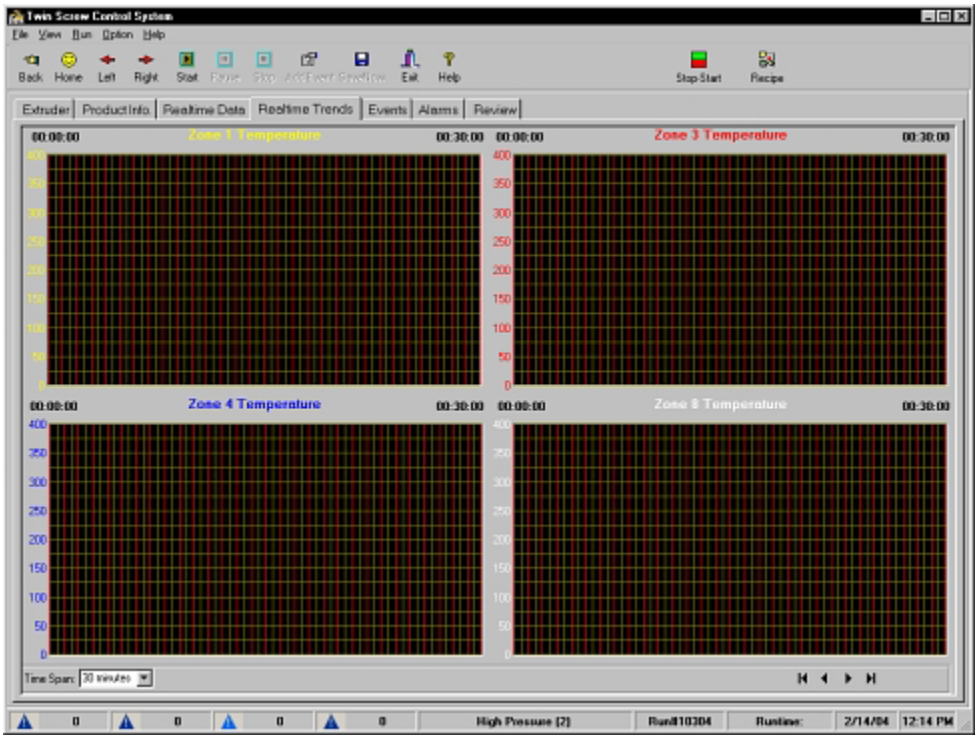
The Realtime Data Page



The Realtime Data page provides a digital snapshot of all process data, along with alarm limits for each parameter. Notice that the data displayed in the Actual column is color coded according to the current condition of the parameter (i.e. if a parameter enters a Hi condition it will appear with a yellow background in the actual column. If a parameter enters a Lo condition it will appear blue and so on).

For details on entering alarm values see "Setting Alarm Values on the Realtime Data Page" on page 22.

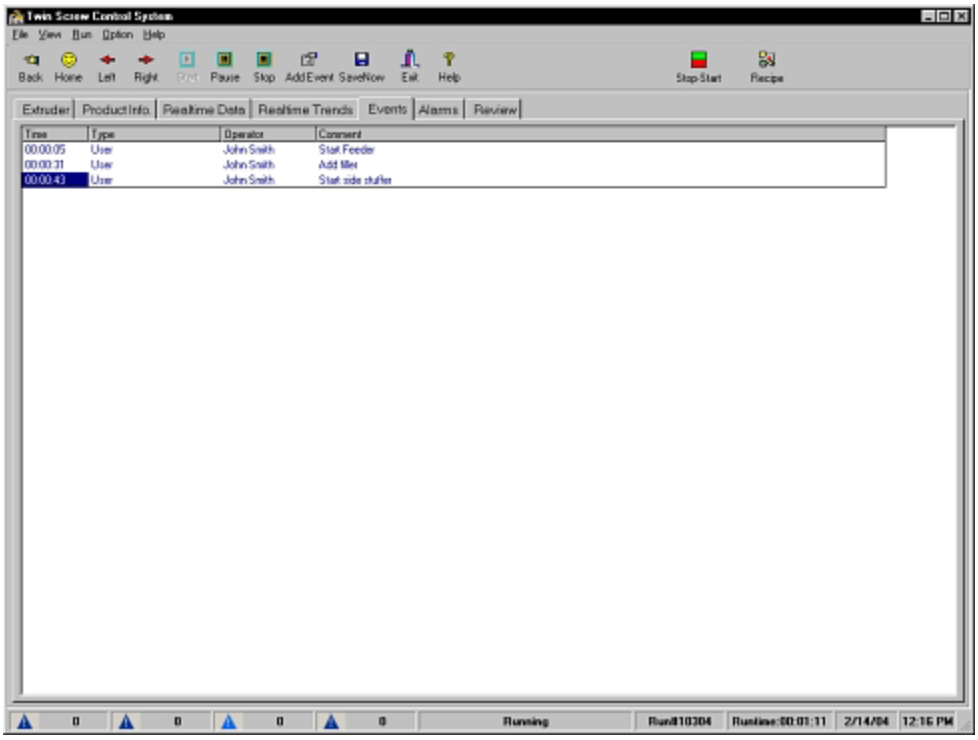
The Realtime Trends Page



The Realtime Trends page provides a graphic display of 4 process parameters. These plots can be expanded to a full screen overlay view. The full screen (expanded) view can be used for easy comparison of real time trends.

For more details see "The Realtime Trends Page" on page 33.

The Events Page

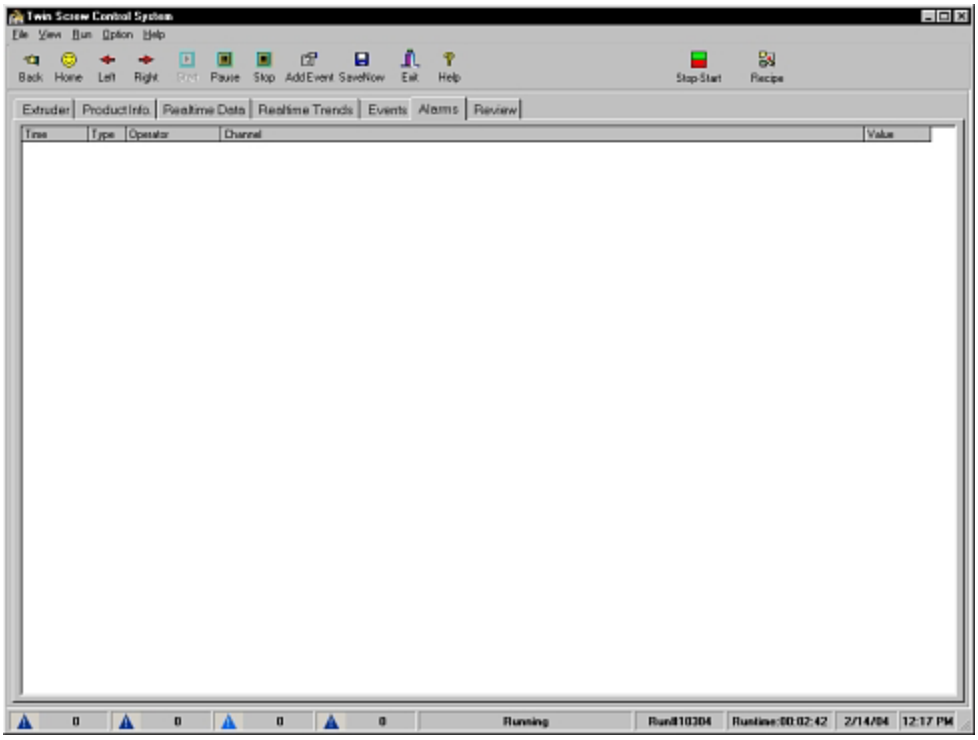


The Leistritz Twin Screw Control System allows you to enter comments regarding events that occur during a run. Event comments can be entered from the graphic view on the Extruder page, the Realtime Trends p age or by clicking the Add Event button on the icon toolbar. These comments are logged on the Events page and stored in your data file for future reference. If E-stop is depressed during a test run it will also be logged on the events page. The following information is logged for each event:

1. Run time of the event
2. The event type (user or E-stop)
3. Operator name
4. Comment text

For more details see "Logging Events in the Graphic Window" on page 32.

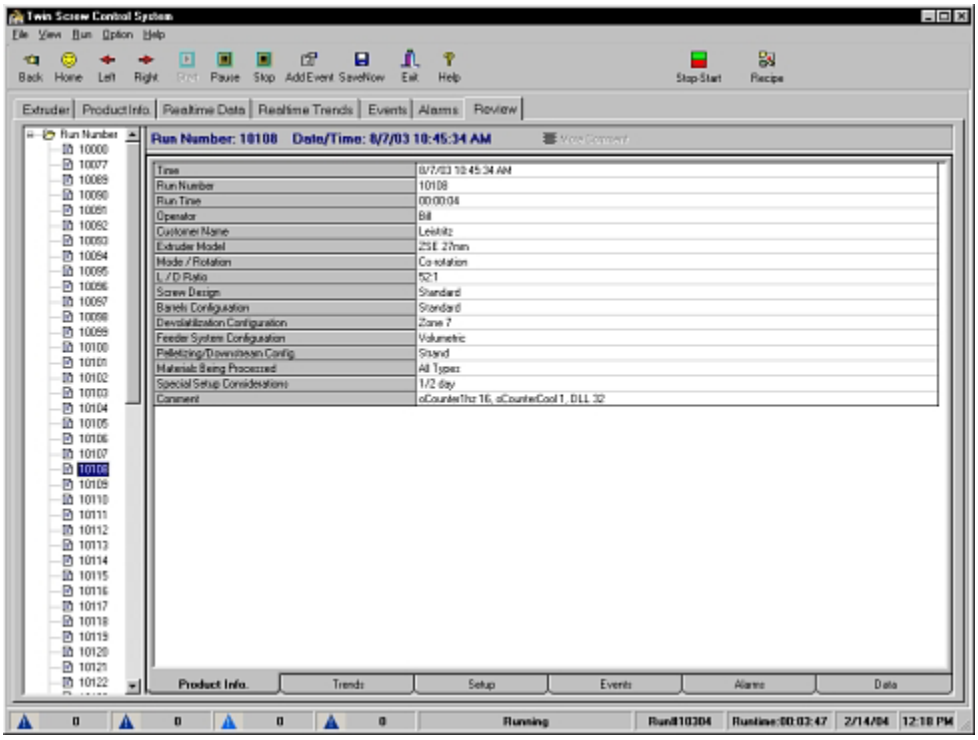
The Alarm Page



As we discussed earlier, you can set alarm values for each process parameter on the Realtime Data page. If a process parameter enters a Hi or Lo alarm state it will automatically be logged on the alarm page. Also, if a parameter progresses from Hi to HiHi or Lo to LoLo it will also be logged on the Alarm page. This information is also stored in your data file for future reference. The following information is logged on the Alarm page:

1. Run time of alarm
2. Alarm type (Hi, HiHi, Lo, LoLo)
3. Operator Name
4. The Process parameter causing the alarm
5. The Alarm value

The Data Review Page



The Data Review page provides all the tools required to recall previously recorded data, preview this data on screen or generate printed reports.

The Data Review page is split into 2 frames:

1. The Explorer frame (on the left of the screen) displays all data files currently on your hard drive.
2. The Data Presentation frame, which consists of 6 separate data presentation pages for viewing your data.

For complete details on of all the tools available on the Data Review page, see "Data Review" on page 35.

Running a test

The following section will take you through a typical test run using the TSCS. If you are working with the system for the first time it is highly recommended that you read this section thoroughly. By following the steps presented in this section you will learn how to use all the tools available in the TSCS software package.

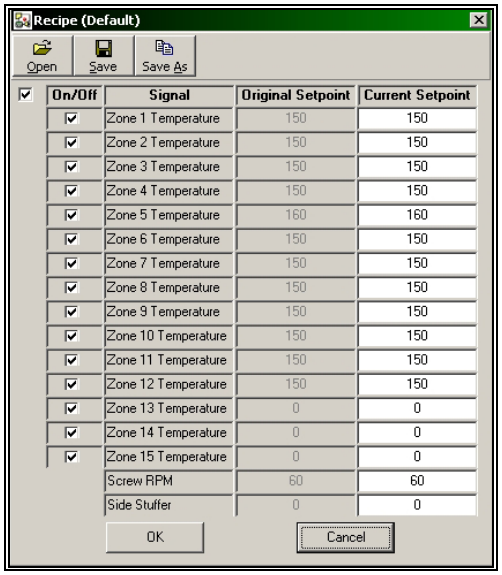
To start the TSCS software choose Start | Programs | TSCS | TSCS. The software will load and the Extruder Page will be displayed.

Load a Recipe

Once the TSCS software has been loaded, the first step in running a test is to load a recipe. NOTE: the operating parameters from your previous TSCS session are automatically loaded when you start TSCS.

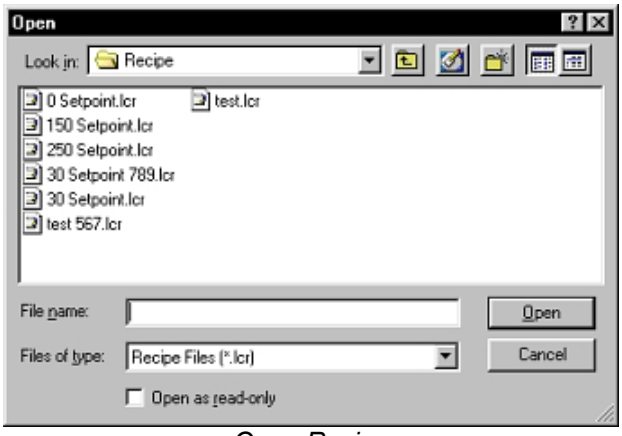
To open a previously stored Recipe click the Recipe Button. 

The recipe dialog will open as shown below.



The Recipe Dialog

Next, click the "Open" icon. The "Recipe Open" dialog will open.

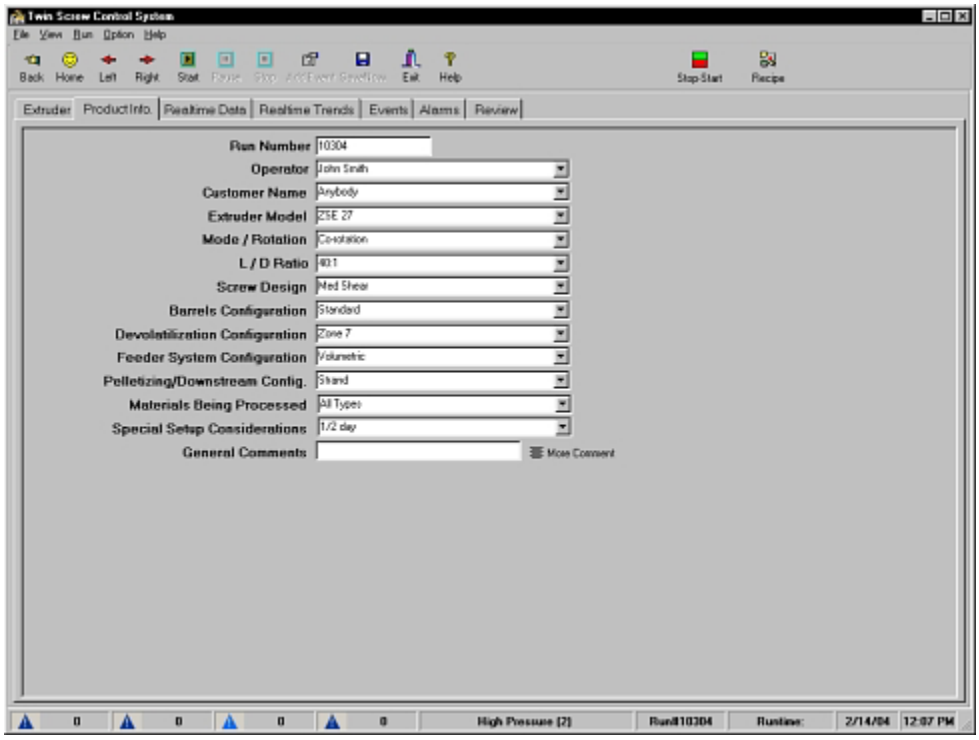


Open Recipe

Select the desired recipe and the click the "Open" button. The recipe will be loaded and the values displays in the "Original Setpoint" and "Current Setpoint" columns. Click the "OK" button on the recipe dialog to active the recipe.

Entering Product Info. Data

The next step in running a test is to enter information about your run on the Product Info page. To move to the product info page use the right button on the icon bar or simply click the product info tab. The Product Info page will appear as shown below.



The first field on the Prod info page is run number. This is the number that will be assigned to your test run. This number auto-increments for every new test run and is assigned by the TSCS software. This value cannot be modified. All other fields on Product Info page with the exception of Company Name can be edited with information about your test run.

Building pull down lists

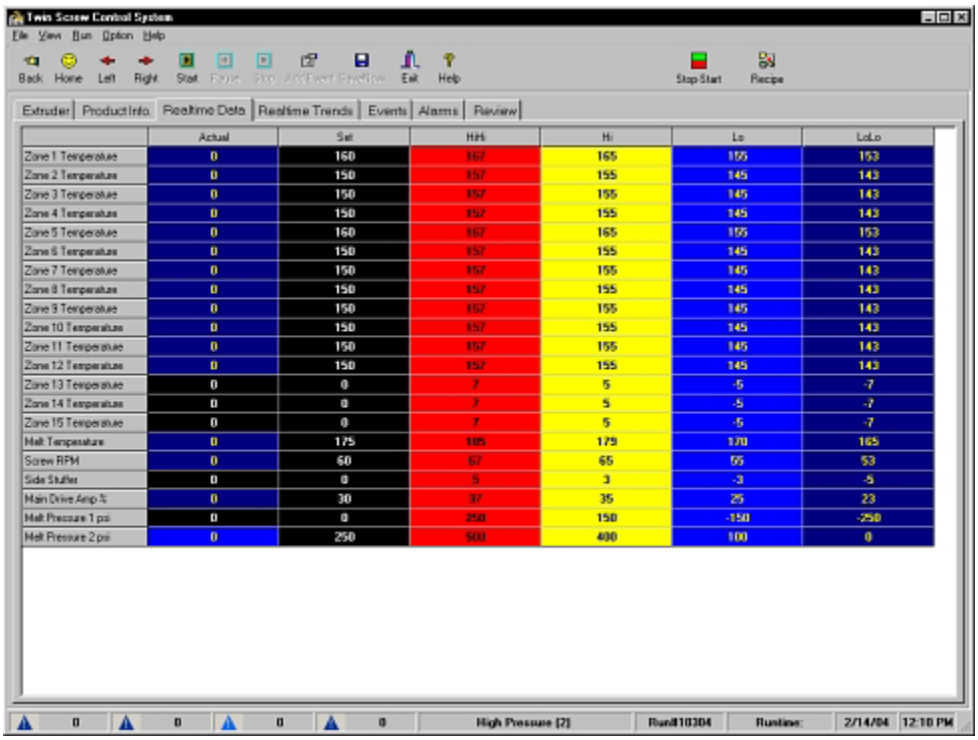
You can build customized pull down lists on the Product Info. page for each editable field. To do this, enter some information in one of the fields on the Product Info page. When you are finished entering the information hit the enter key on the keyboard. This will add the entry to the pull down list for that field. If you do not want to add an entry to a field pull down list hit the tab key when you are done entering the field contents.

The last field on the Product Info. page is the General Comments field. By clicking the More Comment button you will open a window that allows you to enter extended information about your test run.

When you're finished entering all the information about your test on the Product Info. Page use the Right button on the icon bar to move to the Realtime Data page.

Setting Alarm Values on the Realtime Data Page

The Realtime Data page (shown below) provides a digital snapshot of all process data, along with alarm limits for each parameter.



Notice that the data displayed in the Actual column is color coded according to the current condition of the parameter (I.E. if a parameter enters a Hi condition it will appear with a yellow background in the actual column. If a parameter enters a Lo condition it will appear blue and so on).

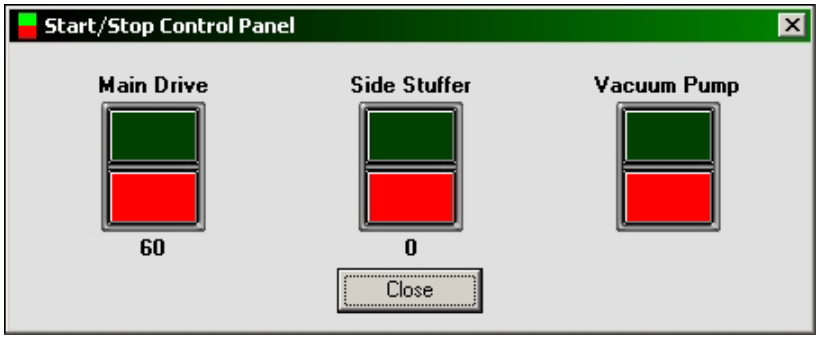
The "actual" column displays the actual data from your process. The "set" column displays the set points of your temperature controllers and analog signals. By default the alarm values (Hi, HiHi, Lo, LoLo) for each zone temperature are set to +10 HiHi , +5Hi, - 5Lo , -10 LoLo. All alarm values can be modified by double clicking the desired alarm value and then entering a new value for that alarm. Hitting the "enter" key will apply the new alarm value. For all "read only" signals (i.e. Motor Current, Pressure, Melt Temperature) you can enter a setpoint and the alarms will toggle around the setpoint. You can also set any individual alarm for these signals. After you have set all alarm values click the home button on the icon bar to return to the extruder page.

Note: You can print the contents of the Realtime Data page at any time by selecting File|Print from the Main Menu Bar while the Realtime Data page is in view.

Starting Drives

When all temperatures have reached set point you can start your extrusion process. To start the various drives in your system, click the Stop-Start button.

The Stop-Start dialog will open as shown.



Note that the current setpoints for the drives are shown below each Stop-Start button. This is the value that the drive will run at when the Start button is clicked.

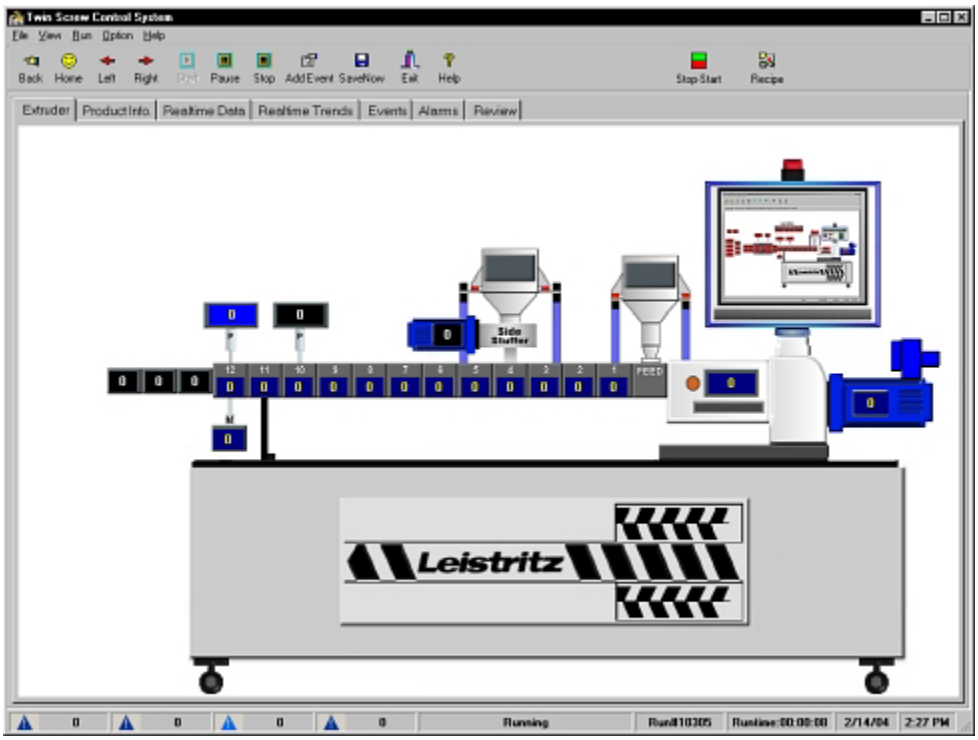
Starting Data Acquisition

To start data acquisition, click the start button on the icon bar. 

You will notice that the runtime clock on the status bar will start and the system status will change from idle to running.

Viewing Process Data on the Extruder Page

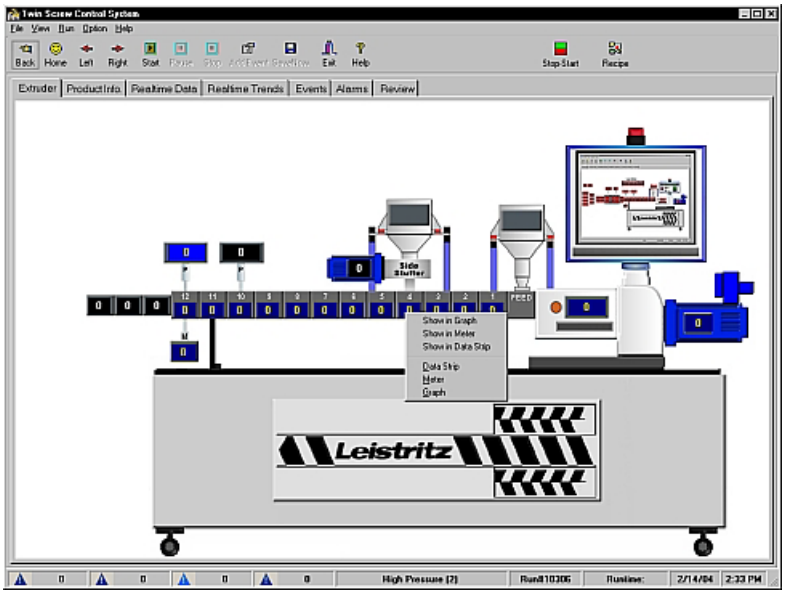
Now that your test is underway we will examine the various tools available to view your process data. The standard extruder page view (shown below) displays all process parameters in a "process view".



All parameters are color coded based on their alarm status. You will notice that when you place the mouse pointer in any parameter cell the name of the parameter will appear on a small text balloon. There are 3 major ways to view a process parameter's data. These are:

1. The Data Strip
2. The Analog Meter view
3. The Graphic view

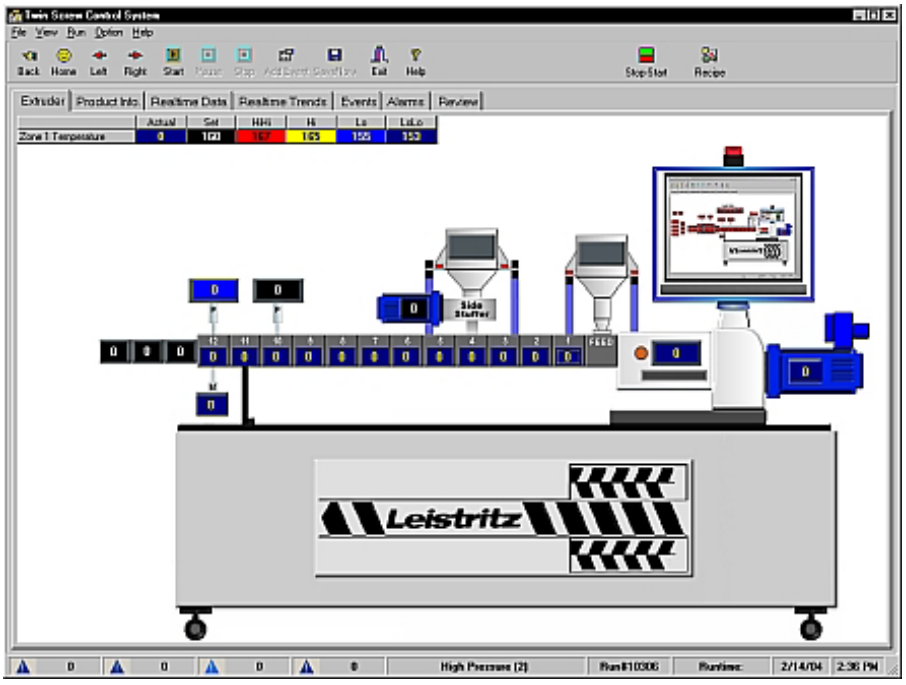
In the following sections we will take a look at these 3 views but first let's look at how you gain access to these views. To view a particular parameter in the data strip, meter or graph right click the mouse on the desired parameter. A pop-up menu will appear as shown below.



The top section of the pop-up menu allows you to show the parameter in one of the 3 data views. Now let's look at each view in detail.

The Data Strip

To view a parameter in the data strip, right click the desired parameter and then highlight and click "Show in Data Strip". The data strip will appear in the upper left hand side of the extruder page as shown below.



As you can see the data strip displays information from the Realtime Data page for the selected parameter. This allows you to see the alarm values along with the actual parameter value, and parameter setpoint. Once the data strip is in view you can left click on any parameter and it will be displayed in the data strip.

Making "on-line" setpoint changes using the Data Strip

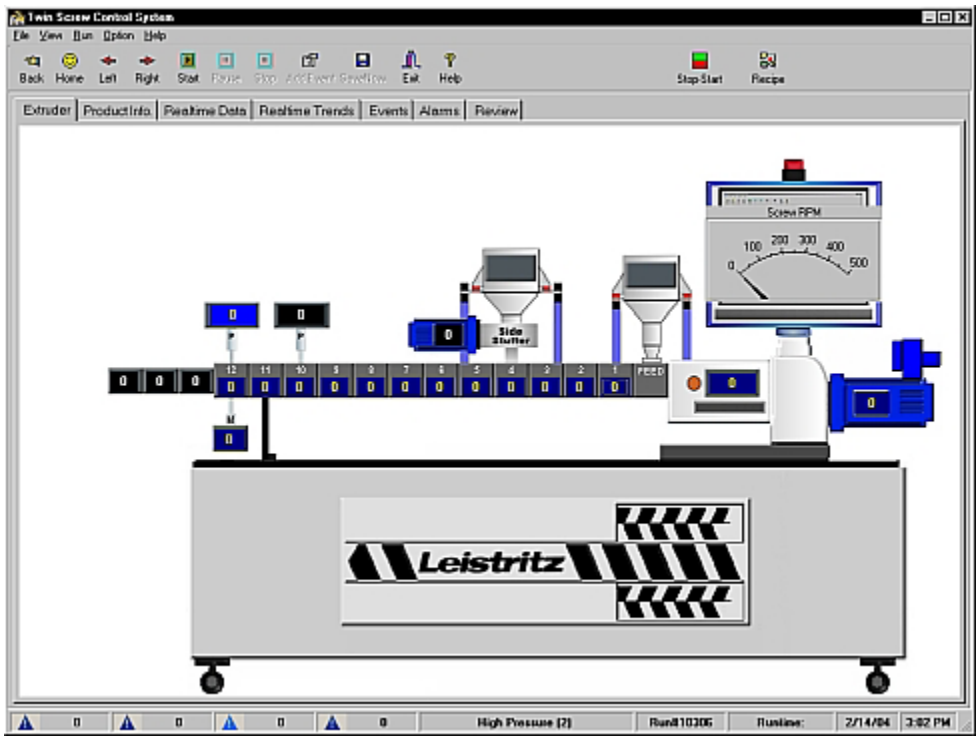
If a drive or temperature control zone is displayed in the data strip you can change that parameters setpoint by double clicking the "Setpoint" block or by right-clicking the Data Strip and selecting "Change Setpoint". Type a new setpoint and hit Enter to apply the change. This procedure applies only to Drive and temperature control zone. Setpoints for "read-only" parameters (ie Motor Current, Melt Temperature, Melt Pressure etc.) can only be changed on the Real Time Data page.

There are 2 ways to hide the data strip from view:

1. Right click on the data strip and then highlight & click "Hide".
2. Right click on any process parameter and then click on the check marked data strip selection.

The Analog Meter

Along with the data strip you can view a process parameter in an analog meter. To do this, right click the desired parameter and select "Show in Meter". The meter view will appear in the upper right hand corner of the extruder page as shown below.



As with the data strip, you can hide the meter from view using the following 2 methods:

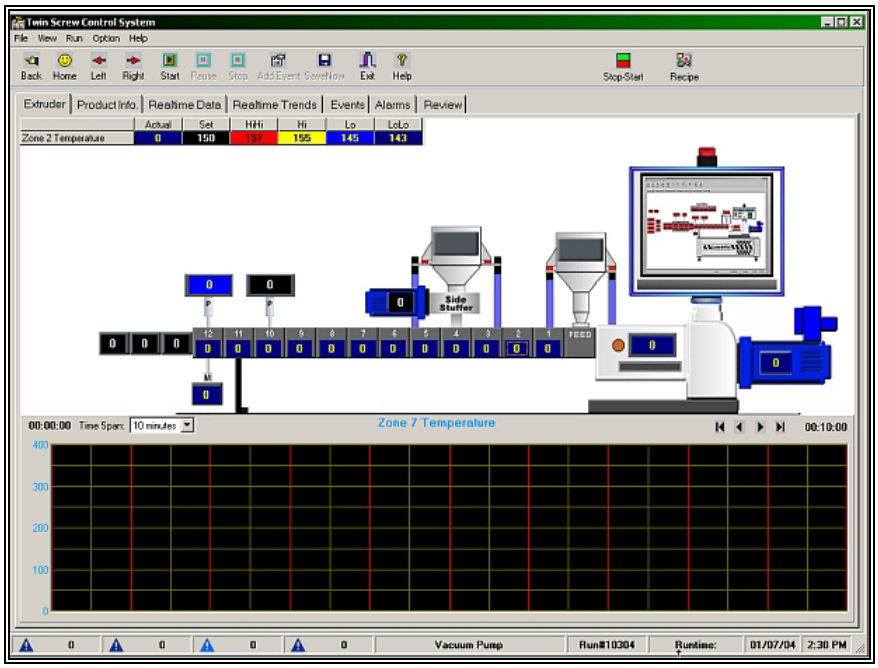
1. Right click on the Analog Meter and then highlight & click "Hide".
2. Right click on any process parameter and then click on the check marked Analog Meter selection.

Working with Graphic Data

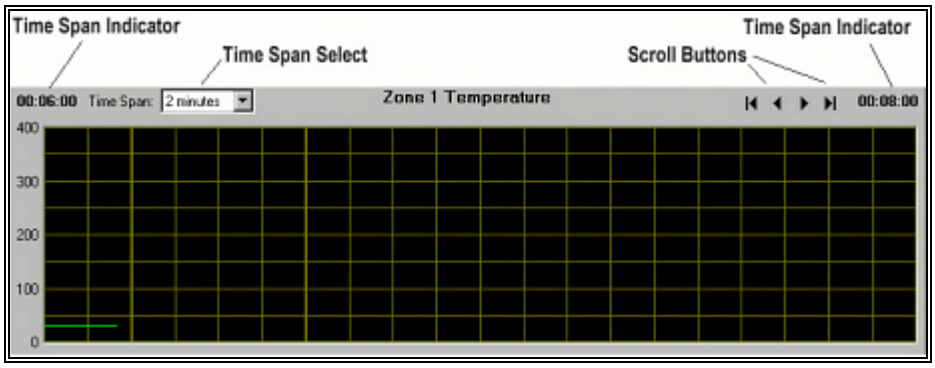
The extruder page contains a powerful trending display that allows you to view a parameter in graphic format. The following sections will introduce you to all the graphics tools available on the extruder page.

Plotting a process variable on the Extruder Page

To view a process parameter in the graphic view, right click the desired parameter and then select "Show in Graph". The graph view will appear as shown below.

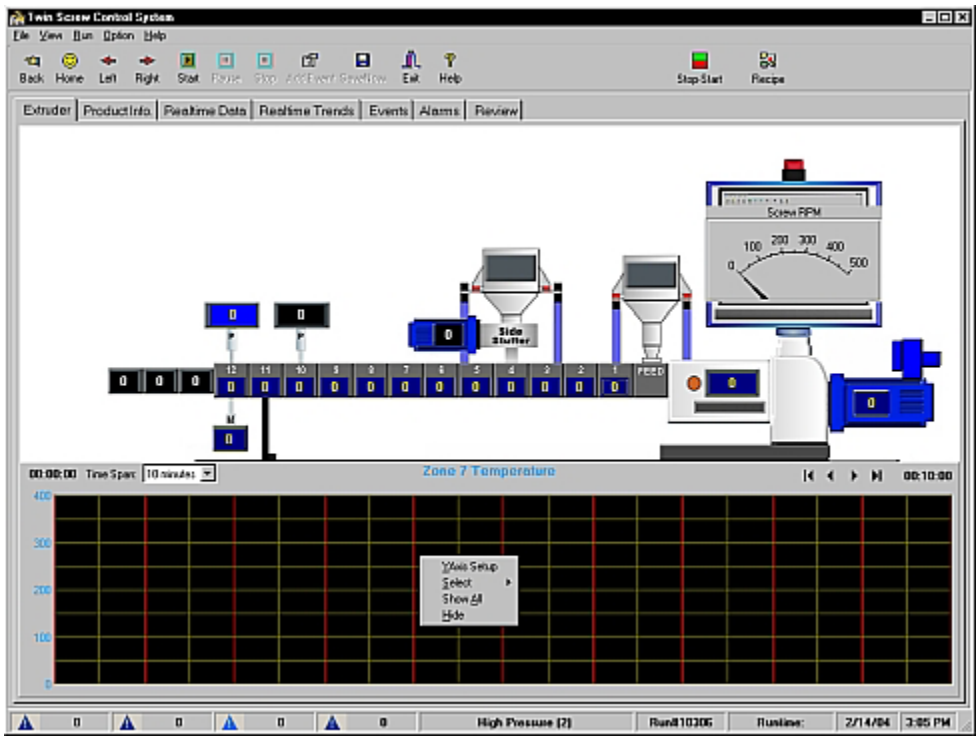


The graph view window contains tools for setting the time span of the graphic display and scroll buttons to allow you to pan through your test data. The figure below shows the location of these graphic tools.



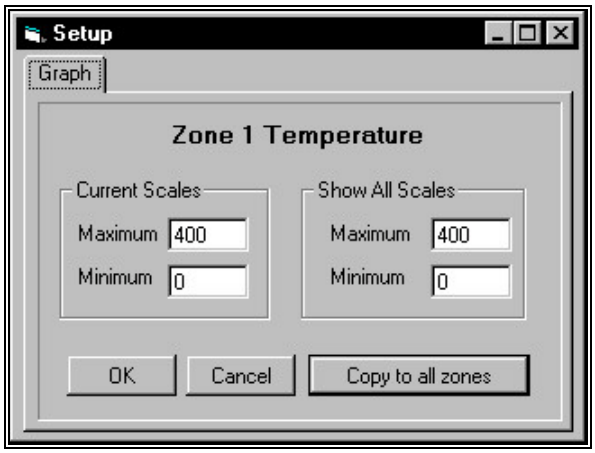
Graphics Tools

There are a number of tools available to assist you in customizing the graphic window for the best view of a selected parameter. To gain access to these tools place the mouse pointer in the plot area (black area) of the graph window and click the right mouse button. The graph window pop-up menu will appear as shown below.



Y Axis Setup

When you select y axis setup from the graph window pop up menu the following set up dialog box will appear



This dialog is split into 2 sections:

1. Current Scales
2. Show all Scales

Current scales

To change the current scaling of the y-axis enter the minimum & maximum values and then click ok. The y axis of the graph window will be adjusted to the values you have entered.

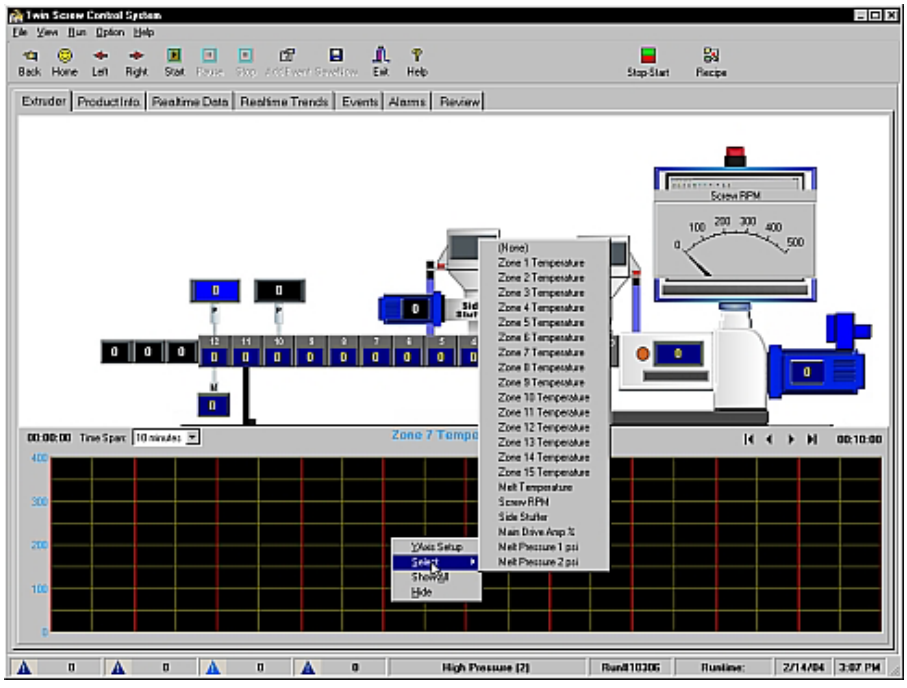
Show all scales

In the y-axis set up dialog, the values for "Show all Scales" refers to the y-axis scaling when "Show All" is selected from the graph window pop up menu. By default these values are set to full scale of the selected parameter (i.e. 0-400 for temperature, 0-500 for RPM etc).

Note: If you are displaying a control temperature zone in the graph window and open the y axis setup dialog box you will notice that the "Copy to all Zones" button at the lower right hand side of the dialog becomes available. You can use this button to copy the "Show All" values in the y axis setup dialog to all temperature control zones.

Parameter Select

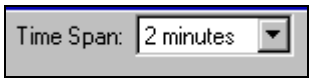
The next selection in the graph window pop up menu is parameter "Select". To access this command, right click with the mouse pointer in the graph window and then highlight the "Select" command. The "Select" command menu will appear as shown below.



From this menu you can select any parameter to be displayed in the graphic window.

Adjusting the Time Span

You can adjust the time span (x axis) of the graphic window by clicking on the down arrow of the time span selection box. This allows you to expand or zoom in on your data. The maximum time span for the graph window is 30min.



Note: the maximum data acquisition time is 8 hours.

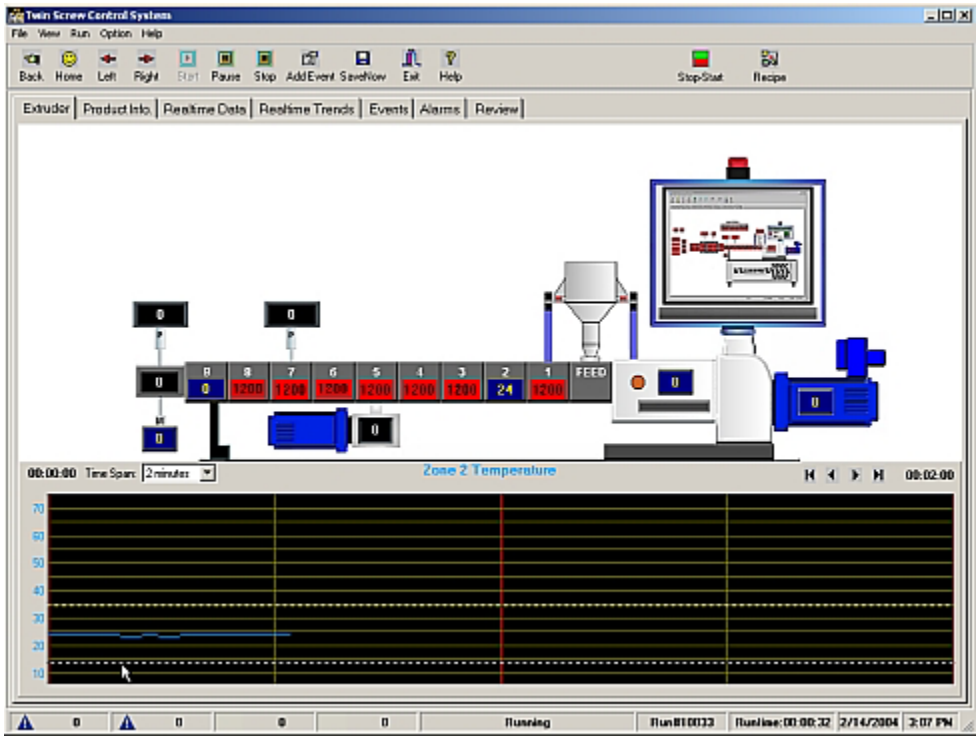
Using the Graph Window Scroll Buttons

The graphic window scroll buttons  allow you to view previous data in the graph window. For example, let's say that your test has been running for 10 minutes and you have been viewing your data in the graph window with a time span of 15 minutes. If you were to switch the time span to 1 minute you would see the time span indicators switch to 10:00 min (start) and 11:00 min (end). Your data will now be displayed on a 1 minute time base and the time span indicators will update every minute.

Now let's say you've been running for 20 minutes with the time span set to 1 minute and you want to go back to view the data you acquired at 15 minutes. To do this you would use the left scroll button and scroll back until the time span indicator shows 15:00 to 16:00. You will notice that as you scroll back the data will lock in the graphic window. If you wanted to view the data from the beginning of the test you would use the "scroll home" button. To return to the current test run data use the "scroll end" button.

Y Axis zoom feature

You can quickly scale the y axis of the graphic window using the y-axis zoom feature. To use this feature place the mouse pointer slightly above the actual parameter plot and then hold the left mouse button down and drag the pointer below the parameter plot. You will see 2 dashed lines appear as shown below.



When you release the mouse button the y-axis of the graphic window will re-scale based on the span of the 2 dashed lines.

Show All

The Show All command on the graphic window pop-up menu will reset the y-axis scaling to the values that were entered in the "Show all Scales" of the y-axis set up dialog.

Logging Events in the Graphic Window

As we discussed earlier in this manual, you can log event comments by using the "Add Event" button on the icon bar. You can also log event comments by double clicking the left mouse button on the graphic window this will open the "User Event Log" window. You can then add your event comments and then click OK to add them to the Events page.

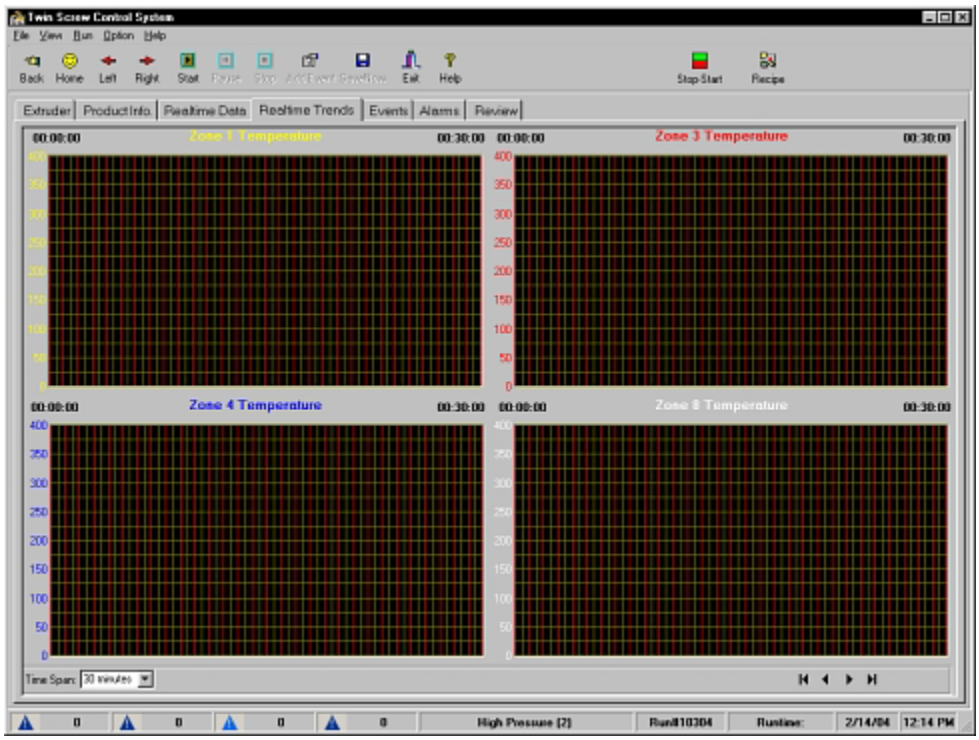
Note: events are logged at the current run time, not the point of the graph that you click on.

Hiding the Graph Window

You can hide the graph window from view by selecting the "Hide" command from the graph window pop up menu.

The Realtime Trends Page

The Realtime Trends page (shown below) allows you to view 4 process variables in graphic form at one time. All the tools available on the Real Time Trends page are identical to those discussed in the graphics section of the Extruder Page chapter.



Expanding a data plot

One tool that is unique to the Realtime Trends page is the Expand command. To access this command, place the mouse pointer in any one of the 4 graphic displays and click the right mouse button. The Realtime Trends pop-up menu will appear. You will notice that the last command in the pop up menu is "Expand" when you click this command the graph will expand to a full screen multiplot view. This view can be used for easy comparison of realtime data. To return to the multiple trends view, right click the expanded graphic and select the "Expand" command again (you will notice a check mark next to expand). The display will now return to the original 4 plot display.

Note: It is typically best to scale the 4 graphic displays using the individual graphic displays before using the “Expand” command, but you can use the Y-axis zoom feature on the expanded multiplot. You can also select “none” in

the parameter select menu to control the number of parameters displayed in the expanded multiplot view.

The E-stop/Alarm function

During your run you may come across a situation that requires that you actuate the e-stop button on your extruder control panel. The TSCS software is designed to detect such a situation and will automatically pause the test run when the e-stop switch is depressed. The Event Log window will open and you can enter information on the e-stop condition. This information will be logged on the Events page and the event type will be logged as "e-stop". When you disengage the e-stop switch you will be prompted to resume data acquisition. The same procedure occurs if drive faults or over pressure situations occur. The Event Log window will open and you can enter information on the fault condition. This information will be logged on the Events page and the event type will be logged. When the fault situation is resolved you will be prompted to resume data acquisition.

Click OK to resume your test run.

The Save Data Now Command

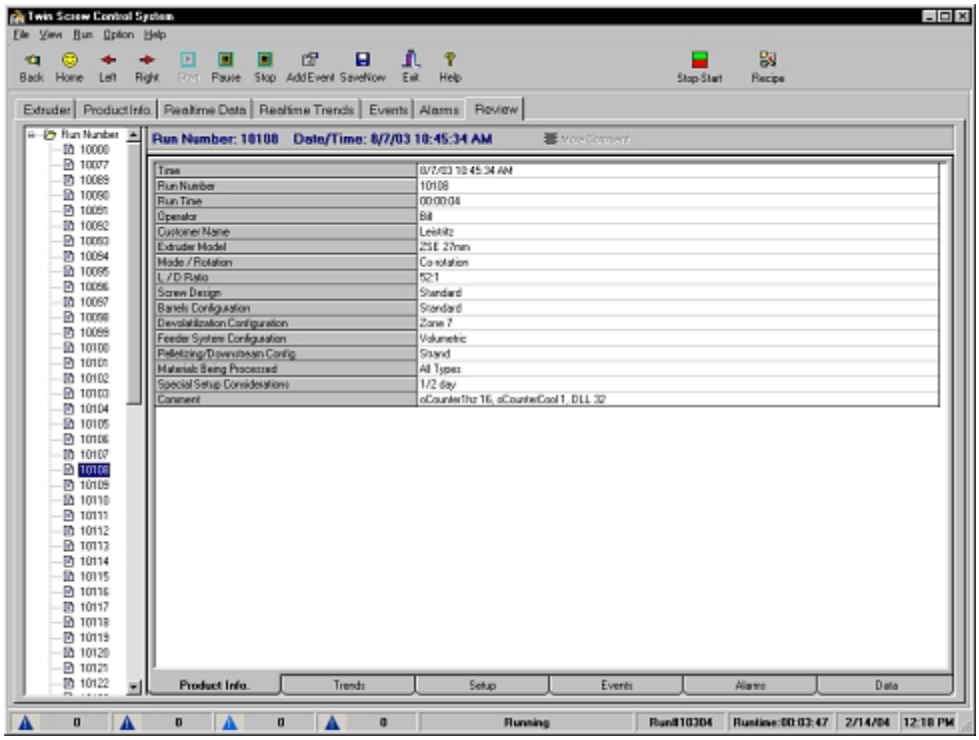
The Save Now button allows you to save data during a run so you can view it using data review. Save now does not terminate the current run. The run continues but all data is stored under the current run number and is available to be viewed and printed using data review.

Stopping a test

To stop a test run, use the Stop Button on the icon bar. This will terminate data acquisition and also store all test run data under the current run number. The run number will then increment by one and the system will be ready for your next run.

Data Review

Overview



The Data Review page provides all the tools required to recall previously recorded data, preview this data on screen, or generate printed reports.

The Data Review page is split into 2 frames:

1. The explorer frame (on the left of the screen) displays all data files currently on your hard drive.
2. The Data Presentation frame, which consists of 6 separate data presentation pages for viewing your data.

In the following sections we'll discuss each of the data review components along with the tools available to view your data and generate printed reports.

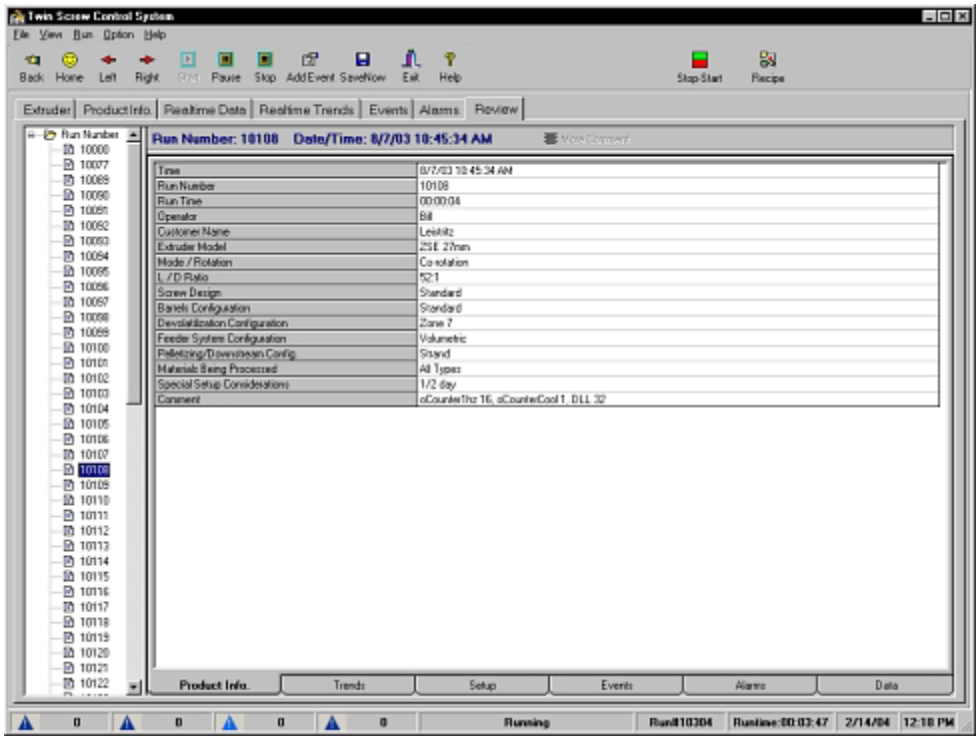
The Explorer Frame

The explorer frame of the Data Review page displays a list of all data files currently on your hard drive. To open a particular data file just click on the appropriate Run Number. The data file will load and information about the run will appear in the data review Product Info page. At this point you can now view the run data using the various data presentation pages.

The Data Presentation Frame

The data presentation frame (located on the right hand side of the data review page) contains 6 separate data presentation pages for viewing your test data. You can navigate through these 6 pages by clicking on the page tabs at the bottom of the screen.

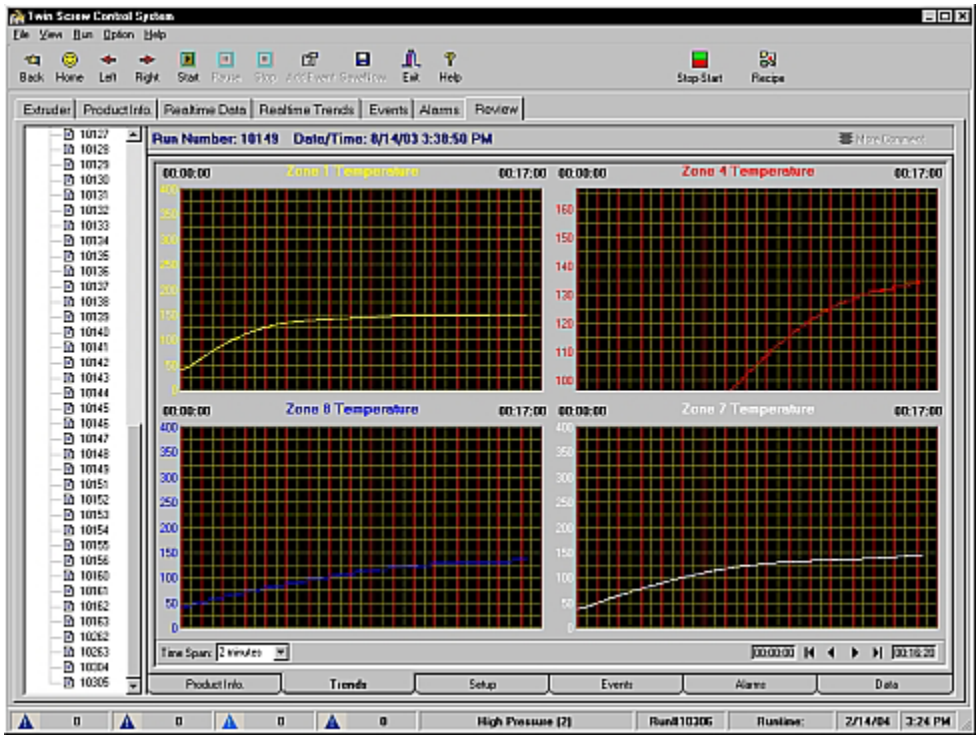
The Product Info. page



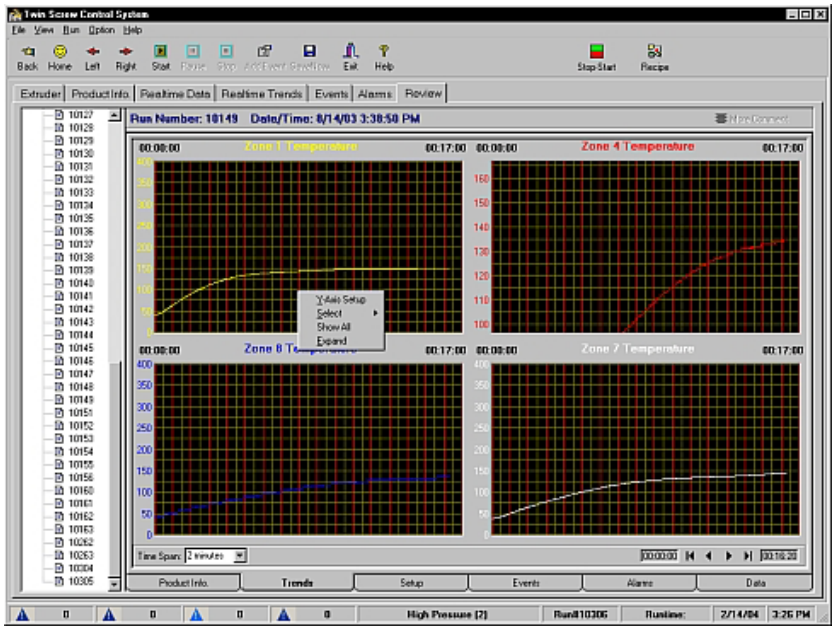
The Data Review Product Info page includes all the information that was entered on the run time Product Info page for any specific run number. In addition to this information is the "Time" field, which displays the date of the run and the time of day that the run was started.

Note: if you entered extended comments on the Product Info page you will notice that the More Comments button will be available in data review. You can view extended comments by clicking this button.

The Trends Page

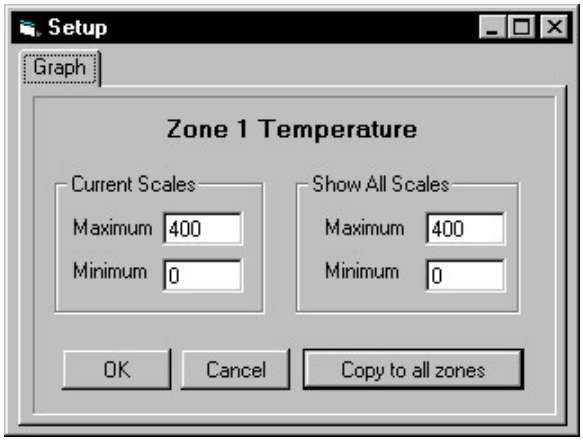


The Data Review Trends page allows you to view a graphic representation of your data. There are a number of tools available to assist you in customizing the graphic window for the best view of a selected parameter. To gain access to these tools place the mouse pointer in the plot area (black area) of the Trends window and click the right mouse button. The graph window pop-up menu will appear as shown below.



Y Axis Setup

When you select y axis setup from the Trends Page pop up menu, the following Setup dialog box will appear



This dialog is split into 2 sections:

3. Current Scales
4. Show all Scales

Current scales

To change the current scaling of the y-axis, enter the minimum & maximum values and then click OK. The y-axis of the graph window will be adjusted to the values you have entered.

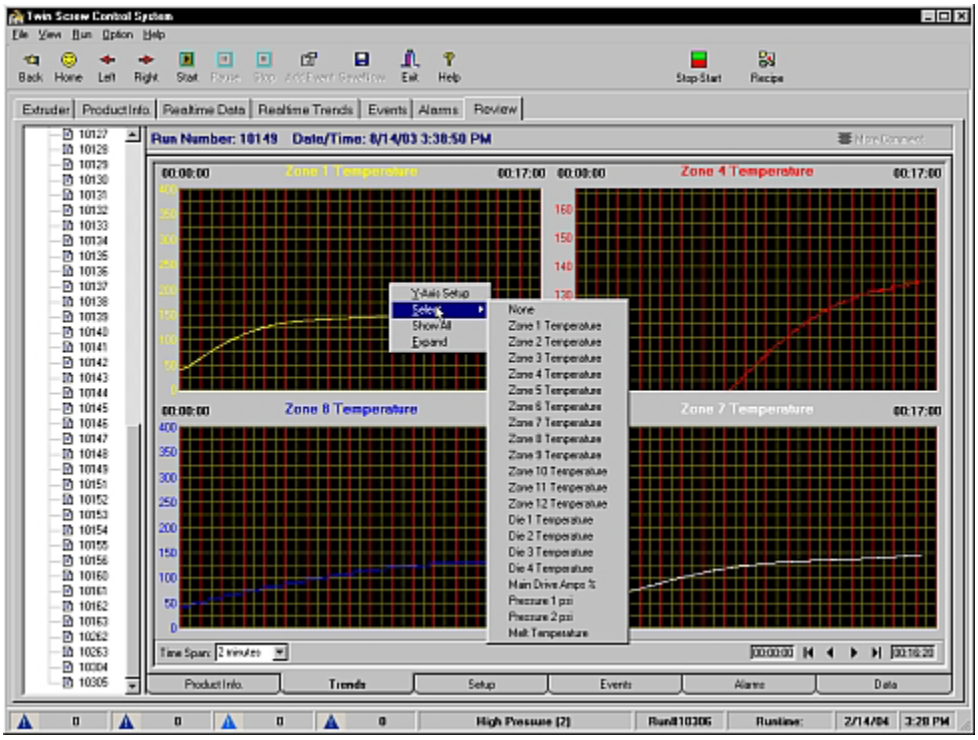
Show all scales

In the y axis set up dialog the values for "Show all Scales" refers to the y axis scaling when "Show All" is selected from the graph window pop up menu. By default these values are set to full scale of the selected parameter (i.e. 0-400 for temperature, 0-500 for RPM etc).

Note: If you are displaying a control temperature zone in the graph window and open the y-axis setup dialog box you will notice that the "Copy to all Zones" button at the lower right hand side of the dialog becomes available. You can use this button to copy the "Show All" values in the y-axis setup dialog to all temperature control zones.

Parameter Select

The next selection in the graph window pop up menu is parameter "Select". To access this command, right click the mouse pointer in the graph window and then highlight the "Select" command. The "Select" command menu will appear as shown below.

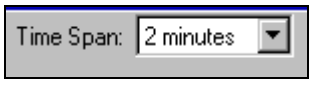


From this menu you can select any parameter to be displayed in the graphic window. You can repeat this step for each of the 4 data plots.

Note: The parameters selected, and the scaling for each parameter, will determine the printout that is generated when you print the Graphic report. You can select “None” to control the number of parameters that will be displayed and printed. (ie. If you just want to plot screw rpm and pressure you would select these 2 parameters for 2 graphic panes and “None” for the other 2 graphic panes.

Adjusting the Time Span

You can adjust the time span (x-axis) of the graph window by clicking on the down arrow of the time span selection box. This allows you to expand or zoom in on your data. The maximum time span for the graph window is 8 hours.

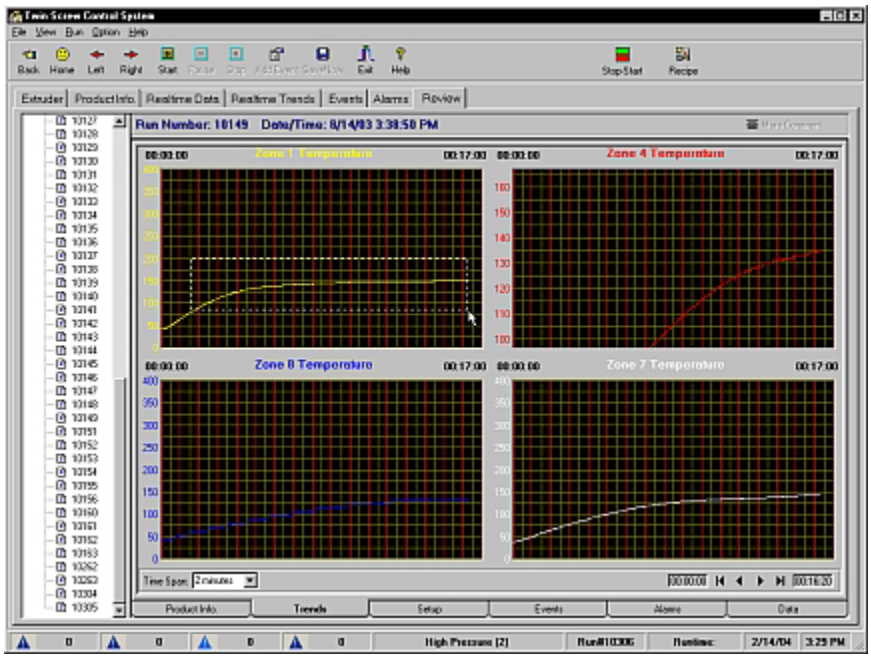


Using the Graph Window Scroll Buttons

The graph window scroll buttons  allow you to scroll through your test data. The "Home" button (leftmost) will bring you to the beginning of your run data. The left and right buttons will scroll the data based on the Time Span selected. The "End" button will bring you to the end of your run data.

Using the Zoom feature of the Data Review page

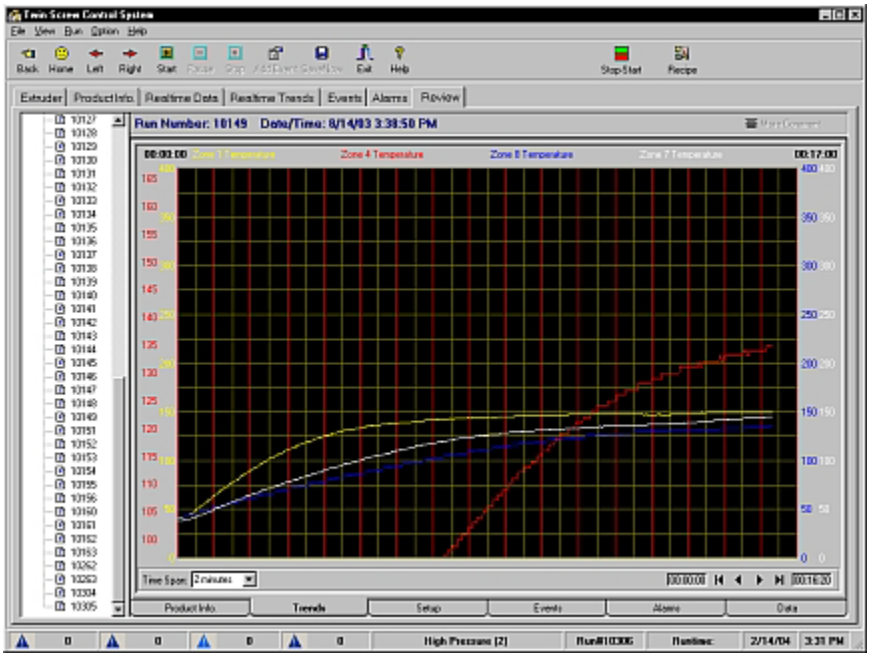
You can quickly scale each plot in the graphic window using the zoom feature. To use this feature place the mouse pointer slightly above the actual parameter plot and then hold the left mouse button down and drag the pointer below the parameter plot. You will see a dashed box appear as shown below.



When you release the mouse button the graph window will re-scale based on the span of the dashed lines. This zoom feature differs from the zoom feature of the Extruder and RealTime Trends pages in that it re-scales both the x & y-axis.

Expanding the Graphic Window to a multiplot view

You can use the “Expand” command in the graphic window pop up menu to display a full screen multiplot view of your data as shown below.

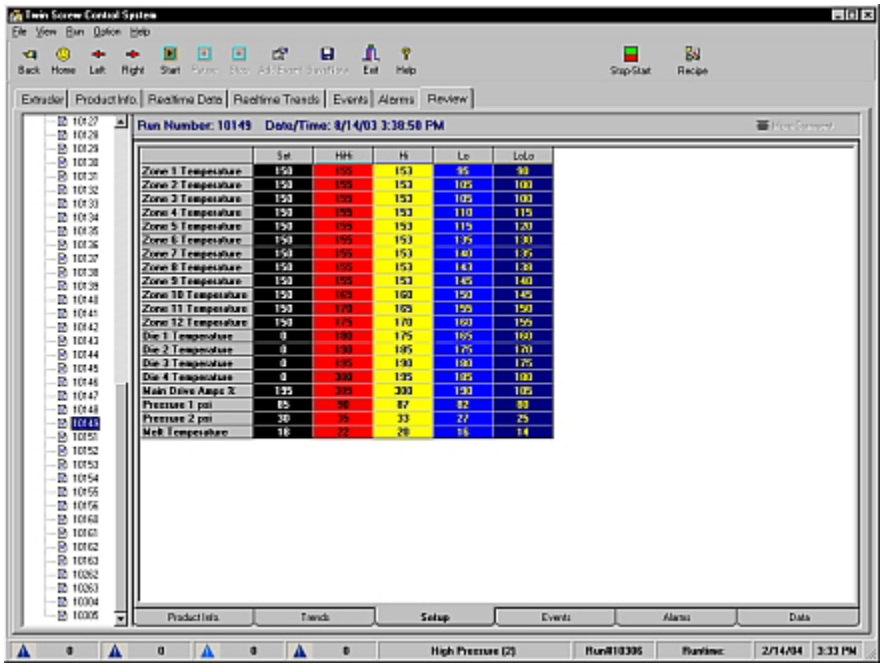


This multiplot view gives you an on screen view of the printout that will be generated when you print the graphic report.

Note: It is typically best to scale the 4 graphic displays using the individual graphic displays before using the “Expand” command, but you can use the Y-axis zoom feature on the expanded multiplot. You can also select “none” in the parameter select menu to control the number of parameters displayed in the expanded multiplot view.

To return to the 4 plot view, right click on the graph window and click on “Expand” (it will have a check mark next to it).

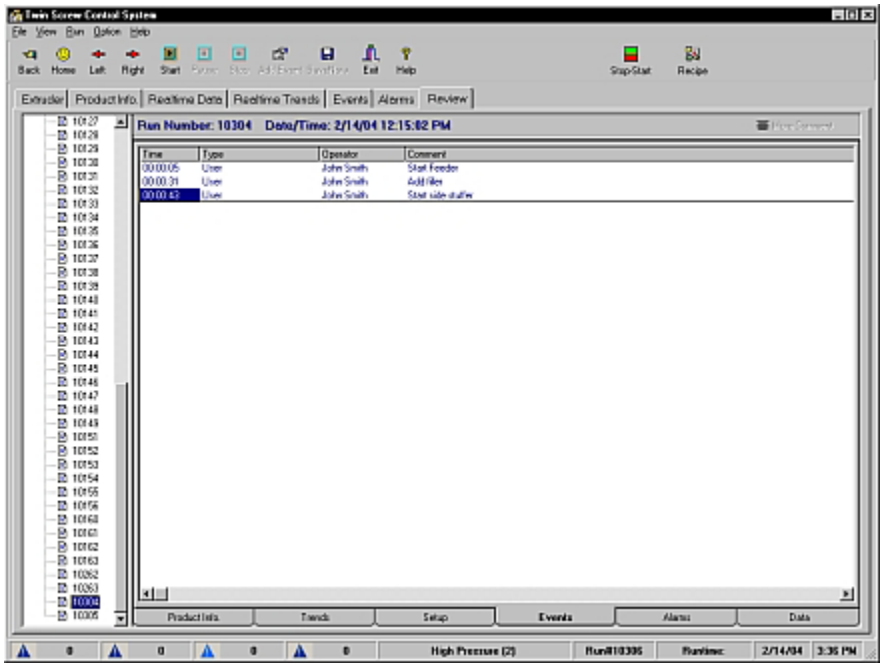
The Setup Page



The Data Review Setup page displays the initial setup that was used for this run. The information displayed on this page includes:

1. Set Points for all parameters when data acquisition was initiated
2. Alarm values for all parameters

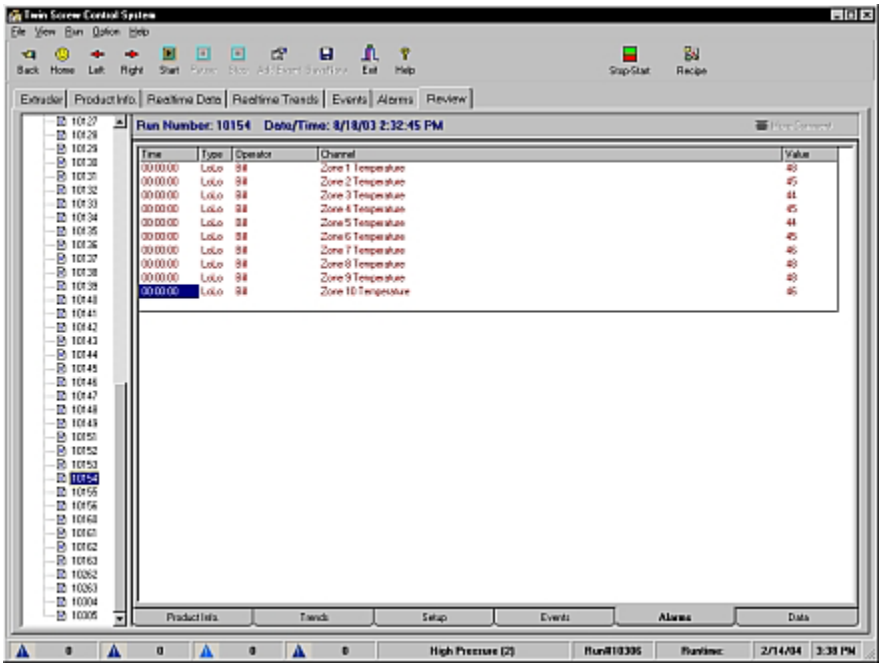
The Events Page



The Data Review Events page displays all of the events that were logged during a run. The information contained on this page includes:

1. Run time of event
2. Event type (User or E-stop)
3. Operator Name
4. Event comments

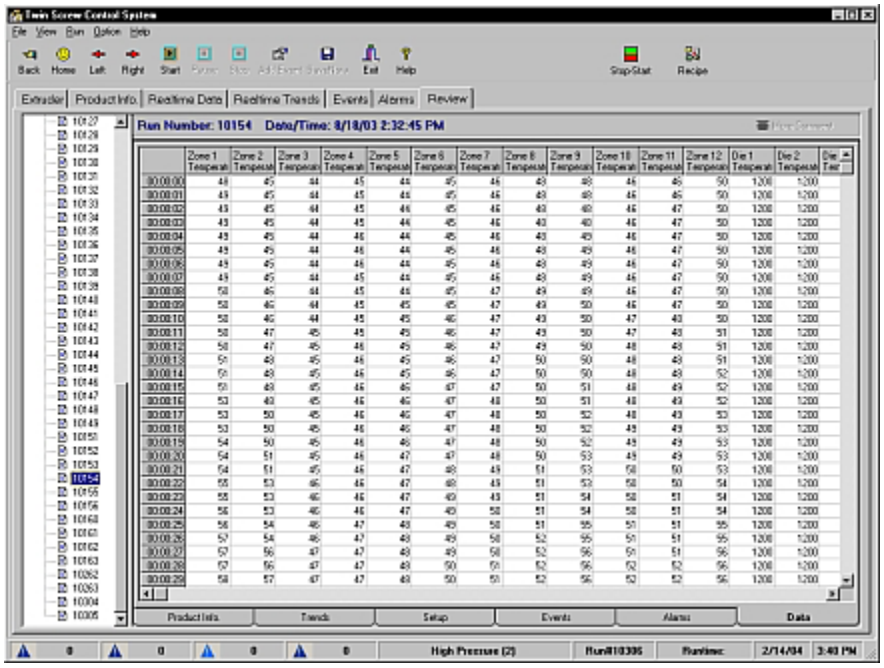
The Alarm Page



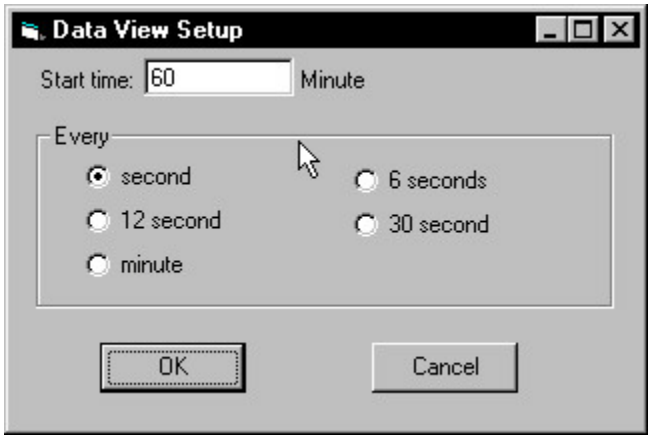
The Data Review Alarm page displays all alarms that were logged during a run. The information displayed on this page includes:

1. Run Time of alarm
2. Alarm type
3. Operator name
4. Parameter causing alarm
5. Alarm value

The Data Page



The Data Review Data page displays digital data from a run. The data on this page is displayed in a block of 300 data points. You can set the start time and the time increment for the data block by right clicking on the data table and selecting Data View Setup. The Data View Setup dialog will appear as shown below.



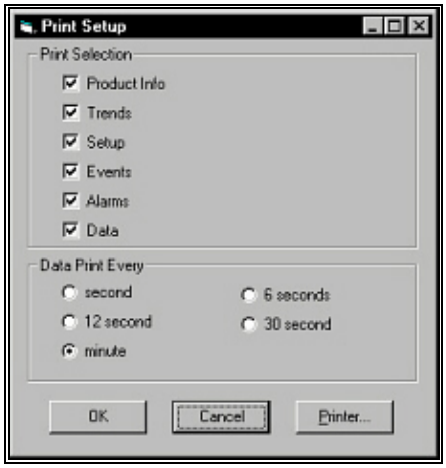
After you have entered the Start time and selected a time increment click the OK button to display your data.

Generating Printed Reports

You can generate printed reports of your data from the Data Review page. To do this, first select the desired data file from the Explorer Frame. Next view and scale a parameter on the Data Review Trends page.

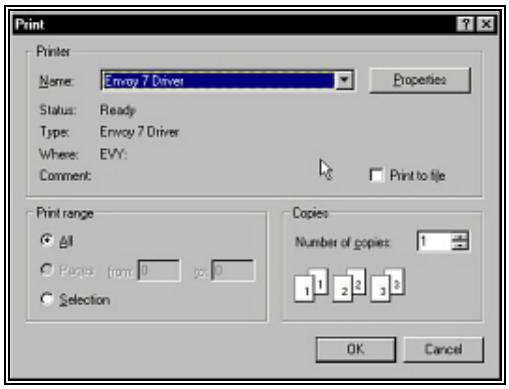
Note: The graph printout will be based on the scaling that you apply on the Data Review Trends page.

Now select File | Print Setup from the Main Menu Bar. The Print Setup dialog will appear as shown below.



From this dialog you can select which pages you want to print (i.e. Product Info, Trends, Setup, etc.) by checking or unchecking the appropriate selection box. You can also select the time increment for the digital data printout (i.e. every second, every 6 seconds, 12 seconds etc.).

You can also select which printer to print to by clicking the "Printer…" button. This will display the Windows Print dialog as shown below.



After you have selected the appropriate printer and print properties, click OK to return to the Print Setup Dialog. When all print settings are selected click OK to close the Print setup Dialog. Now select File | Print from the Main Menu Bar to print your reports.

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