
ProcessTemplates



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ProcessTemplates

All Processes have repeatable events

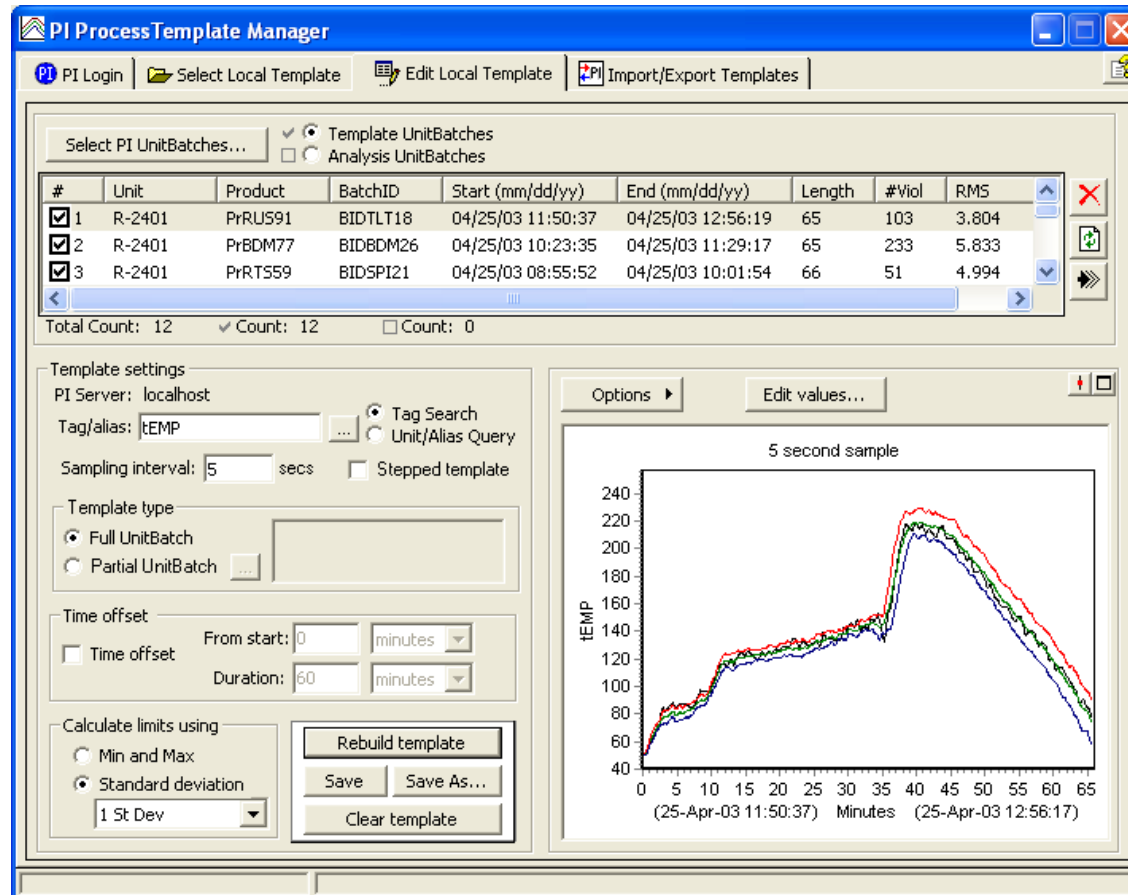
- Batches, Operations, Phases
- Day, Week, Month
- Turbine Start-ups
- Product or Grade Changes
- Hourly Load Schedules
- Tests

Measures and Monitors Process Repeatability

Uses PI, PI Batch and the PI Module Database

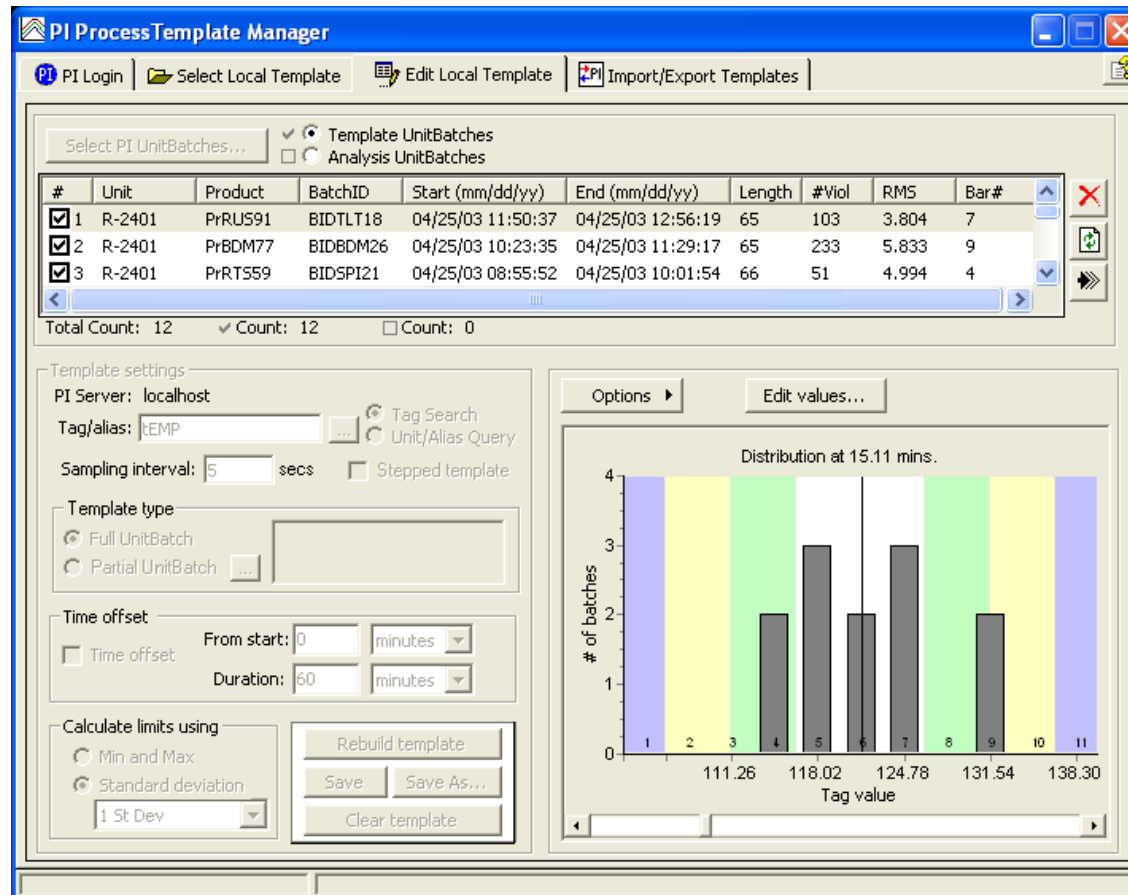
ProcessTemplate Manager

Client tool to Build Templates and Measure Repeatability



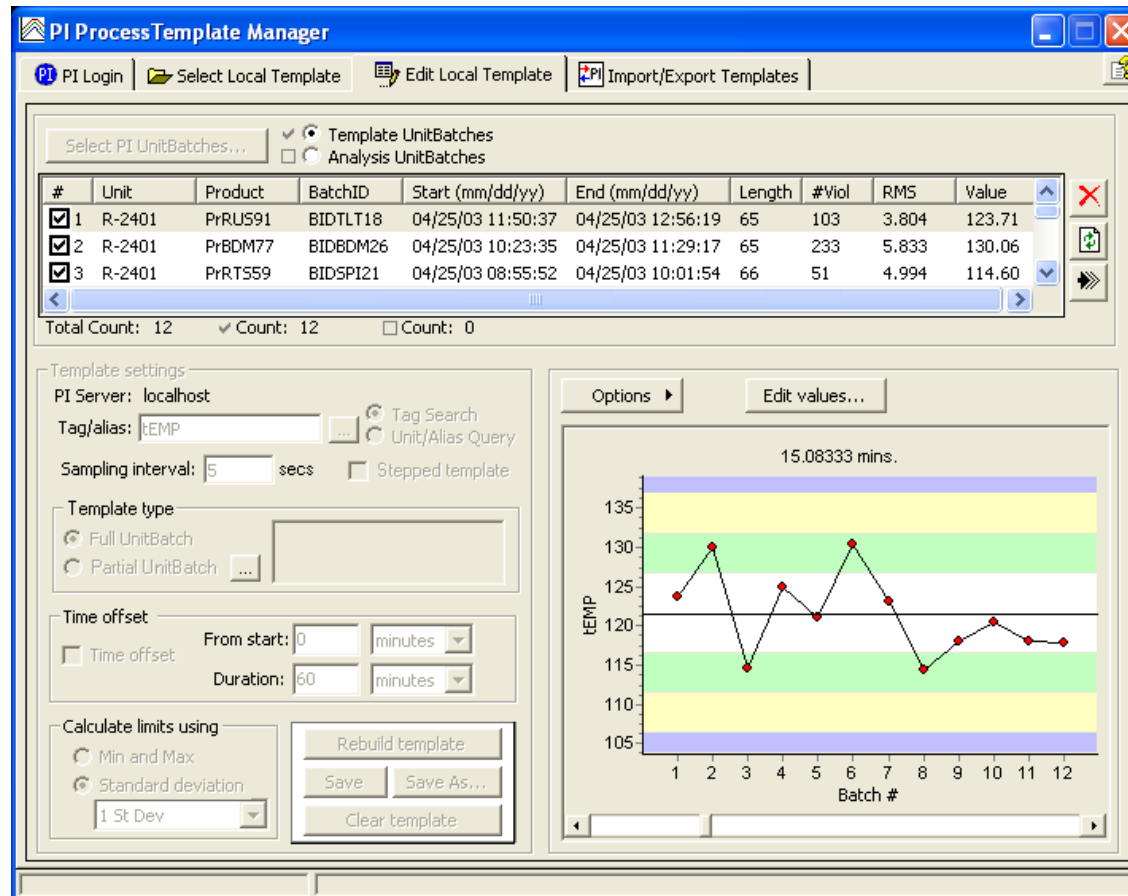
ProcessTemplate Manager

Histogram displays distribution of values relative to Batches



ProcessTemplate Manager

SQC Chart displays process values relative to Batches

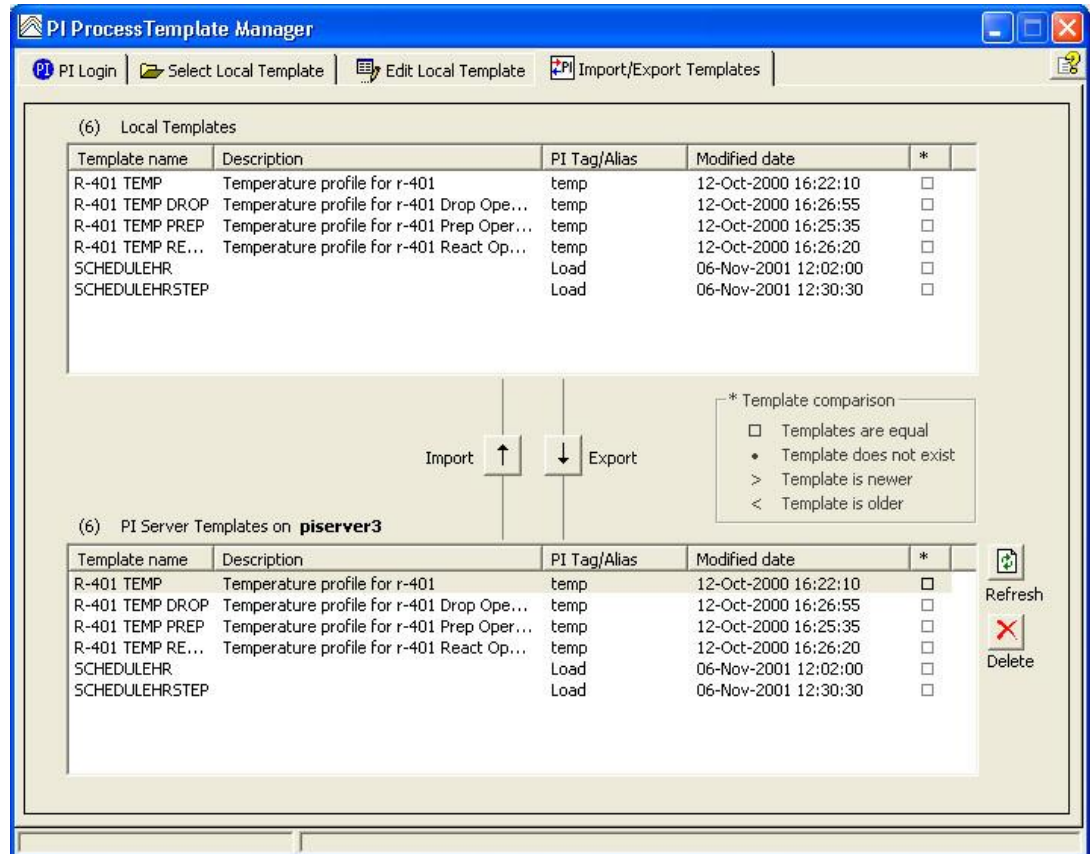


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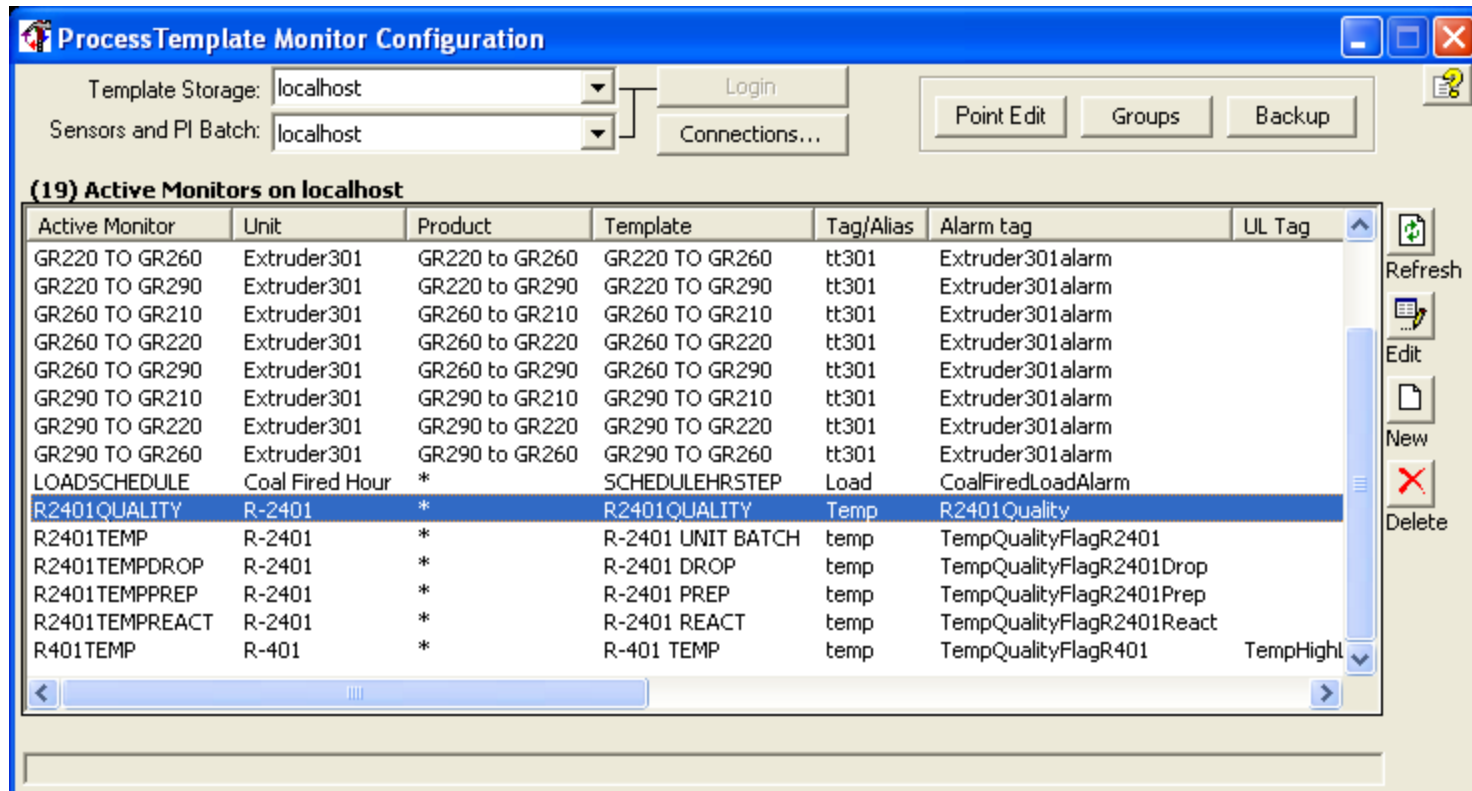
ProcessTemplate Manager

Export Templates to PI Module Database



ProcessTemplate Monitor

Monitor Processes against stored Templates



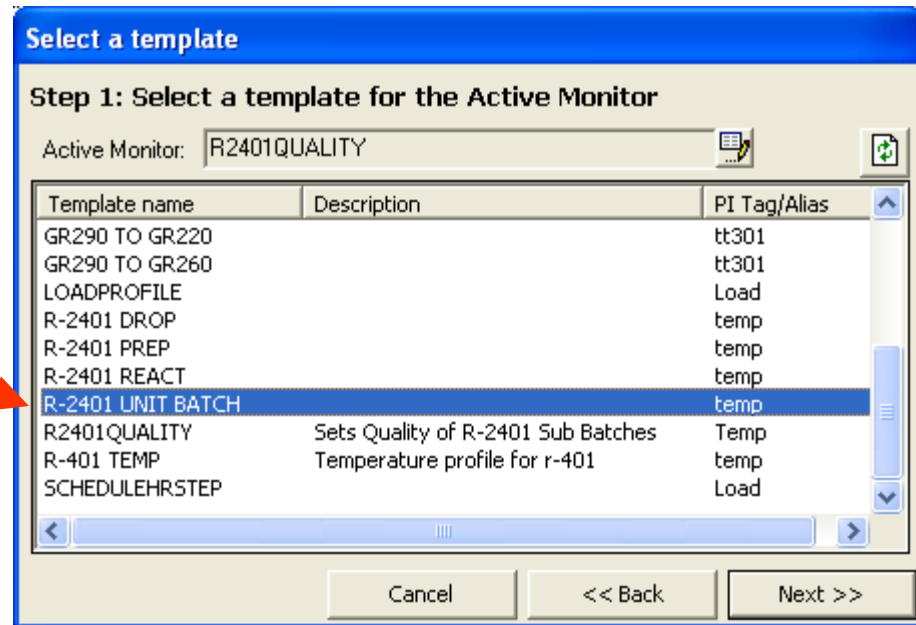
The screenshot shows the 'ProcessTemplate Monitor Configuration' window. At the top, there are dropdown menus for 'Template Storage' and 'Sensors and PI Batch', both set to 'localhost'. To the right of these are buttons for 'Login', 'Connections...', 'Point Edit', 'Groups', and 'Backup'. Below this is a section titled '(19) Active Monitors on localhost'. It contains a table with 7 columns: 'Active Monitor', 'Unit', 'Product', 'Template', 'Tag/Alias', 'Alarm tag', and 'UL Tag'. The table lists various monitors, including extruder quality and temperature monitors, and a coal-fired load alarm. The 'R2401QUALITY' monitor is highlighted in blue. To the right of the table are buttons for 'Refresh', 'Edit', 'New', and 'Delete'. At the bottom of the window is a scroll bar.

Active Monitor	Unit	Product	Template	Tag/Alias	Alarm tag	UL Tag
GR220 TO GR260	Extruder301	GR220 to GR260	GR220 TO GR260	tt301	Extruder301alarm	
GR220 TO GR290	Extruder301	GR220 to GR290	GR220 TO GR290	tt301	Extruder301alarm	
GR260 TO GR210	Extruder301	GR260 to GR210	GR260 TO GR210	tt301	Extruder301alarm	
GR260 TO GR220	Extruder301	GR260 to GR220	GR260 TO GR220	tt301	Extruder301alarm	
GR260 TO GR290	Extruder301	GR260 to GR290	GR260 TO GR290	tt301	Extruder301alarm	
GR290 TO GR210	Extruder301	GR290 to GR210	GR290 TO GR210	tt301	Extruder301alarm	
GR290 TO GR220	Extruder301	GR290 to GR220	GR290 TO GR220	tt301	Extruder301alarm	
GR290 TO GR260	Extruder301	GR290 to GR260	GR290 TO GR260	tt301	Extruder301alarm	
LOADSCHEDULE	Coal Fired Hour	*	SCHEDULEHRSTEP	Load	CoalFiredLoadAlarm	
R2401QUALITY	R-2401	*	R2401QUALITY	Temp	R2401Quality	
R2401TEMP	R-2401	*	R-2401 UNIT BATCH	temp	TempQualityFlagR2401	
R2401TEMPPROP	R-2401	*	R-2401 DROP	temp	TempQualityFlagR2401Drop	
R2401TEMPPREP	R-2401	*	R-2401 PREP	temp	TempQualityFlagR2401Prep	
R2401TEMPREACT	R-2401	*	R-2401 REACT	temp	TempQualityFlagR2401React	
R401TEMP	R-401	*	R-401 TEMP	temp	TempQualityFlagR401	TempHigh

ProcessTemplate Monitor

Create a Monitor to compare Processes against stored Templates

Select Template



ProcessTemplate Monitor

Specify the Unit to Monitor and the Product for which it applies

The screenshot shows a Windows-style dialog box titled "Select a Unit and Product". Inside, the text "Step 2: Select a Unit and Product(s) for the Active Monitor" is displayed. There are three input fields: "Template:" with the value "R-2401 UNIT BATCH", "Tag/Alias:" with the value "temp", and "Stepped?:" with the value "False". Below these is a section titled "Unit and Product" which contains two sub-fields: "Unit:" with a dropdown menu showing "R-2401" and "Product(s):" with a text box containing an asterisk (*). To the right of the "Product(s)" text box is a note "(* = any)". At the bottom of the dialog are three buttons: "Cancel", "<< Back", and "Next >>".

ProcessTemplate Monitor

Processes that violate a given Template are alarmed with a PI Tag

Select PI tags

Step 3: Select Monitor output PI tags (optional)

☐ Only alarm on new snapshot values

Search method:
☒ Tag Search
☐ Unit/Alias Query

Point Edit

Alarm tag: TempQualityFlagR2401 ...

Digital PI Tag where (0=Inactive) (1=Low alarm) (2=Compliant) (3=High Alarm)

Template Upper Limit: TempHighLimit R2401 Float16/Float32 ...

Template Center Line: Temp Center Line R2401 Float16/Float32 ...

Template Low Limit: TempLowLimit R2401 Float16/Float32 ...

Time into Template (mins): Float16/Float32 ...

RMS (Root Mean Square) Float16/Float32 ...

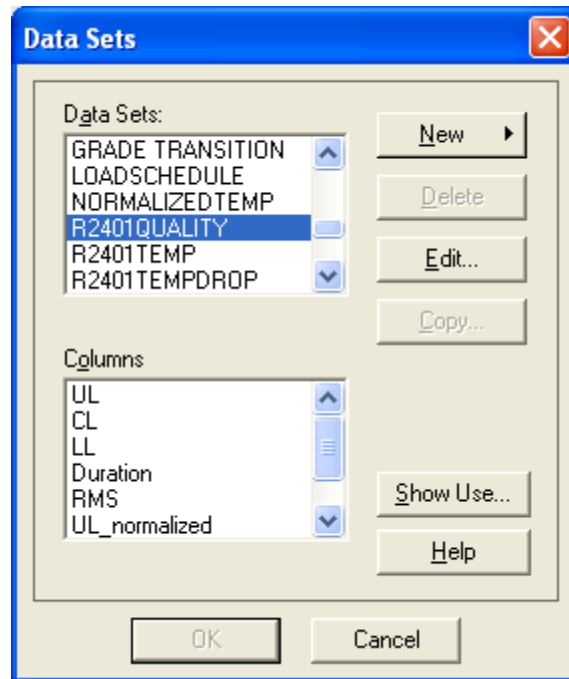
Delta CL: Float16/Float32 ...

Cancel << Back Save

The “As-Monitored” Template is optionally stored in PI Tags

ProcessTemplate Add-In

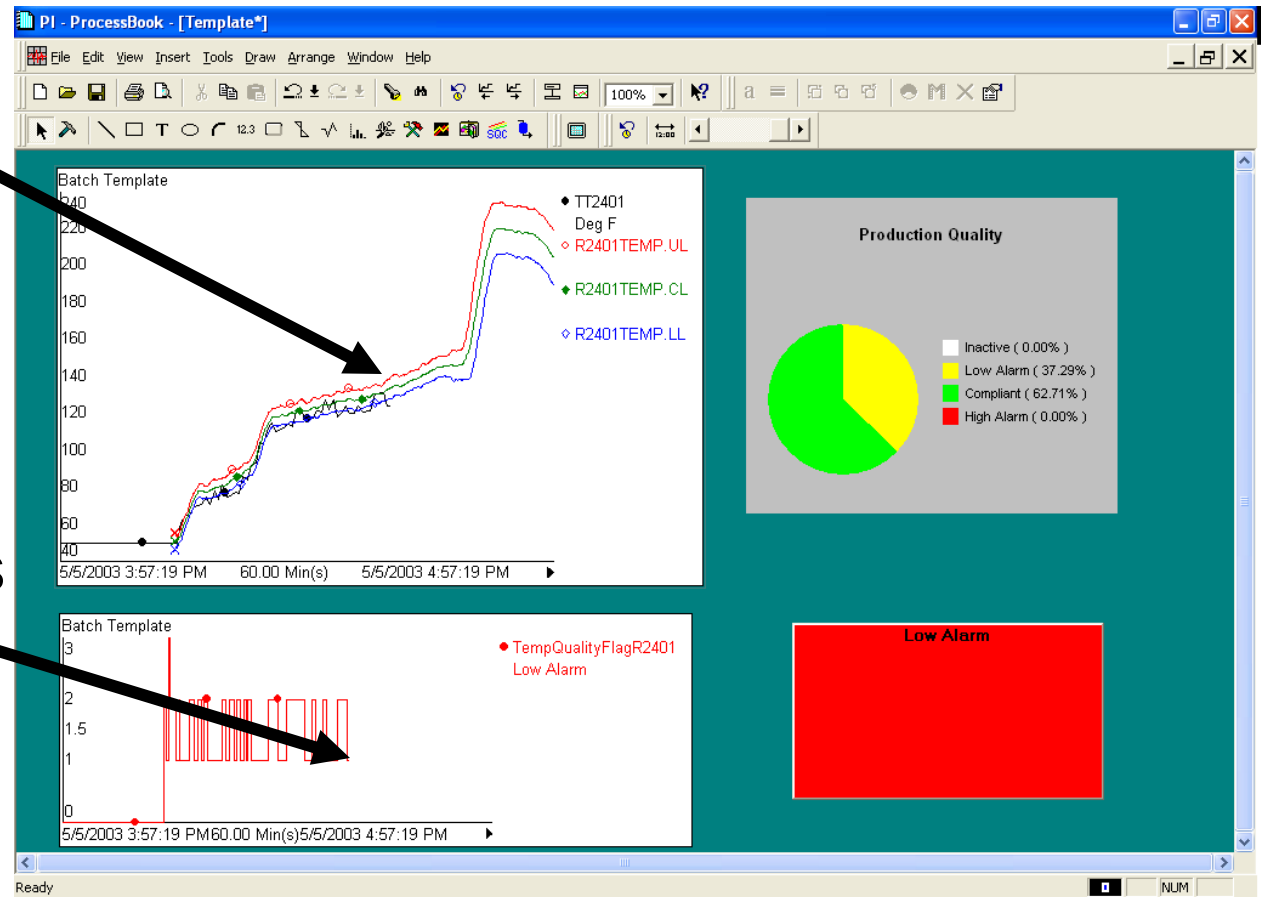
Add-In to ProcessBook that Presents Templates as Data Sets



ProcessTemplate Add-In

Templates are plotted into the future against current operating conditions.

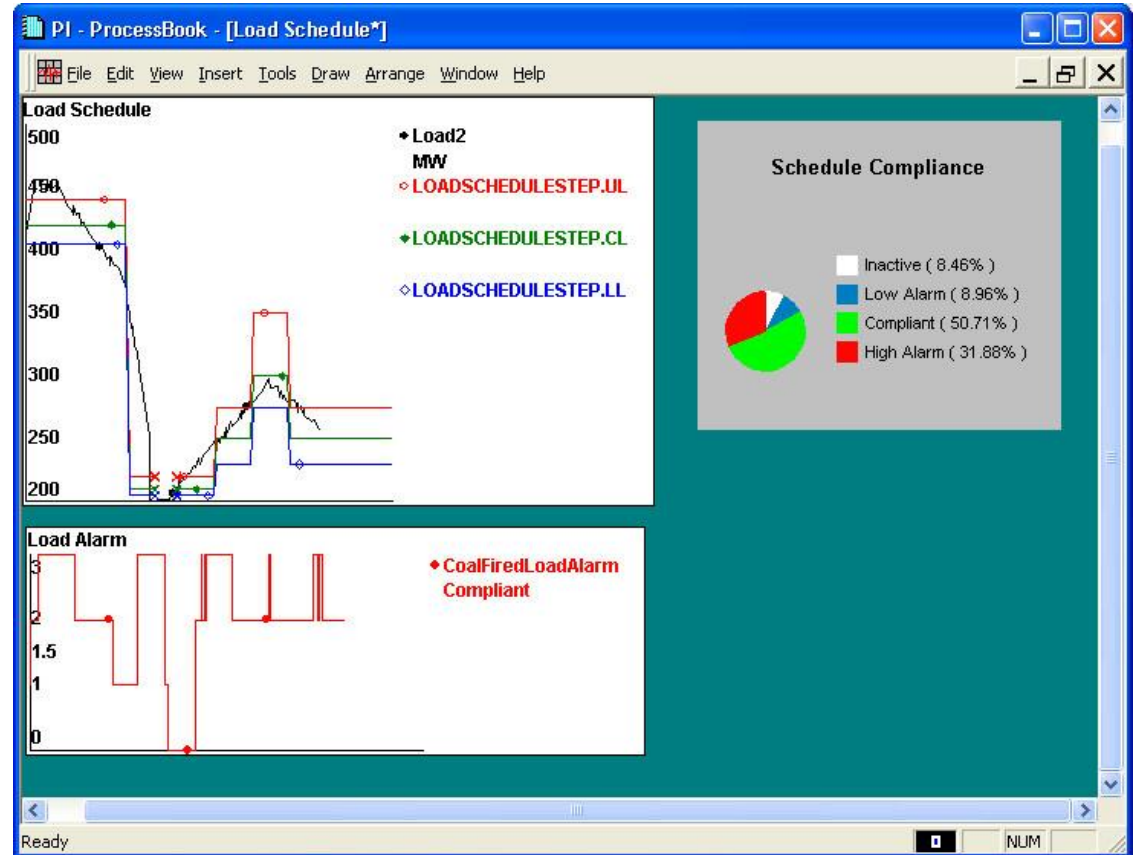
Alarm when process violates template



ProcessTemplate Add-In

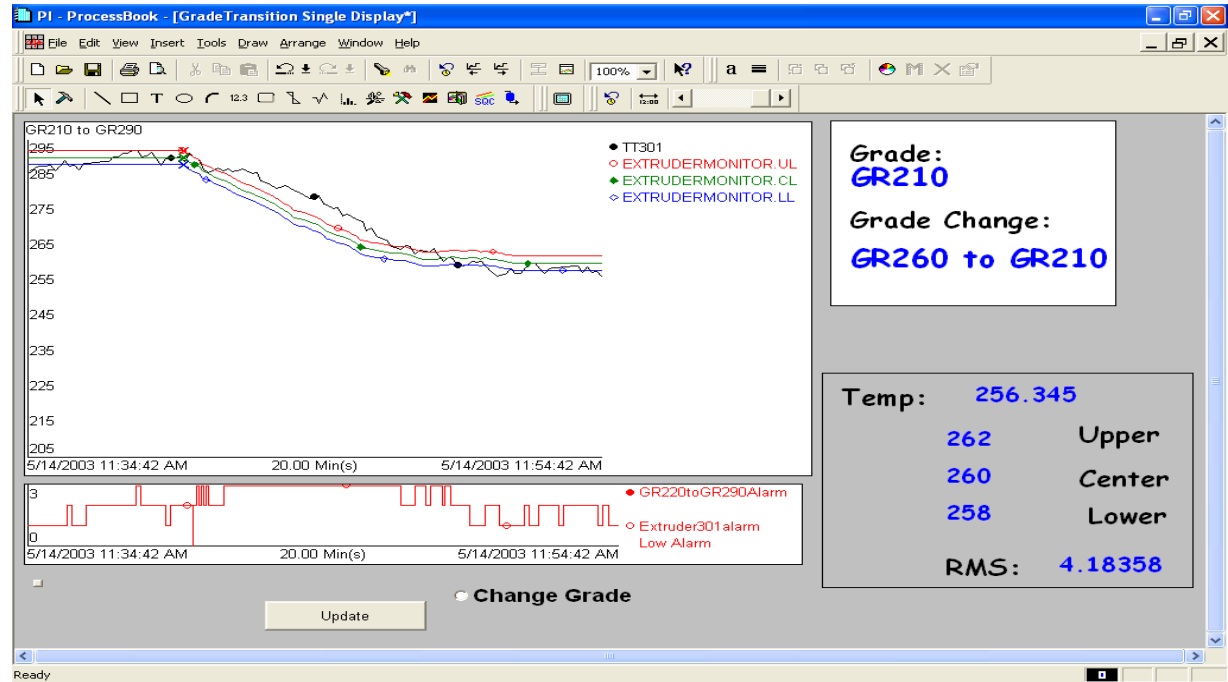
An Active X Server
allows Templates to be
updated in real time.

Measure Generator
Performance with
dynamic Load
Schedules



ProcessTemplate Add-In

Grade changes can
be monitored



New Features

- *Sub Batch Support*
- *Template Groupings*
- *Time into Template*
- *RMS*

ProcessTemplates

Key Benefits

- Reduce Cycle Times
- Reduce Product Variability
- Identify Process Bottlenecks
- Improve Product Quality
- Raise real-time alarms on non-linear limits
- Notify when events do not conform to schedule
- Increase repeatability of turbine start-ups
- Buy or sell power on the spot market by comparing power generation to Load Schedules

ProcessTemplates

“ProcessTemplate Manager is the most intuitive batch analytical software I have seen...”

Raj Bhadauria, AOC

“PI and PI Batch was used to reduce the cycle times of our batches by 40% and saved \$5 million in two years...”

Barry MacGregor, Dow Corning Corporation