

Using Data from One Source to Report from Another

Overview

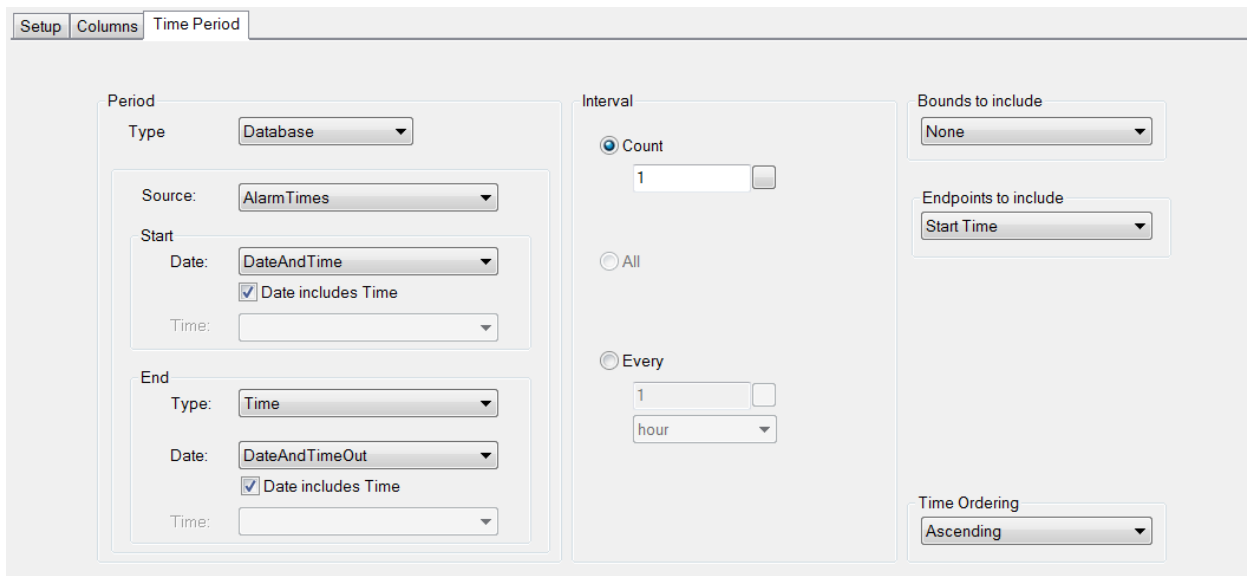
With **XLReporter** it is very easy to report on data from many different data sources like live data from PLCs, summary data from historians and alarm data from a relational database.

However, in some cases the data from these different sources needs to be combined together in a report to give a full picture of what is going on. For example, a report may need to show data samples from a historian over the day and also the alarms that occurred over that day as a single data table. Or a report may need to show all the alarms over a period of time and then show a set of process values recorded in the historian at the time of each alarm.

The following spotlight document highlights the features available to combine different data sources in the same report.

Historical Data from Database Rows

Data Group Time Period



The screenshot shows the 'Time Period' configuration interface. It is divided into several sections: 'Period', 'Interval', 'Bounds to include', 'Endpoints to include', and 'Time Ordering'. The 'Period' section has a 'Type' dropdown set to 'Database'. Below it, the 'Source' dropdown is set to 'AlarmTimes'. The 'Start' section has a 'Date' dropdown set to 'DateAndTime' and a checked 'Date includes Time' checkbox. The 'End' section has a 'Type' dropdown set to 'Time', a 'Date' dropdown set to 'DateAndTimeOut', and a checked 'Date includes Time' checkbox. The 'Interval' section has three radio buttons: 'Count' (selected), 'All', and 'Every'. The 'Count' radio button has a value of '1' and a unit dropdown set to 'hour'. The 'Bounds to include' dropdown is set to 'None'. The 'Endpoints to include' dropdown is set to 'Start Time'. The 'Time Ordering' dropdown is set to 'Ascending'.

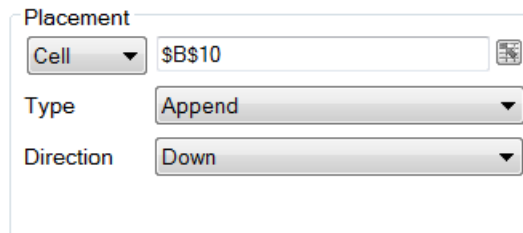
When configuring a **History Data Group**, under the **Time Period** tab the Period Type can be set to Database. When set, the **Source** provides a list of **Database Data Groups** configured in the project. The **Start** and **End** can be configured to timestamp columns selected in the group.

In the example above the **AlarmTimes** group has *DateAndTime* and *DateAndTimeOut* columns for the timestamp of the start and end of each alarm. These columns contain both the date and time so the **Date includes Time** option is checked. If there were separate columns for date and time, this would be unchecked and each column would be specified for the **Date** and **Time** settings.

In some cases, the group may have a column for the **Start** but not one for **End**. In this case, for **End, Type** can be set to *Duration*. In this case, the **End** is defined by adding the *Duration* specified to the **Start**.

When this **History Data Group** is executed, the **Database Data Group** set for the **Source** is executed and for each record returned, the History Data Group is executed using the column values for that record. If 10 records are returned from the database group, the history group is run 10 times.

Data Connection



The screenshot shows a configuration dialog box with the following fields:

- Placement:** A dropdown menu set to "Cell" and a text input field containing "\$B\$10".
- Type:** A dropdown menu set to "Append".
- Direction:** A dropdown menu set to "Down".

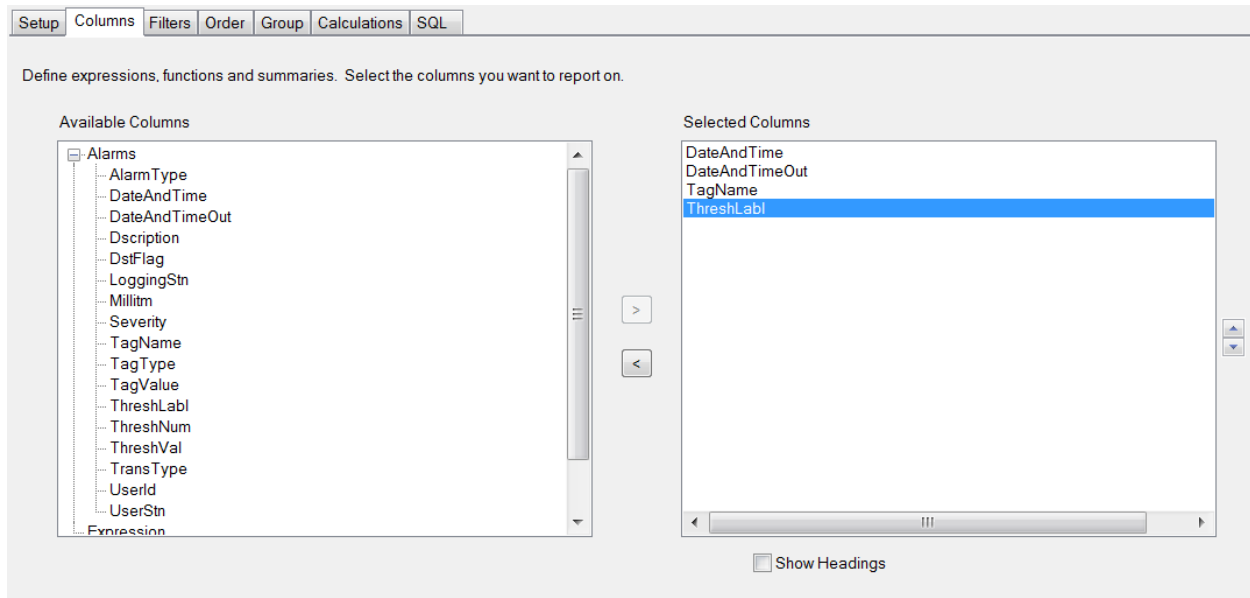
When the **History Data Group** that uses **Database** as the **Time Period** is configured as a **Data Connection**, it is important to set the **Placement Type** to *Append* or one of the *Insert* options. This is because multiple rows of data will be returned as separate updates based on each record of the database group.

Typical Scenario

Consider the following scenario: A daily report is required to show all the *HI* alarms that occurred over the day and for each alarm in the mixer, the average of each mixer tag recorded in the historian during the alarm.

Database Data Group

The **Database Data Group** is used both to bring the daily alarm data into the report and also to use as the **Time Period** in the **History Data Group**.



Under the **Columns** tab, all the columns to display for the daily alarms are selected. *DateAndTime* is the start timestamp for the alarm and *DateAndTimeOut* is the end timestamp for the alarm.

History Data Group

The screenshot shows the 'Columns' tab of the 'History Data Group' configuration. It features a table with four columns: Name, Calculation, Scaling, and Heading. Below the table are 'Output Options' including a dropdown for 'None', a checkbox for 'Transpose', and a checkbox for 'Include Heading'.

Name	Calculation	Scaling	Heading
MIXER_ZONE1_TEMP	average		MIXER_ZONE1_TEMP average
MIXER_ZONE2_TEMP	average		MIXER_ZONE2_TEMP average
MIXER_SPEED	average		MIXER_SPEED average
MIXER_RAMPRESSURE	average		MIXER_RAMPRESSURE average

Output Options:
None (dropdown)
Empty rows between records: 0 (input)
 Transpose
 Include Heading

In the **History Data Group**, under the **Columns** tab, the *MIXER* tags logged to the historian are set up with the **Calculation** as *average*.

Also, the **Output Options** are set to *None*. This is because the DailyAlarms database group (the group configured in the previous section) brings in the timestamps for each alarm. This group will be configured adjacent to the database group so there is no reason to double up on the timestamps.

The screenshot shows the 'Time Period' tab of the 'History Data Group' configuration. It is divided into three sections: 'Period', 'Interval', and 'Bounds to include'. The 'Period' section has dropdowns for 'Database', 'DailyAlarms', 'DateAndTime', and 'DateAndTimeOut'. The 'Interval' section has radio buttons for 'Count', 'All', and 'Every', with a value of '1' and a unit of 'hour'. The 'Bounds to include' section has dropdowns for 'None' and 'Start Time'. The 'Time Ordering' section has a dropdown for 'Ascending'.

Period:
Type: Database (dropdown)
Source: DailyAlarms (dropdown)
Start: DateAndTime (dropdown)
Date includes Time:
End: Time (dropdown)
Date: DateAndTimeOut (dropdown)
Date includes Time:

Interval:
 Count: 1 (input)
 All
 Every: 1 (input), hour (dropdown)

Bounds to include:
None (dropdown)
Endpoints to include: Start Time (dropdown)

Time Ordering: Ascending (dropdown)

Under the **Time Period** tab the **Period** is set up the *DailyAlarms* database group using the *DateAndTime* column for **Start** and the *DateAndTimeOut* column for **End**.

Since the requirement is to report on the average during the entire duration of the alarm and each alarm can have a different duration, the **Interval** is set to **Count** as *1* to produce a single average over the entire duration.

Data Connections

Group	Connector	Source	Target	Place
0	Database	DailyAlarms	\$B\$10	Direct
0	XLR_History	HistoryForAlarms	\$F\$10	Append

In the template, the **Data Connections** are set up to bring in both the alarm data and the historical data.

Schedule

Condition

- Time
 - Continuous
 - Daily
 - Weekly
 - Monthly
- Event
 - XLR_DA

Time: 12:15:00 AM

Action Time Adjustment: 1 day(s)

Action

- Produce Reports
 - Update Workbook
 - Update Worksheet
 - Update Workbook Groups
 - Update Worksheet Groups
- Publish Reports
 - Save Workbook to Web Page(s)
 - Save Worksheet to Web Page
 - Save Workbook to PDF
 - Save Worksheet to PDF
 - Print Workbook
 - Print Worksheet
- Transfer Reports
- Manage Files and Folders

Action: Update Worksheet

Worksheet: DailyAlarmAndData.xlsx.Template

To generate this report, a single *Update Worksheet* **Action** scheduled to run every day.

Because the data is coming from a database and historian, it is a good idea to trigger this report on the next day to ensure all the data has been collected and is available to retrieve. That's why the **Time** is set to *12:15:00 AM*.

However, everything in the report template is configured to work off the current day. To account for this, the **Action Time Adjustment** is set to *1 day* to adjust the current date by 1 day when generating the report.

	A	B	C	D	E	F	G	H	I
7									
8						MIXER			
9		DateAndTime	DateAndTimeOut	TagName	ThreshLabl	ZONE1 TEMP	ZONE2 TEMP	SPEED	RAMPRESSURE
10		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_ZONE2_TEMP	HI	62.50	64.76	45.21	32.12
11		03/17/2020 07:15:00	03/17/2020 07:35:00	MIXER_ZONE1_TEMP	HIHI	59.50	67.76	49.21	33.12
12		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_SPEED	HI	55.50	74.76	54.21	36.12
13		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_ZONE2_TEMP	HI	51.50	77.76	56.21	37.12
14		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_ZONE2_TEMP	HI	44.50	83.76	59.21	40.12
15		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_ZONE1_TEMP	HI	39.50	87.76	64.21	42.12
16		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_SPEED	HIHI	33.50	93.76	69.21	45.12
17		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_ZONE2_TEMP	HI	27.50	98.76	72.21	47.12
18		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_ZONE2_TEMP	HIHI	21.50	103.76	76.21	49.12
19		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_ZONE1_TEMP	HI	16.50	108.76	79.21	52.12
20		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_SPEED	HI	13.50	112.76	84.21	55.12
21		03/17/2020 03:45:00	03/17/2020 04:15:00	MIXER_ZONE2_TEMP	HI	8.50	113.76	89.21	58.12

The resultant report displays all the information from both alarms and history.

Combine Data Into a Single Data Table

In many reports, data from different data sources are written in separate ranges or even separate worksheets. However, sometimes it is nice to be able to view data from disparate data sources in a single view. **XLReporter** has a management function, **Weave Into Range**, that can do just that.

Weave Into Range

Data (0)
Manage (0)

Active By Any Sheet Group 0

Category Presentation

Type Weave Into Range

Apply To

Cell \$B\$6:\$F\$6

Direction Down

End All cells are empty

Collection

Cell \$J\$6:\$M\$6

Type Direct

Setting	Value
Weave Mode	Column Insert
Use Collection Format	Yes
Add Grouping	Yes
Initial State	Expanded
Clear Collection	All (Extended)

The **Weave Into Range** management function is available under the **Category Presentation**.

The **Apply To** settings define the range which data will be woven into.

The **Collection** settings define the range of data to weave. This should be set to the top row of where the collection data appears. The bottom row of the **Collection** is determined by finding the first empty cell in the leftmost column of the range. In the example above, the **Collection** range would be determined by finding the first empty cell beneath $\$J\6 .

Rows are woven into the **Apply To** range from the **Collection** range based on the leftmost column of each range. Typically these are timestamps from the data source.

The **Weave Mode** defines how the **Collection** rows are woven into the **Apply To Range**.

The *Column Insert* mode means that every row in the **Collection** is inserted as its own new row.

The *Row Append* mode means that if the left column of the **Collection** range matches the left column of the **Apply To** range, the remaining columns of the Collection range are appended on the same row (to the right of the rightmost column of the **Apply To** range). Otherwise, a new row is inserted.

To illustrate, consider the following data:

	A	B	C	D	E	F	G
1							
2							
3							
4		0:00	1			1:00	100
5		1:00	2			2:15	101
6		2:00	3			4:00	102
7		3:00	4			7:30	103
8		4:00	5			11:00	104
9		5:00	6			11:45	105
10		6:00	7				
11		7:00	8				
12		8:00	9				
13		9:00	10				
14		10:00	11				
15		11:00	12				
16		12:00	13				

The **Apply To** range is $\$B\$4:\$C\16 . The **Collection** range is $\$F\$4:\$G\9 . If **Weave Mode** is *Column Insert*, the results are:

	A	B	C	D
1				
2				
3				
4		0:00	1	
5		1:00	2	
6		1:00		100
7		2:00	3	
8		2:15		101
9		3:00	4	
10		4:00	5	
11		4:00		102
12		5:00	6	
13		6:00	7	
14		7:00	8	
15		7:30		103
16		8:00	9	
17		9:00	10	
18		10:00	11	
19		11:00	12	
20		11:00		104
21		11:45		105
22		12:00	13	

For *Row Append* the results are:

	A	B	C	D
1				
2				
3				
4		0:00	1	
5		1:00	2	100
6		2:00	3	
7		2:15		101
8		3:00	4	
9		4:00	5	102
10		5:00	6	
11		6:00	7	
12		7:00	8	
13		7:30		103
14		8:00	9	
15		9:00	10	
16		10:00	11	
17		11:00	12	104
18		11:45		105
19		12:00	13	

The **Use Collection Format** option applies the formatting along with the values from the **Collection** range.

The **Add Grouping** option adds crosshairs to every row (**Weave Mode = Column Insert**) or column (**Weave Mode = Row Append**) from the **Collection** range.

If grouping is enabled, the **Initial State** defines if all groups are initially *Expanded* or *Collapsed*.

After the **Collection** is woven, it can be cleared from the report by setting **Clear Collection** to *All* or *All (extended)*. If the **Collection** range has headings on the worksheet use the *All (extended)* setting to clear the headings as well.

Typical Scenario

Consider the following scenario: A report is required to show 15 minute samples of historical data over the day along with all the alarms recorded for that day. The report should show both the historical data and alarm data in a single table of data.

Template Design

	Group	Connector	Source	Target	Place
	0	XLR_History	Alarms with Process Values	\$B\$6	Direct
	0	Access DB	Alarms with Process Values	\$O\$6	Direct
*					

The **Data Connections** for the template are configured to retrieve the historical data and the alarm data onto the worksheet at cells *\$B\$6* and *\$O\$6* respectively.

Data (2) Manage (4)

Active By: Any Sheet Group: 0

Category: Presentation

Type: Weave Into Range

Apply To: Cell \$B\$6:\$K\$6

Direction: Down

End: All cells are empty

Collection: Cell \$O\$6:\$Q\$6

Type:

Setting	Value
Weave Mode	Column Insert
Use Collection...	Yes
Add Grouping	Yes
Initial State	Expanded
Clear Collection	Yes

To combine the historical and alarm data the **Weave Into Range** management connection is configured to weave the alarm data into the historical data, inserting new rows for each alarm row. The formatting of the alarm data will be applied as will grouping.

On the template worksheet the alarm data is formatted red to distinguish from the historical data when woven together.

Report Generation

Without the **Weave Into Range**, the report would look like this:

Alarms with Process Values											Date:	
Date	Mixer Zone 1 (deg F)			Mixer Zone 2 (deg F)			Mixer Speed (RPM)			Alarm	State	
	min	max	avg	min	max	avg	min	max	avg			
6	10/1/15 0:00	80.77	16.00	54.17	76.20	75.03	75.64	32.96	29.96	31.29	10/1/2015 0:09 ProcessTank1Level	HHH
7	10/1/15 0:15	80.41	16.00	54.57	76.76	75.20	75.94	37.87	31.34	34.89	10/1/2015 0:21 ProcessTank1Level	HI
8	10/1/15 0:30	80.35	16.00	60.05	78.12	75.04	76.59	39.08	34.89	37.35	10/1/2015 0:45 ProcessZone1	HI
9	10/1/15 0:45	80.77	46.00	70.36	77.48	74.30	75.83	36.27	32.09	33.57	10/1/2015 1:53 ProcessTank1Level	HI
10	10/1/15 1:00	80.59	16.00	50.18	79.66	77.49	78.65	36.67	34.56	35.52	10/1/2015 2:15 ProcessZone1	HI
11	10/1/15 1:15	80.31	16.00	54.11	79.42	77.96	78.78	38.50	35.60	37.35	10/1/2015 2:52 ProcessTank1Level	HI
12	10/1/15 1:30	80.61	16.00	50.57	79.54	78.52	79.09	42.37	39.41	41.03	10/1/2015 8:48 ProcessZone1	HI
13	10/1/15 1:45	76.31	28.00	61.52	79.97	78.83	79.40	43.60	39.93	41.88	10/1/2015 8:48 ProcessZone1	HI
14	10/1/15 2:00	76.59	75.38	76.02	80.60	78.98	79.73	43.84	40.40	41.80	10/1/2015 9:40 ProcessTank1Level	HHH
15	10/1/15 2:15	76.95	75.74	76.33	81.73	78.34	79.79	44.70	42.06	43.48	10/1/2015 10:54 ProcessTank2Level	HHH
16	10/1/15 2:30	77.16	76.00	76.60	92.34	82.69	88.12	47.47	42.42	45.57	10/1/2015 11:06 ProcessTank2Level	HHH
17	10/1/15 2:45	77.49	76.34	76.90	91.70	89.48	90.68	49.78	47.49	48.67	10/1/2015 11:41 ProcessTank2Level	HI
18	10/1/15 3:00	77.91	76.73	77.21	91.74	90.36	91.13	51.93	48.49	50.49	10/1/2015 11:41 ProcessTank2Level	HHH
19	10/1/15 3:15	78.30	76.81	77.51	91.88	90.87	91.42	50.20	45.12	47.95	10/1/2015 12:09 ProcessTank1Level	HHH
20	10/1/15 3:30	78.80	76.95	77.78	92.32	91.12	91.71	49.65	45.20	47.53	10/1/2015 12:21 ProcessTank1Level	HI
21	10/1/15 3:45	79.45	76.58	78.00	92.95	91.31	92.04	53.05	49.03	51.53	10/1/2015 12:45 ProcessTank1Level	HI
22	10/1/15 4:00	80.31	16.00	54.81	94.76	90.96	92.84	50.58	47.76	49.24	10/1/2015 13:53 ProcessZone1	HI
23	10/1/15 4:15	80.84	16.00	54.11	93.93	88.38	90.58	49.03	47.04	48.18		
24	10/1/15 4:30	79.27	75.23	77.07	92.26	89.89	91.05	49.62	45.31	47.07		
25	10/1/15 4:45	78.99	76.83	78.04	91.91	90.68	91.33	50.46	48.36	49.35		
26	10/1/15 5:00	78.98	77.36	78.16	92.02	91.00	91.60	54.51	51.06	52.87		
27	10/1/15 5:15	79.21	77.88	78.55	92.57	91.33	91.89	57.87	53.34	55.85		
28	10/1/15 5:30	79.39	78.25	78.77	93.05	91.45	92.20	60.49	56.51	57.62		
29	10/1/15 5:45	79.65	78.48	79.12	94.99	91.09	93.07	60.45	56.56	58.60		
30	10/1/15 6:00	80.01	16.00	71.36	94.05	88.94	91.04	57.41	55.12	56.04		
31	10/1/15 6:15	76.62	28.00	61.66	92.77	90.47	91.59	56.54	53.85	55.26		
32	10/1/15 6:30	76.88	75.65	76.31	92.52	91.25	91.90	57.28	53.98	56.09		
33	10/1/15 6:45	77.43	75.86	76.62	92.65	91.62	92.18	59.77	56.82	58.57		

With the **Weave Into Range** applied, the report now looks like:

		A	B	C	D	E	F	G	H	I	J	K	L	M
2		Alarms with Process Values											Date:	
4		Mixer Zone 1 (deg F)			Mixer Zone 2 (deg F)			Mixer Speed (RPM)			Alarm		State	
5		Date	min	max	avg	min	max	avg	min	max	avg			
6		10/1/15 0:00	80.77	16.00	54.17	76.20	75.03	75.64	32.96	29.96	31.29			
7		10/1/2015 0:09										Process\Tank1Level	HIHI	
8		10/1/15 0:15	80.41	16.00	54.57	76.76	75.20	75.94	37.87	31.34	34.89			
9		10/1/2015 0:21										Process\Tank1Level	HI	
10		10/1/15 0:30	80.35	16.00	60.05	78.12	75.04	76.59	39.08	34.89	37.35			
11		10/1/15 0:45	80.77	46.00	70.36	77.48	74.30	75.83	36.27	32.09	33.57			
12		10/1/2015 0:45										Process\Zone1	HI	
13		10/1/15 1:00	80.59	16.00	50.18	79.66	77.49	78.65	36.67	34.56	35.52			
14		10/1/15 1:15	80.31	16.00	54.11	79.42	77.96	78.78	38.50	35.60	37.35			
15		10/1/15 1:30	80.61	16.00	50.57	79.54	78.52	79.09	42.37	39.41	41.03			
16		10/1/15 1:45	76.31	28.00	61.52	79.97	78.83	79.40	43.60	39.93	41.88			
17		10/1/2015 1:53										Process\Tank1Level	HI	
18		10/1/15 2:00	76.59	75.38	76.02	80.60	78.98	79.73	43.84	40.40	41.80			
19		10/1/15 2:15	76.95	75.74	76.33	81.73	78.34	79.79	44.70	42.06	43.48			
20		10/1/2015 2:15										Process\Zone1	HI	
21		10/1/15 2:30	77.16	76.00	76.60	92.34	82.69	88.12	47.47	42.42	45.57			
22		10/1/15 2:45	77.49	76.34	76.90	91.70	89.48	90.68	49.78	47.49	48.67			
23		10/1/2015 2:52										Process\Tank1Level	HI	
24		10/1/15 3:00	77.91	76.73	77.21	91.74	90.36	91.13	51.93	48.49	50.49			
25		10/1/15 3:15	78.30	76.81	77.51	91.88	90.87	91.42	50.20	45.12	47.95			
26		10/1/15 3:30	78.80	76.95	77.78	92.32	91.12	91.71	49.65	45.20	47.53			
27		10/1/15 3:45	79.45	76.58	78.00	92.95	91.31	92.04	53.05	49.03	51.53			
28		10/1/15 4:00	80.31	16.00	54.81	94.76	90.96	92.84	50.58	47.76	49.24			
29		10/1/15 4:15	80.84	16.00	54.11	93.93	88.38	90.58	49.03	47.04	48.18			
30		10/1/15 4:30	79.27	75.23	77.07	92.26	89.89	91.05	49.62	45.31	47.07			
31		10/1/15 4:45	78.99	76.83	78.04	91.91	90.68	91.33	50.46	48.36	49.35			
32		10/1/15 5:00	78.98	77.36	78.16	92.02	91.00	91.60	54.51	51.06	52.87			
33		10/1/15 5:15	79.21	77.88	78.55	92.57	91.33	91.89	57.87	53.34	55.85			
34		10/1/15 5:30	79.39	78.25	78.77	93.05	91.45	92.20	60.49	56.51	57.62			
35		10/1/15 5:45	79.65	78.48	79.12	94.99	91.09	93.07	60.45	56.56	58.60			
36		10/1/15 6:00	80.01	16.00	71.36	94.05	88.94	91.04	57.41	55.12	56.04			
37		10/1/15 6:15	76.62	28.00	61.66	92.77	90.47	91.59	56.54	53.85	55.26			
38		10/1/15 6:30	76.88	75.65	76.31	92.52	91.25	91.90	57.28	53.98	56.09			
39		10/1/15 6:45	77.43	75.86	76.62	92.65	91.62	92.18	59.77	56.82	58.57			
40		10/1/15 7:00	78.01	76.03	76.94	93.02	91.86	92.48	58.40	56.37	57.27			
41		10/1/15 7:15	79.13	75.81	77.24	93.78	92.07	92.86	57.14	53.85	56.04			
42		10/1/15 7:30	80.84	16.00	57.00	95.35	91.34	92.95	57.89	53.39	55.63			
43		10/1/15 7:45	80.89	16.00	56.56	35.00	7.00	21.00	60.08	56.71	58.55			
44		10/1/15 8:00	80.99	16.00	52.62	65.00	37.00	51.00	64.61	60.64	62.34			

The group buttons on the left allow the user to expand and collapse to show or hide the alarm data.

Use Data From One Source to Retrieve Data From Another

In the first part of this document it showed using the results of a database data group to drive the time period of a history data group. However, there are scenarios where the data to drive the history data group is not stored in a database but rather in a historian (either the same historian or a different historian). The time period of a history data group does not have an option for this.

However, this can be achieved using the **By Row Iteration** management function.

By Row Iteration

The **By Row Iteration** management function can be used to drive additional data into a report or even to generate new reports. For this document, we are focusing in on using this function to feed time settings into a history data group to get additional data for the report.

Active By Group

Category

Type

Range

Cell

Direction

End

Placement

Cell

Type

Setting	Value
Action	UpdateGroupSheet
Worksheet	Template
Group	2

This management function is available under the **Cell Action** category.

The **Range** defines the rows of data that will be iterated over. This range should consist of a row of headings and then one or more rows of values. The headings each column should be variable names. For every row of data, the value in each column is set to the variable in that row.

Consider the following:

	A	B	C	D
1				
2				
3				
4		Start Date	End Date	Tag 1
5		3/17/2020 3:00	3/17/2020 11:00	MIXER_ZONE1
6		3/17/2020 11:30	3/17/2020 14:00	MIXER_ZONE2
7		3/17/2020 15:30	3/17/2020 17:00	MIXER_SPEED

When executed, this will iterate three times. The first time, the variables *Start Date*, *End Date* and *Tag 1* will be set with the data in row 5, the second time the data from row 6 and the third with the data from row 7.

As part of the execution, after the variables are set, an **Action** can be triggered to run to update either another worksheet or a specific group within the template.

Note, **Action** can be set to a cell (or range of cells) that specify **Actions** that can trigger other reports to execute. This will not be discussed in this document.

Typical Scenario

Consider the following scenario: A daily report is required that needs to show the time of the maximum speed of the mixer every hour of the day. The report must also show the values of the other mixer parameters at that time recorded in the historian.

Setup | Columns | Time Period

Period

Type:

Start

Date: ...

Date includes Time

Time: ...

End

Type:

...

Interval

Count

All

Every

...

Bounds to include

Endpoints to include

Time Ordering

The **Time Period** is configured for the **Start** as a *Variable*. This *Variable* will be set using the **By Cell Iteration** management connection. The **Interval** ensures that only *1* row is returned from the group.

This data group is configured for **Group 2**. **Group 2** connections will be used using the **By Cell Iteration** management connection.

This connection is also set up for **Placement** as *Append* so that each row of data returned is appended to the report going down.

5					
6		Speed		Values	
7	Max Time	Max Value	Zone 1 Temp	Zone 2 Temp	Ramp Pressure
8					

On the template worksheet, the heading in cell $\$B\7 is *Max Time* which is the name of the variable used in the second data group.

Data (2) | Manage (1)

Active By: Group:

Category:

Type:

Range

Cell: ...

Direction:

End:

Placement

Cell:

Type:

Setting	Value
Action	UpdateGroupSheet
Worksheet	Template
Group	2

For the **By Row Iteration** management connection, only values in the B column need to be iterated over to set the **Max Time** variable that is configured in the second data group.

For each row of data starting in \$B\$7 the **Group 2** connections on the *Template Worksheet* are updated.

Schedule

The image shows a configuration window with two main sections: 'Condition' and 'Action'.

Condition Section:

- A tree view on the left shows 'Time' expanded with sub-items: Continuous, Daily, Weekly, and Monthly. 'Event' is also expanded with sub-item: XLR_DA.
- The 'Time' dropdown is set to 'Daily'.
- The 'Time' field is set to '12:15:00 AM'.
- The 'Action Time Adjustment' is set to '1' and 'day(s)'.

Action Section:

- A tree view on the left shows 'Produce Reports' expanded with sub-items: Update Workbook, Update Worksheet, Update Workbook Groups, and Update Worksheet Groups. Other categories include 'Publish Reports', 'Transfer Reports', and 'Manage Files and Folders'.
- The 'Action' dropdown is set to 'Update Worksheet Groups'.
- The 'Worksheet' field is set to 'DailyMixerSpeed.xlsx.Template'.
- The 'Group' field is set to '1'.

The schedule to generate this report is a single *Update Worksheet Groups* **Action** to update the **Group 1** connections in the template.

This will trigger *Daily* at *12:15:00 AM*. The **Action Time Adjustment** is set to *1 day* to generate the report for the previous day.

What will happen when this action triggers is that it will generate a new report and add the hourly maximum times and values for the mixer speed (24 rows). Then **the By Row Iteration** management connection executes. For each of the 24 rows, the *Max Time* variable is set with the time value in the cell in the *B* column and then the group 2 connection is executed.