

SKF @ptitude Analyst HMI

Part No. 32227300-EN
Revision B

User Manual

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HMI Displays

Introduction

SKF @ptitude Analyst HMI (Human Machine Interface) graphically depicts its stored data in relation to the actual physical geometry of what is being studied. HMI is used as a "Human Machine Interface", where it depicts a picture of a machine or a machine train, and superimposes measurement points on top of the picture. A very simple status overview is created of what is being monitored, which is particularly attractive to an "Operator Display".

HMI utilizes a number of standard picture formats, so that the exact graphical representations can be created by anyone with a paint or CAD software program. It is also possible to use pictures created with a camera, permitting a "real live" view of the machine, machine sets, or an entire plant view. HMI poses no limitations on what is being depicted.

HMI consists of a Viewer and a Configurator, which are responsible for, respectively, viewing and configuring the machine graphics. Except for a paint or CAD program to create the pictures, no other software is required to build the Human Machine Interface.

Though HMI is intended for use with a database that is continuously updated with on-line data acquisition systems, it is also capable of showing data collected with hand-held devices.

HMI Displays Dialog

- Select the **View** menu's **HMI Displays** option or click the icon . The **HMI Displays** dialog displays.

The **HMI Displays** dialog allows you to configure, view, and manage HMI layouts. Use the **HMI Displays** dialog to work with existing layouts and to create new layouts.



Figure 1.
The **HMI Displays** dialog.

Fields include:

Select Layout - Existing layouts display in this window. Select a layout to view or edit it using the buttons to the right.

First View - Displays the selected layout's top level graphic specified in the configurator.

Configure - Click to establish links between mimics and hotspot locations for the selected layout.

Open - Click to open the viewer for the selected layout.

Add - Click to create a new layout.

Remove - Click to delete the selected layout.

Properties - Click to edit the selected layout's name and description.

Close - Click to exit the **HMI Displays** dialog.

To create a new HMI layout:

- Select the **View** menu's **HMI Displays** option. The **HMI Displays** dialog displays.
- Click the **Add** button. The **Layout Properties** dialog displays.
- Enter a unique name and description in the **Name** and **Description** fields and click **OK**. A new layout is generated and displays in the **HMI Displays** dialog's **Select Layout** list for configuring and viewing.

➤ Note: the layout does not have a background image at this point.

To change an existing layout's name and description:

- From the **HMI Displays** dialog, select a layout from the **Select Layout** list.
- Click the **Properties** button. The **Layout Properties** dialog displays the layout's current name and description in the **Name** and **Description** fields.
- Type in the new name and description in the **Name** and **Description** fields and click **OK** to save your changes.

To remove an existing layout:

- From the **HMI Displays** dialog, select a layout from the **Select Layout** list.
- Click the **Remove** button. You are prompted to confirm you wish to delete the selected layout.
- Click **Yes**.

Configuring HMI Displays

Use HMI's configurator functions to configure the mimic displays, including establishing links between mimics and hotspot locations. You

To launch the configurator:

- Select **View** menu's **HMI Displays** option. The **HMI Displays** dialog displays.
 - You must select an item in the hierarchy to activate the HMI's configurator functions.

- Select a layout from the **Select Layout** list and click **Configure**. The **HMI Displays Configuration** dialog displays.



Figure 2.
The **HMI Displays Configuration** Dialog.

- ① Displays the selected view's path. Use the drop down list to display a previously used view.
- ② Click to enable editing for the current view.
- ③ Click to save all recent edits.
- ④ Click to undo all unsaved edits.
- ⑤ Click to add a new view for the selected hierarchy item.
- ⑥ Click to delete the current view.
- ⑦ Click to open the **Viewer** dialog. The **Configuration** dialog closes.
- ⑧ View button
- ⑨ Hierarchy Pane
- ⑩ Displays your current mouse position.
- ⑪ When enabled, hotspots added to the view will "snap" to the nearest grid mark.
- ⑫ Select the grid size from the drop down for the view pane.
- ⑬ View Pane
- ⑭ Specify the font used for hotspot labels.
- ⑮ Specify the hotspot icons' display size.
- ⑯ Specify where the hotspot label will be located in relationship to the hotspot icon.

The configuration dialog is split into two main areas:

Hierarchy pane - The SKF @ptitude Analyst hierarchies display in the left pane. The hierarchy shows all SETs, machines, and POINTs, including their alarm status and enabled / disabled status. The HMI hierarchy does not show measurements.

View pane – Displays the selected hierarchy item's view. This is where you will drag and drop hierarchy items to create hotspots and establish asset links for the selected view.

- HMI does not provide functions to create graphics such as WMF or BMP files. An external software package is necessary to create the required drawings.

Creating Views

HMI shows machine mimics as a collection of views that belong to a SKF @ptitude Analyst SET. HMI refers to this collection as an "Asset". Typically, SETs divide an entire plant or large machine into smaller manageable sections (for example, a paper machine that has been broken down by machine section, such as Fourdrinier, Press section, and Dryer sections). In this case, it makes sense to show a machine mimic for each of these sections, so that measurement POINTs can be easily shown with ample machine detail drawing.

In many cases, the user may want to provide more than one single machine mimic for a particular SET. In the case mentioned above, provide a single machine mimic with all measurement locations as hotspots on top. However, since most SETs consist of many data POINTs, it is more practical to display hotspots separated by front side and back side. Therefore, the user may want to configure HMI to show two different views, a front side and a back side view. HMI permits use of different graphics files for each view.

- A SKF @ptitude Analyst Machine group cannot be associated with a collection of views. In HMI, a machine group is used as a container for measurements that belong together; a single click on a machine hotspot shows all measurements within that group.
- It is necessary to define a "Top Level" machine mimic. This is a single mimic that is associated with the highest shown node in the hierarchy. In the example above, which displays a single hierarchy, the top level machine mimic must be associated with the node labeled **Hierarchy**. For multi-hierarchy databases, the top level node is labeled **Top**. HMI uses the top level node as the first machine mimic to display when the Viewer starts up. From the top level machine mimic, create links to other machine mimics.

To add a new view:

- Locate the SET to add a view to by highlighting it in the hierarchy.
- Press the **Add a New View** button. The **HMI Displays Properties** dialog displays.

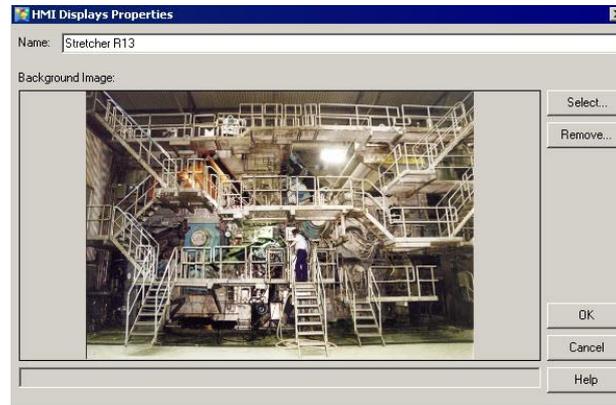


Figure 3.
The **HMI Displays Properties** Dialog.

- Enter a view name in the **Name** field. View names must be unique within a SET. For example, views with identical names must be attached to their individual SET.
- Click **Select** to choose a graphic file. The **Select View Image** dialog displays.
- Browse for a graphics file and click **OK** when finished. The graphic displays for the selected SET.



Figure 4.
The **HMI Displays Configuration** Dialog with View.

To populate the view with hotspots:

- Click the **Edit View** button to activate edit mode.
- Drag-and-drop a hierarchy node onto the view.



Nodes that can be dropped on the mimic do not need to be part of the SET the view is associated with. A hierarchy node can be dropped only once on the same view. By dropping SET hotspots, links to other views are created.

Create an asset link to jump from one asset to another in the viewer. This is necessary, for example, to be able to display an entire plant and a detailed drawing of a section of that plant, or a single machine. Asset links are created by placing the destination SET hotspot on the source machine mimic.



- When the machine mimic has been appropriately configured, click the **Save Edits** button to permanently store the mimic definition.

To reposition a hotspot:

- Drag-and-drop it to the new location.

To delete a hotspot:

- Right-click the hotspot to display the right-click context menu.
- Click **Delete**.

Customizing Elements in the View

Flexible Label Positioning

The **Custom** option enables you to move the label text for an element to any position you want.

- Launch the HMI configurator by going to the **View** menu > **HMI Displays...** The **HMI Displays** dialog opens.

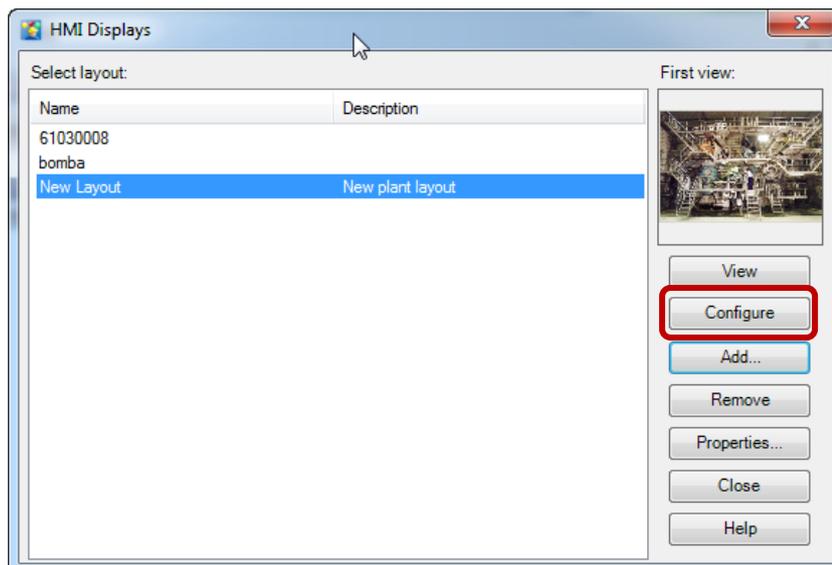


Figure 5.
HMI Displays Dialog.

- Locate the SET you want to edit by highlighting it in the hierarchy.

- Select the layout you want in the dialog, and then click **Configure** to open the **HMI Configuration** view.
- Drag and drop an item from the hierarchy on to the background image. The element is represented by the marker of a small sphere with a label in black text.



Figure 6.
Element Dropped in the Configuration Display.

- Right-click the desired element in the HMI display to open the context menu.

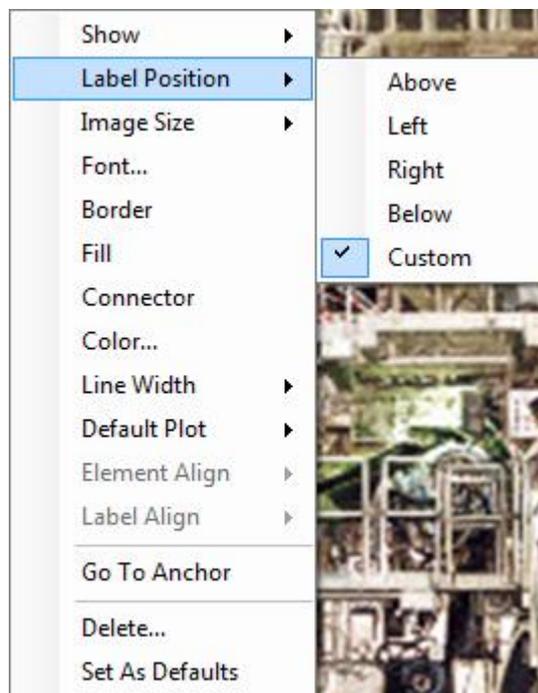


Figure 7.
HMI Display Context Menu. **Label Position**.

- Select the **Custom** option.
- Click on the label text and drag and drop it to a new location on the screen. The label appears in bold font while it is being moved.



Figure 8.
Example of Customized Label Position.



- You may click the **Save** tool to save any changes you make before continuing.

Color and Line Width

The right-click context menu also includes options for **Border**, **Fill** and **Connector**. These options produce visual highlights to the text area to improve visibility against the background image or provide emphasis.

- **Connector** is available only for elements that have **Label Position = Custom**.

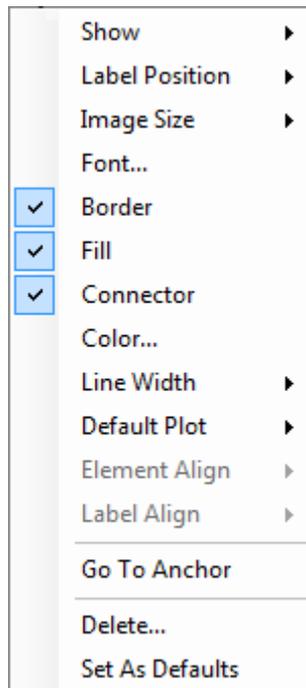


Figure 9.
Border, **Fill** and **Connector** Menu Options.

- Still in configuration mode, right-click the desired element in the HMI display to open the context menu.

- Check **Border** in the context menu to enable the drawing of an optional border around the label text. The default border is black and 1 pixel wide.
- To change the color of the border, select the **Color...** menu option. The color selector opens for you to select a color and then click **OK**.
- To change the width of the border, select **Line Width**.

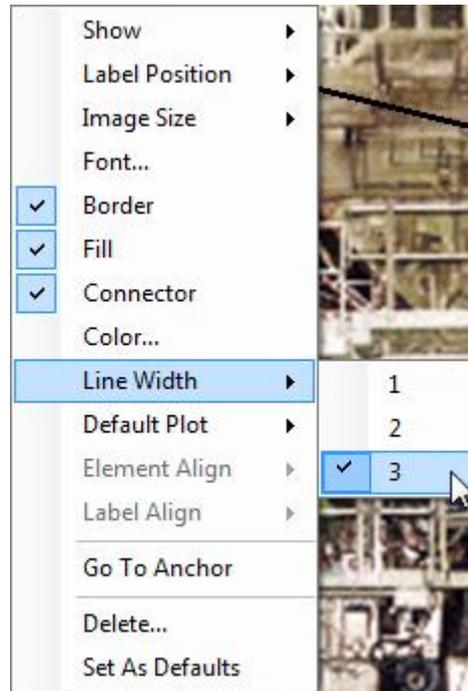


Figure 10.
Line Width Options.

- **Line Width** options are:
 - **1** (1 pixel wide).
 - **2** (2 pixels wide).
 - **3** (3 pixels wide).
- Check **Fill** in the context menu to enable filling the background rectangle area of the text label with color.
 - A single color selection is applied to the border, the fill and the connector. If you change the color of one, the other visible items change to match.



Figure 11.
Examples of **Border**, **Line Width** and **Fill**.

- Remove the check mark to disable the display of the **Border**, **Fill** or **Connector**.

If the selected element has **Label Position = Custom**, then the menu option **Connector** is also available.

- Check **Connector** to enable the display of a connecting line between an element and the label text in custom position. The default connecting line is black, 1 pixel wide. If you have already selected another color and line width, the connector will display those selected values. You can change the color and line width of the connector. Recall that any change will be applied to the border and fill, if displayed.

Graphical Alignment of HMI Elements and Custom Labels

You can easily align elements and custom labels in the view with the alignment options.

- Select two or more elements that you want to align by holding down the **Ctrl** key while performing a left-click on each element. The selected elements will show a small border drawn around the element image.

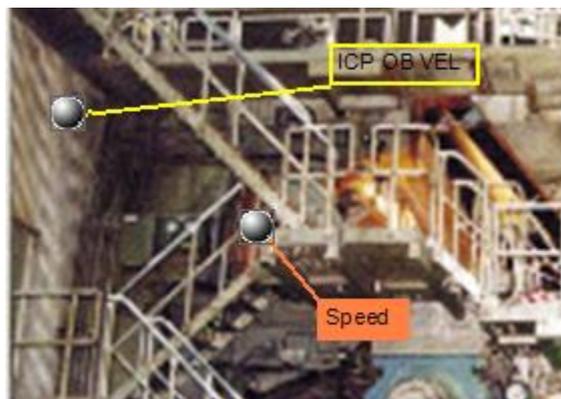


Figure 12.
Example of Two Elements Selected for Alignment.

- Right-click a selected element in the view to open the context menu.

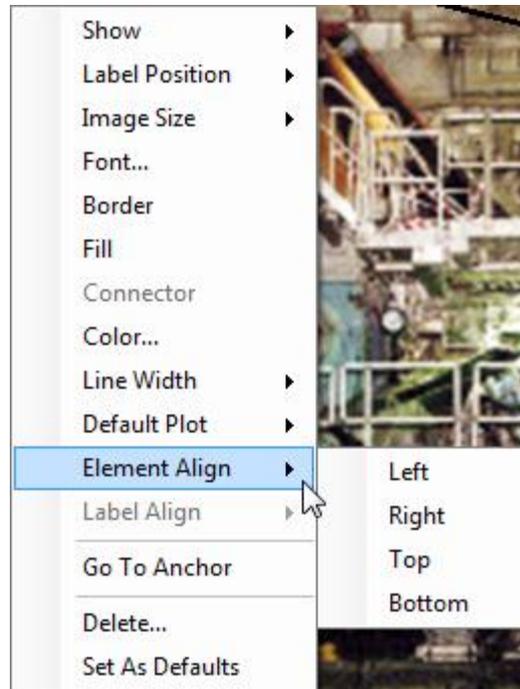


Figure 13.

Element Align, Alignment Options.

- Select **Element Align**, and then select by check mark the alignment position you want: **Left**, **Right**, **Top** or **Bottom**.

Left – moves all selected elements to match the horizontal position of the leftmost element.

Right – moves all selected elements to match the horizontal position of the rightmost element.

Top – moves all selected elements to match the vertical position of the topmost element.

Bottom – moves all selected elements to match the vertical position of the bottommost element.

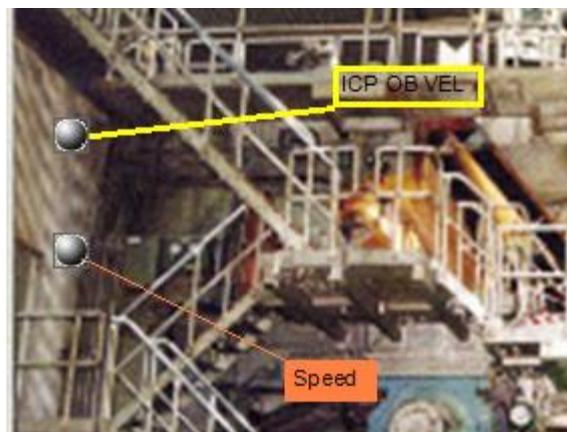


Figure 14.

Example of the Two Selected Elements Aligned to the Left.

Label Align becomes available when two or more elements with **Label Position = Custom** are selected. The label alignment options are **Left, Right, Top** and **Bottom**.

- Be careful that an aligned label does not hide or obscure another existing label.

Setting Default Values

Set the Default Plot Type for a POINT

You can configure a specific plot type to display when you click on a POINT element in the HMI view. This feature supports many types of plots.

To configure a POINT element for a default plot type, right-click on the element to open the context menu.

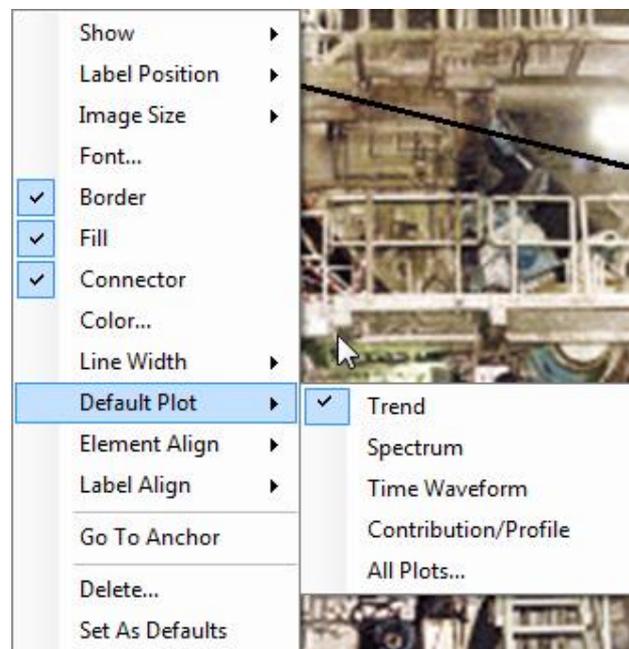


Figure 15.

Default Plot, Plot Type Options.

- Click the **Default Plot** menu item.
- Select by check mark one of the plot types visible or select **All Plots...**

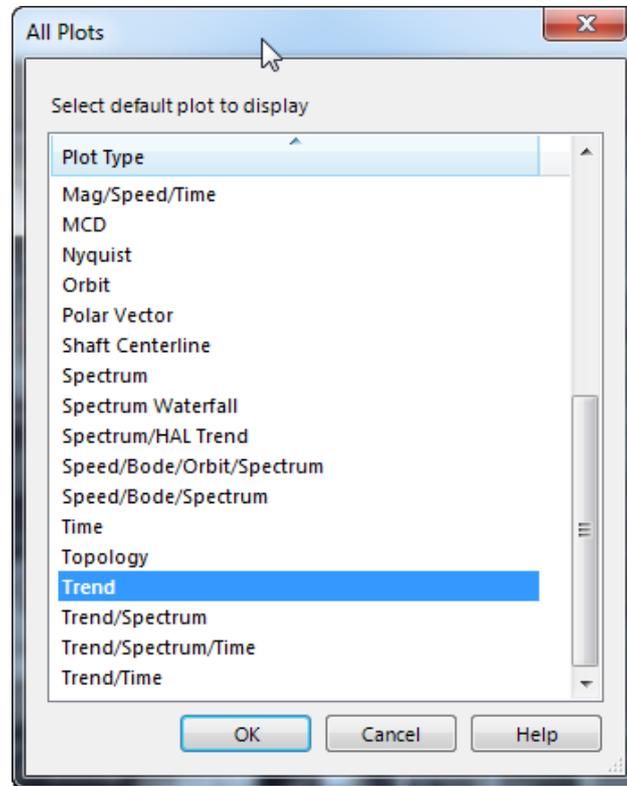


Figure 16.
Default Plot, All Plots.

- In the **All Plots** dialog, select the plot type you want to display when you single-click on the POINT element in view mode, and then click **OK**.

Establish Default Element Properties for the HMI view

In order to improve the speed and efficiency of configuring multiple HMI elements for viewing, you can take the configuration settings of an existing element and define them to be the default settings for new elements in the view.

- Configure an element with the appearance and settings you want, as described above.
- Right-click that element to open the context menu.

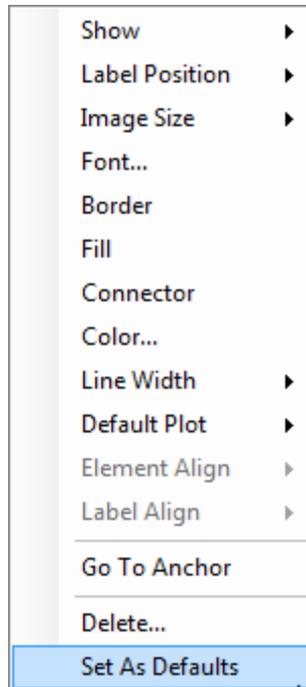


Figure 17.

Set As Defaults Menu Option.

- Click **Set As Defaults**, and then **Save**.

Any new element you add to the current view will share the configured values as default values for all of the following items:

- Show name
- Show value
- Show time stamp
- Label position
- Image size
- Font
- Show border
- Show connector
- Color
- Line width
- Default plot type

Viewing HMI Displays

The HMI viewer is responsible for showing machine mimics overlaid with hotspots. The main function of the viewer is to give an overview of the machine's operation without having to traverse through lists or hierarchies of data. The HMI viewer structures the data similar to the way you view and operate the actual machine.

To launch the viewer:

- Select the **View** menu's **HMI Displays** option. The **HMI Displays** dialog displays.
- Select a layout from the **Select Layout** list and click **View**. The **HMI Displays Viewer** dialog displays the selected layout in the viewer window.

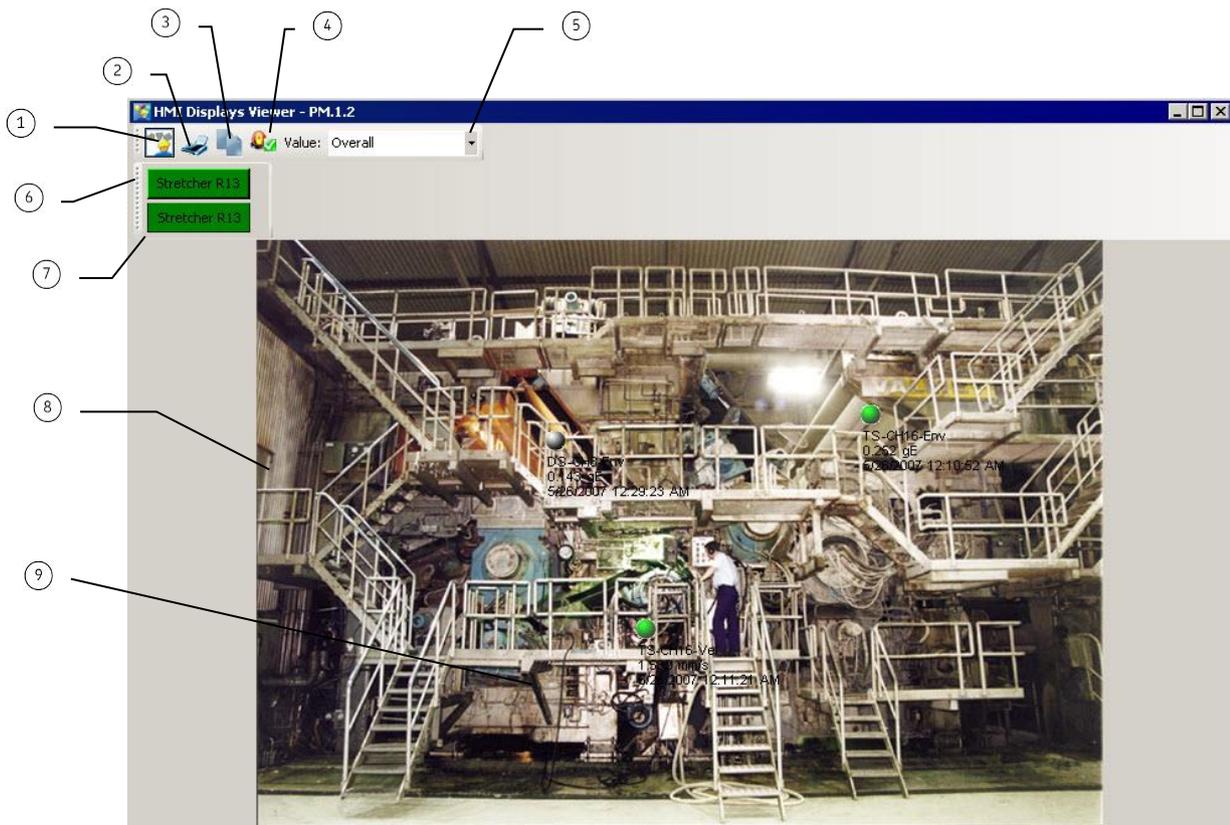


Figure 18.
The HMI Viewer.

- ① Click to open the **Configuration** dialog. The **Viewer** dialog closes.
- ② Print a copy of the view
- ③ Copy the view to the clipboard
- ④ Acknowledge button
- ⑤ Click to display only alarms with specified measurement value.
- ⑥ Asset button bar
- ⑦ View button bar
- ⑧ View
- ⑨ Hotspot

Upon first opening a layout in the viewer, the top level view of all machine graphics displays. Typically, this view shows the entire plant. From here, select other parts of the plant for which graphics have been defined.

The viewer's navigational functions are as follows:

Hotspots - Hotspots go directly to the collected data. Since hotspots are positioned on the actual physical location, interpreting the data becomes more intuitive and self-explanatory.

Asset button bar - Even when deep into a single point's data, with the Asset button bar, you will never lose overview with the rest of the plant. When an alarm occurs anywhere else on the plant, the appropriate Asset button will notify you. By clicking that button, the actual situation for that asset displays.

View button bar - In many cases, it is important to provide different views of the same asset. By clicking a view button, the selected view of the asset displays.

Acknowledge button - The **Acknowledge Alarms** dialog maintains a snapshot of a view's alarm situation, including all elements not in alarm, but part of the view. This permits review of the entire situation, rather than one single alarm event.

- The viewer displays disabled hierarchy nodes (POINTS, machine, or sets) with the user defined disabled color. However, HMI does not include these nodes as part of the alarm evaluation, and does not build graphical displays for disabled nodes.

Asset and View Button Bars

The **Asset Button Bar** is the top most button bar. The **Asset Button Bar** shows the level of the plant being viewed. The button on the far right displays the current level being viewed; the color indicates the highest alarm that is applicable for that level. By selecting an Asset button, HMI automatically displays the level selected.

The **View Button Bar** is the second row of buttons. The **View Button Bar** has as many buttons as there are views of the level on display. Which views and how many are available depends on how they were configured. The color of the View button indicates the highest alarm applicable for that view. To switch between individual views, click the corresponding button.

Showing Data Plots

The machine and POINT hotspots are used in HMI to display actual data captured and stored in the SKF @ptitude Analyst database. A machine hotspot brings up all the defined measurements; whereas, a POINT hotspot brings up just that POINT's data.

- A POINT can be configured with a default plot type. Refer to [Set the Default Plot Type for a POINT](#) in this manual.

To launch a graphical display:

- Right-click a machine or POINT hotspot to display the right-click context menu.
- Click the **Plot** option. The plot types Trend, Spectrum, Time Waveform and Contribution/Profile are immediately available. Click **All Plots** to open a full list to choose from.

- Click the graphical display you wish to view. The graphic display window opens.

A Note about Auto Link Mode

Note that Auto Link mode is automatically enabled when you have a plot open and use the Next POINT / Previous POINT or the Next Measurement / Previous Measurement buttons in the navigation toolbar.

When Auto Link mode is enabled, the Auto Link indicator  displays in the HMI Viewer toolbar. When you click an element in the viewer to open a plot, then select a different POINT in the hierarchy (the source window), or a different measurement, the plot window (the target window) automatically updates to display the current selection. If you click another POINT in the viewer, you will see this message “REMINDER: Clicking on a POINT element while Auto Link mode is enabled will not open a new plot window.”

To turn off Auto Link mode, click the Auto Link tool  in the main toolbar. Then, you can click another POINT in the viewer to open its plot in a new window.

Alarm Acknowledge and Review

The HMI Acknowledge function is similar to the SKF @ptitude Analyst Acknowledge Alarm function.

This SKF @ptitude Analyst Acknowledge Alarm function allows the user to acknowledge each individual alarm that is detected by the SKF @ptitude Analyst system. This process is meant to allow a tight control over all incoming data, making sure no new alarm goes unnoticed.

The HMI Acknowledge function has a few specific differences.

HMI shows new alarms by blinking its corresponding hotspot. Upon reviewing the new alarm as necessary, there are two ways to acknowledge the alarm.

To acknowledge an alarm:

- Right-click the blinking hotspot.
- Click the **Acknowledge Alarm** option.

OR



- Click the **Acknowledge** button. The **Acknowledge Alarms** dialog displays.

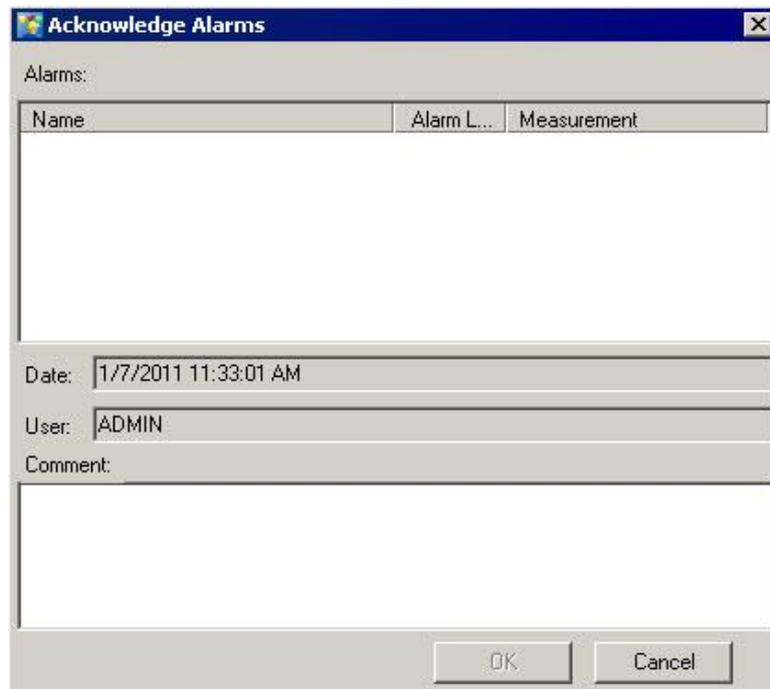


Figure 19.
The **Acknowledge Alarms** Dialog.

- Select the alarms you wish to acknowledge in the **Alarms** list.
- Click **OK**.

When the **Acknowledge** function finishes, all new alarms show solid, non-blinking.
Each view with new alarms must be acknowledged individually.

To review previously acknowledged alarms:

- Right-click a hotspot.
- Click the **Acknowledge Alarms Summary** option. The **Acknowledge Alarms Summary** dialog displays.

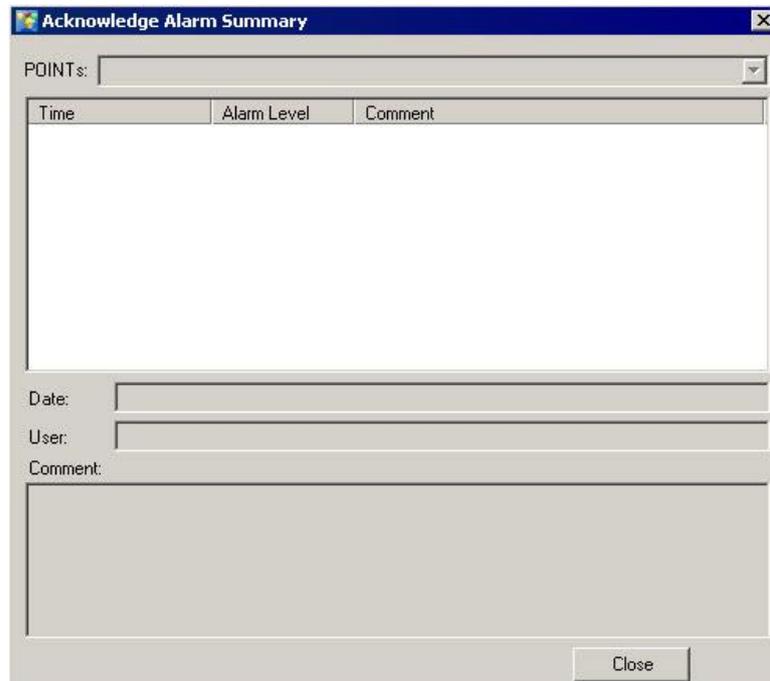


Figure 20.

The **Acknowledge Alarm Summary** Dialog.

- Select a POINT from the **POINTS** drop down list. The time the alarm was acknowledged, its alarm level, the user that acknowledged the alarm, and comments for all previous alarms for the selected POINT display.