

# ISA-88, IEC-61512 Batch Standard

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## Standards

The ANSI/ISA-88 batch standard was introduced in 1995, adopted by IEC 61512-1 in 1997 and updated in 2010. It is a standard for addressing batch process systems by a design philosophy for describing equipment and procedures.

### Basic vs Advanced Reporting

**XLReporter** provides batch reports at two levels, **Basic** and **Advanced**.

**Basic** reports are available with every version of **XLReporter** and partially provide the batch metrics and information suggested by ISA-88 and IEC-61512 standards. This is an ideal start to any batch reporting application.

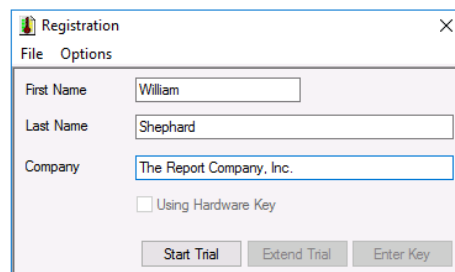
**Advanced** reports are available with the ISA-88 Batch module for **XLReporter**. The addition provides deeper understanding of batch behavior by providing batch-to-batch comparison and “Golden Batch” comparison to help identify systematic design issues and specific areas for improvement.

This document describes the Batch module when it is applied to the Emerson DeltaV™ Basic Batch. The DeltaV™ Basic Batch software is designed for easy operation of batch processes. This software contains the Batch Executive, the batch engine that coordinates all batch processing activity, and creates detailed batch history records and schedules recipes and resources.

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## Registration

Before you begin, enable the software to run either in evaluation or full mode. From the **XLReporter Project Explorer**, select the **Home** tab, **Register Product**.



### Evaluation License

Enter the information required and select **Start Trial** to start the evaluation. When the evaluation period expires, you can re-open this display and select **Extend Trial**.

The evaluation license runs continuously for two hours and limits the number of data connections to a report template. In evaluation mode, the data collection from the **Basic Batch Data Connector** is also limited. When the product is registered, the time limit and data connections limit are removed. When the product is registered with an **Advanced Modules** license, the limitations of the basic batch connector are removed.

**Full License**

Select **Enter Key** to obtain the lock code. Contact SyTech and provide the lock code and product serial number to obtain a key code.

As an alternative, you can purchase a hardware key to enable your license.

# Connector

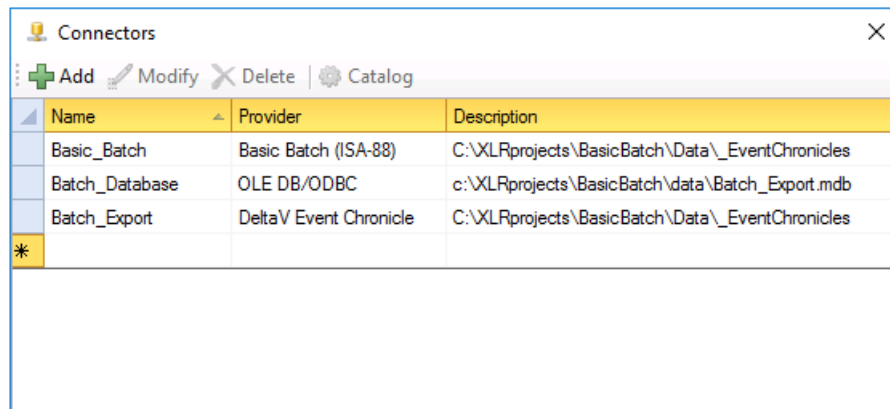
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## Overview

**Connectors** are used to define data sources. An advantage of this approach is that a change in the **Connector** definition does not have any cascading effect on any other configuration performed in the project.

*Example:* Suppose a set of report templates contain a reference to a **Connector** called *MyDatabase* (a SQL Server database connector). If the SQL server database is moved to a new location, then the definition of *MyDatabase* is the only change required.

From the **XLReporter Project Explorer** select **Data** tab, **Sources**, **Connectors** to display the connectors defined for the project. This same display appears when creating a new project as well.



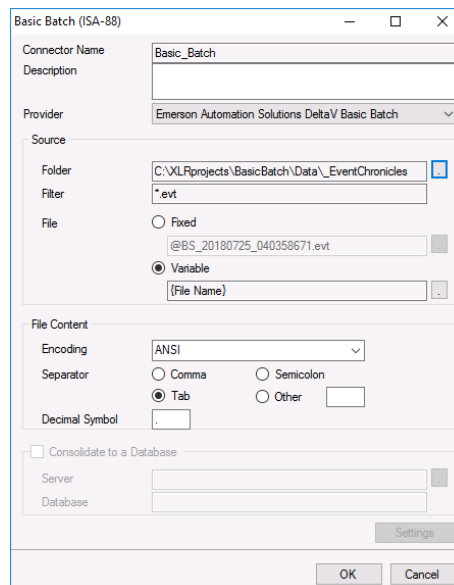
Name	Provider	Description
Basic_Batch	Basic Batch (ISA-88)	C:\XLrprojects\BasicBatch\Data\_EventChronicles
Batch_Database	OLE DB/ODBC	c:\XLrprojects\BasicBatch\data\Batch_Export.mdb
Batch_Export	DeltaV Event Chronicle	C:\XLrprojects\BasicBatch\Data\_EventChronicles
*		

The display provides options to **Add**, **Modify** or **Delete** a **Connector**.

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## Defining a Basic Batch Connector

Click **Add** to open a list of the supported data source. Expand **Advanced Modules** select **Basic Batch (ISA-88)** and click **OK**.



Basic Batch (ISA-88)

Connector Name: Basic\_Batch  
Description: [Empty]

Provider: Emerson Automation Solutions DeltaV Basic Batch

Source:

Folder: C:\XLrprojects\BasicBatch\Data\\_EventChronicles [Browse]

Filter: \*.evt

File:

Fixed  
@BS\_20180725\_040358671.evt [Browse]

Variable  
[File Name] [Browse]

File Content:

Encoding: ANSI [Dropdown]

Separator:  Comma  Semicolon  
 Tab  Other [Text]

Decimal Symbol: .

Consolidate to a Database

Server: [Text] [Browse]

Database: [Text] [Browse]

[Settings]

[OK] [Cancel]

In this display, provide information about your alarm system database  
The **Provider** defines the source of the batch data logging.

Under **Source**

- Set the **Folder** to the location where the batch records are being stored.

The Folder selection will automatically fill out the remaining fields so there should be no reason to change any other settings.

When the connector is saved, the following is performed:

- The database *Batch\_Export.mdb* is added to the **Data** folder of the project.
- The connector *Batch\_Export* is created and configured for the database. This is a DeltaV Event chronicle connector used for exporting.
- The connector *Batch\_Database* is created and configured for the database. This is a database connector used for selecting batches in on-demand reports.
- The background template (not visible in the **Project Explorer**) called *\_Batch Export* is added to the project. This template uses the *Batch\_Export* connector to extract key values from an event chronicle file and save it to the database.
- A schedule is added to monitor a new history log file which activates the export
- The templates *Batch Analysis* and *Batch Details* are moved into the current project. These report templates are fully functional and requires no additional configuration.

# Batch Enumeration

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## Overview

For each batch produced, the Emerson Batch executive produces a file containing the history of the batch process (EVT). The name of the file is a unique ID which is probably meaningless to the operator since it provides no indication of the Recipe/Batch it represents.

**XLReporter** takes pertinent information from each history file and saves it to its own database so that batch selection becomes more meaningful to the user.

The **XLReporter** database (*Batch\_Export.mdb*) contains the following columns:

- **Start\_Date** Start date and time when the batch started
- **End\_Date** End date and time when the batch ended
- **Batch ID** The batch ID
- **Recipe** The recipe used for the batch
- **Description** The recipe description
- **Short File Name** The short name of the history file
- **Long File Name** The long name of the history file

## Schedule Script

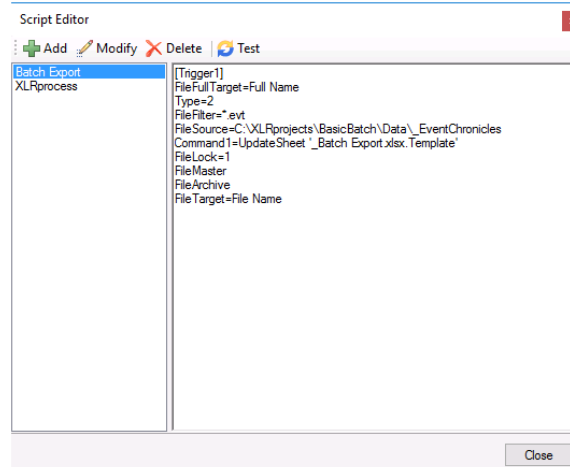
A schedule script is provided to manage the database as described in the previous section. The script can be modified from the **Schedule Designer**.

From the **Project Explorer**, select the **Project** tab and the **Schedule Designer**. A schedule is provided to manage the database as described in the previous section.

Condition	Action
<input checked="" type="checkbox"/> Continuous	Recur 5 second(s); <every day>; 00:00:00
* <input type="checkbox"/>	RunScript Batch Export

The schedule runs a script periodically that monitors the folder where the history log files are saved. On completion of the batch, the content of the history log file is read and saved to the database.

To see the details of the script, select **Tools, Script Editor** and then select the *Batch Export* script.



To change the settings of the script, click **Modify**. For more details on each setting of the script, refer to the **User Guide**. The following setting would normally be changed for a specific application.

- **File Source**

This is the folder where the history files are stored i.e., the folder that is monitored for a new history log file. This is set to the folder specified when the Basic Batch connector was created.

The following settings would be used if information about the new log file is needed.

- **File Target**

This is a variable where the short file name (with no extension) is stored e.g., @123456789. By default, the variable *File Name* is used.

- **File Full Target**

This is the variable where the long file name is stored e.g., c:\MyFiles\@123456789.evt. By default, the variable *Full Name* is used.

## Backfilling the Database

If you already have history log files, they can be saved to the database. From the **Project Explorer**, open the **Schedule Designer** from the **Project** tab.

From **Tools**, select **Script Editor**

- Highlight **Batch Export**
- Click **Test**

A dialog will appear showing the export progress.

All the files in the folder are processed and the last processed date is stored. This is done so that only new files that are saved to the folder are processed.

## Batch Selector

To produce a report on-demand, the **XLReporter** batch selector uses the content of the database to select one or more batches:

	BatchID	Recipe
<input checked="" type="checkbox"/>	AB8Z25M357	XYTHANE_8000D
<input type="checkbox"/>	AB8Z25M356	PREPOM_F2N
<input type="checkbox"/>	AB8Z24M071	XYPRENE_TS950A
<input type="checkbox"/>	AB8Z24M355	XYTHANE_8000D
<input type="checkbox"/>	AB8Z24M354	PREPOM_F1
<input type="checkbox"/>	AB8Z24M353	XYPRENE_W167_TS450
<input type="checkbox"/>	AB8Z23M070	XYPRENE_TS950A
<input type="checkbox"/>	AB8Z23M352	XYTHANE_8000D
<input type="checkbox"/>	AB8Z23M351	XYPRENE_W300_TSX450
<input type="checkbox"/>	AB8Z22M069	XYPRENE_TS900A
<input type="checkbox"/>	AB8Z22M350	XYTHANE_8000C
<input type="checkbox"/>	AB8Z22M349	XYTHANE_6020
<input type="checkbox"/>	AB8Z22M348	XYPRENE_W100_TS450
<input type="checkbox"/>	AB8Z21M068	XYPRENE_TS950A
<input type="checkbox"/>	AB8Z21M347	XYTHANE_PK_3S

Selecting batches based on their unique ID is supported - however, using the selector may be more meaningful to the user.

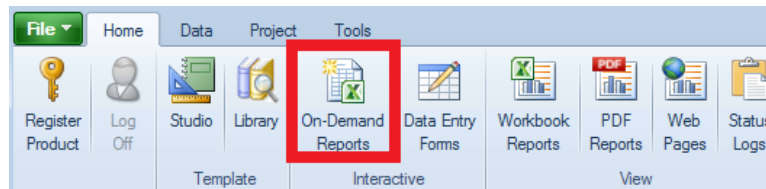
# Predefined Templates

## Overview

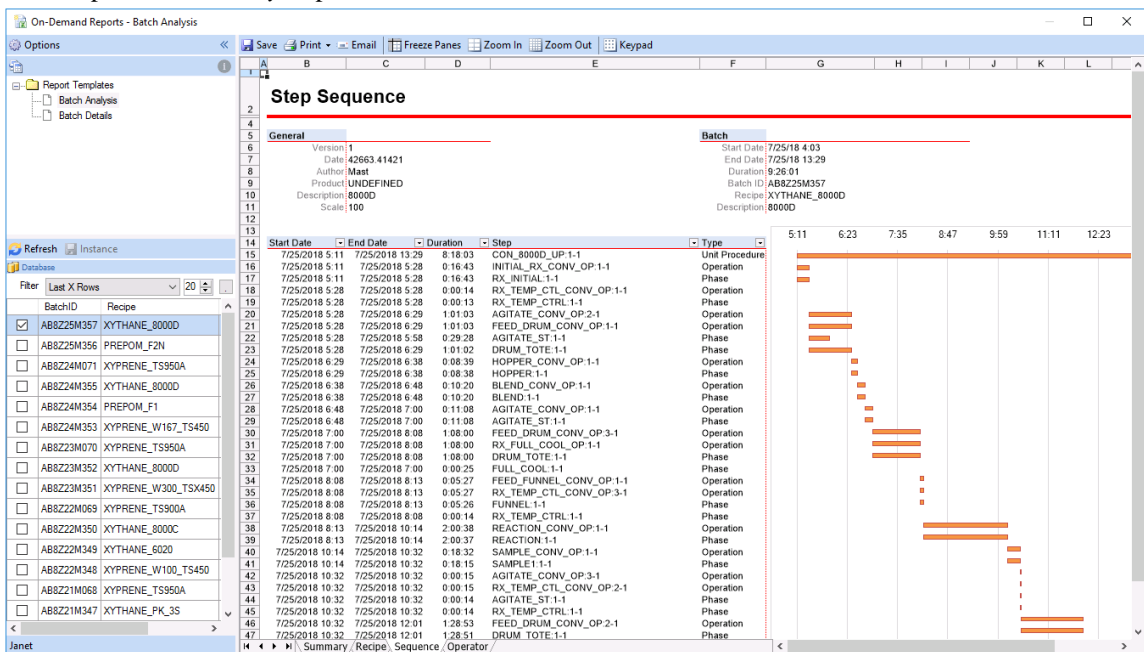
As stated in the previous section, when a basic batch connector is created, a set of predefined templates are automatically copied into the current project. These templates are fully functional but may be limiting if a full license is not present.

## On-Demand Reports

From the **XLReporter Project Explorer**, select **On-Demand Reports** to open the On-Demand application.



The template *Batch Analysis* provides an overview of a selected batch.



Select a batch in the grid and click **Refresh**.

# Predefined Templates - Closer Look

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## Overview

The pre-defined templates can be modified in the Template Design Studio built in Excel.

From the **XLReporter Project Explorer**, click **Template Studio** to open **Excel**.



From the **XLReporter** ribbon select **Open** and choose the *Batch Analysis* template to open the template

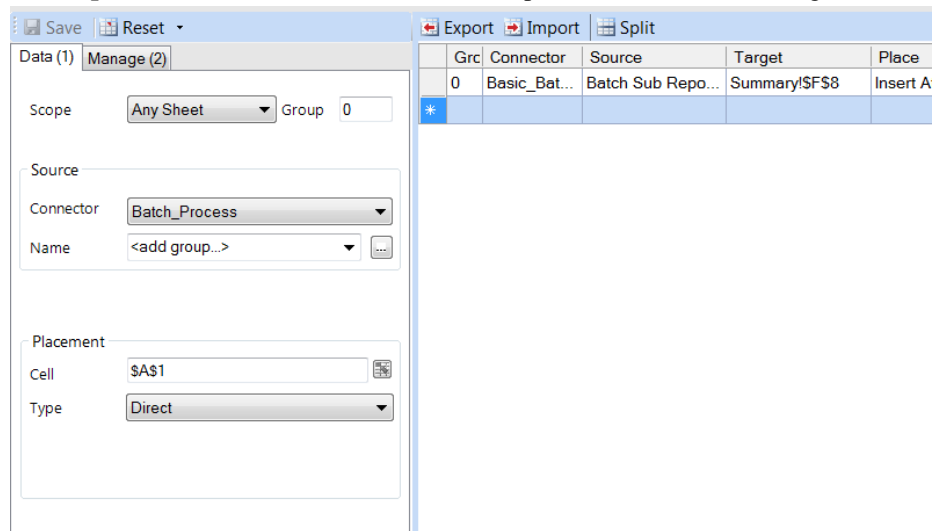
The data to the workbook is provided by data connections that can be viewed by selecting **Data Connect** that is described in the next section.

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## Data Connect

Data connections transfer information from the data connector to the report.

From the **XLReporter** ribbon, select **Data Connect** to open the **Connections** dialog.



The grid shows all the connections in the template. This template has a **Data** connection and two **Manage** connections. Highlighting a line in the grid displays its setting in the left pane.

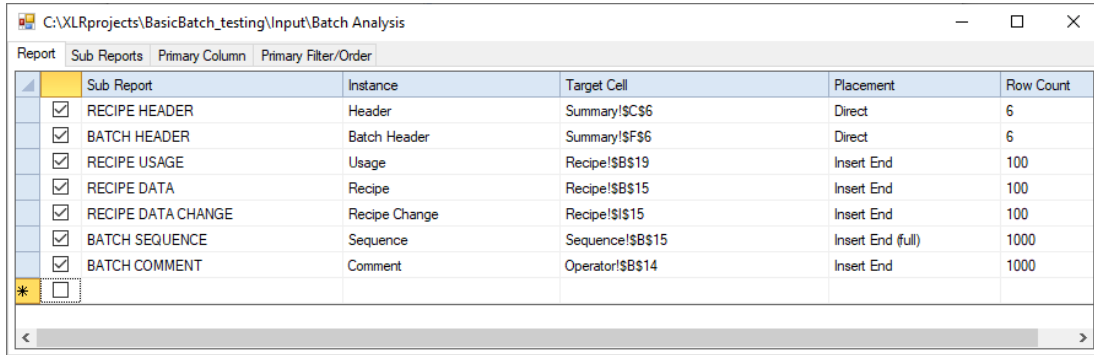
On the **Data** tab is the batch module configuration. Since the module is configured like any other **XLReporter** connection, it is possible to define other data sources and have them also feed information to the report. This is demonstrated later in this document.

Either click the browse [...] or double click the line in the grid to open the definition of the connection.



## Batch Group

The **Batch Group** is an advancement on the standard data groups that interface to historians and databases. The group contains a number of **Instances** of **Sub-Reports** to provide data to the report. Multiple instances of the same sub report displayed on the same report are supported.



Sub Report	Instance	Target Cell	Placement	Row Count
<input checked="" type="checkbox"/> RECIPE HEADER	Header	Summary!\$C\$6	Direct	6
<input checked="" type="checkbox"/> BATCH HEADER	Batch Header	Summary!\$F\$6	Direct	6
<input checked="" type="checkbox"/> RECIPE USAGE	Usage	Recipe!\$B\$19	Insert End	100
<input checked="" type="checkbox"/> RECIPE DATA	Recipe	Recipe!\$B\$15	Insert End	100
<input checked="" type="checkbox"/> RECIPE DATA CHANGE	Recipe Change	Recipe!\$I\$15	Insert End	100
<input checked="" type="checkbox"/> BATCH SEQUENCE	Sequence	Sequence!\$B\$15	Insert End (full)	1000
<input checked="" type="checkbox"/> BATCH COMMENT	Comment	Operator!\$B\$14	Insert End	1000
<input type="checkbox"/>				

The output from a sub report depends on its configuration. Most sub reports have *Selected* columns which determine the number of columns of the sub report. The number of rows of a sub report depends on the quantity of data in the database or limited by **Row Count**.

## Reports Tab

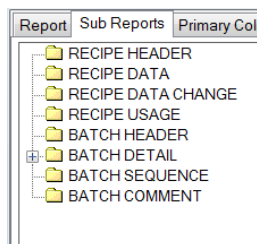
The **Reports** tab contains one or more rows of configuration inside a grid. Each active row in the grid provides output to the report (an active line has a check in the first column). The columns and rows produced by the row depends on the columns selected in the **Instance** and the **Row Count**. The output is placed in the **Target Cell** by the **Placement** rule selected.

- An **Instance** is a sub report with a specific set of settings. Using instances opens up the possibility of running the same sub-report with different settings on the same report.
- **Target Cell** indicates the cell where the output will start. The syntax of this setting is in the form *sheet!cell*.
- **Placement** is either **Direct**, **Append**, or **Insert**. **Direct** means the output is placed directly into the cell given by the **Target Cell** overwriting any information that happens to be there. **Append** means the output is placed in the next empty cell starting at the **Target Cell**. **Insert** means the output is inserted at the **Target Cell**, any content below of the insertion is moved down.
- **Row Count** determines the limit of the number of rows in the output.

To delete a row on the grid, highlight the row and press the **Delete** key on the keyboard.

## Sub Reports Tab

The **Sub-Reports** tab shows current supported sub reports provided by the module. Expanding a sub report shows the configured instances.



See the **Sub Report** section for more information.

# Sub Reports

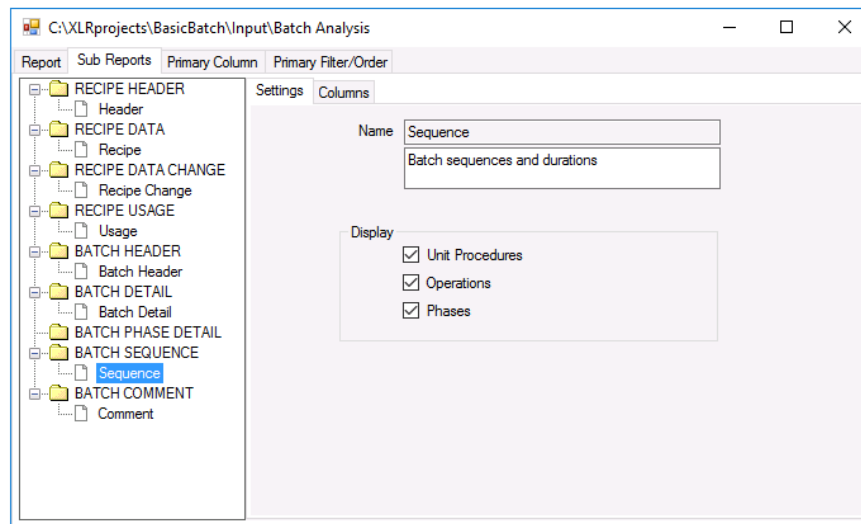
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## Overview

**Sub Reports** are pre-defined reports that produce metrics from data that has been produced by a system that is designed according to the ISA-88 standard. Sub reports can be used collectively or separately in templates.

*Note: In evaluation mode, only the RECIPE HEADER, BATCH HEADER, and BATCH DETAIL sub reports are enabled. The full functionality of the data connector is enabled with an Advanced Modules license.*

In practice, the output of an **Instance** of a sub report is shown in the report. The instance is simply a sub report with selected columns and user limits. The concept of instances opens up the possibility of running the same sub-report with different settings on the same report.



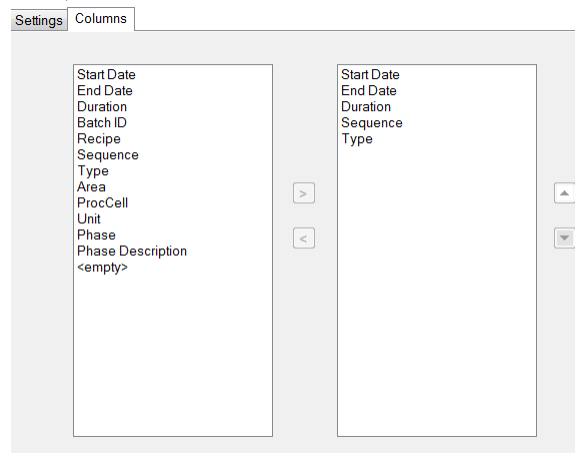
To define an **Instance**, select the sub report in the left pane and provide **Settings** and **Columns**. When complete, the instance will be listed in the left pane using the **Name** of the instance. To modify an instance, highlight it in the left pane.

In the dialog above, the *Sequence* instance has been selected to show the configuration of the **Settings** tab.

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## Columns Tab

The **Columns** tab consists of two lists, the left list shows the *Available* columns and the right list are the *Selected* columns. Each selected column will result in a column in the report starting from the **Target Cell** (see **Report Tab**).



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## Settings Tab

### Common Settings

The following settings are common to some of the sub reports and are described here to avoid repetition.

- **Name**  
User defined name of the instance
- **Description**  
User defined description
- **Order**  
Order the output of the instance. Enter a column name from the *Selected* columns on **Columns** tab followed by *ASC* (ascending) or *DESC* (descending).

### Common Columns

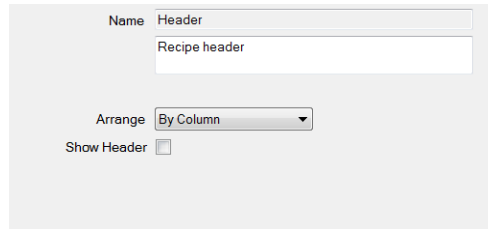
The following columns are common to some of the sub reports and are described here to avoid repetition.

- **Batch ID**  
The batch identifier
- **Recipe**  
Recipe used for the batch
- **Description**  
Recipe description
- **Area**  
**ProcCell**  
**Unit**  
**Phase**  
**Phase Description**  
**Node Name**  
**Operator**  
**Operator Name**  
Refer to the Emerson Basic Batch documentation

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## RECIPE HEADER

Provides the recipe header.



The screenshot shows a configuration window for the 'Recipe Header'. It contains the following elements:

- A 'Name' field with the value 'Header'.
- A text input field containing 'Recipe header'.
- An 'Arrange' dropdown menu set to 'By Column'.
- A 'Show Header' checkbox, which is currently unchecked.

### Settings

- **Arrange**  
Indicates if the output is shown in column or rows
- **Show Header**  
If checked, the output contains header labels. If this option is used, there will be two columns or rows in the output, one for the header labels and one for the values.

### Columns

Refer to the Emerson Batch documentation for more information

### Output

```
Version|1
Date|3/30/2018 13:07:59
Author|Mast
Product|UNDEFINED
Description|TS800A
Scale|100
```

---

## RECIPE DATA

Provides the recipe details.

### Columns

- **Item Name**  
The name of a recipe item.
- **Value**  
The value of the recipe item.
- **Eng Units**  
The units of the recipe item.

## Output

Item	Value	Units
AGIT_SPEED_SP	90.00	%
AGIT_SPEED_SP1	25.00	%
DRUM_TOTE_VAC_SP	-0.90	bar-g
ETH_B_ATR_1	114.70	\B0\C
ETH_B_ATR_2	114.70	\B0\C
ETH_B_CHG_AMT_1	1849.60	kg
ETH_B_CHG_AMT_2	1849.60	kg
ETH_B_FIC_SP_1	1000.00	kg/h
ETH_B_FIC_SP_2	1000.00	kg/h
ETH_B_SF_1	10.00	
ETH_B_SF_2	10.00	
FUNNEL_AMT1_SP	299.90	kg
FUNNEL_VAC_SP	-0.10	bar-g
REWORK_DRUM_AMT1_SP	0.00	kg
RXN_TEMP_SP2	62.00	\B0\C
RXN_TIMR1_SP	120.00	min
RXN_VAC_SP	-0.30	bar-g
RX_FULL_VAC_SP	-0.90	bar-g
RX_PRESS_SP	0.00	bar-g
RX_TEMP_HI_ALM_SP	65.00	\B0\C
RX_TEMP_SP_SP1	35.00	\B0\C
RX_TEMP_TERGAT_SP	62.00	\B0\C
TDI_CHG_AMT_SP	2075.60	kg
TDI_FIC_SP	3500.00	kg/h
TEMP_TARGET_SP	62.50	\B0\C

## RECIPE DATA CHANGE

Provides any changes to the recipe. When used in conjunction with **Recipe Data**, the Manage connection *Weave Range* can be used to align the items from both outputs.

### Columns

- **Item Name**  
The name of a recipe item.
- **Change Value**  
The change in value of the recipe item.
- **Eng. Units**  
The engineering units of the recipe item.

### Output

Item	Value	Units	Change
AGIT_SPEED_SP	90.00	%	
AGIT_SPEED_SP1	25.00	%	
DRUM_TOTE_VAC_SP	-0.90	bar-g	
ETH_B_ATR_1	114.70	\B0\C	
ETH_B_ATR_2	114.70	\B0\C	
ETH_B_CHG_AMT_1	1849.60	kg	From 1836.000000 To 1849.6 kg
ETH_B_CHG_AMT_2	1849.60	kg	From 1836.000000 To 1849.6 kg
ETH_B_FIC_SP_1	1000.00	kg/h	From 2000.000000 To 1000 kg/h
ETH_B_FIC_SP_2	1000.00	kg/h	From 2000.000000 To 1000 kg/h
ETH_B_SF_1	10.00		
ETH_B_SF_2	10.00		
FUNNEL_AMT1_SP	299.90	kg	
FUNNEL_VAC_SP	-0.10	bar-g	
REWORK_DRUM_AMT1_SP	0.00	kg	
RXN_TEMP_SP2	62.00	\B0\C	
RXN_TIMR1_SP	120.00	min	From 210.000000 To 120 min
RXN_VAC_SP	-0.30	bar-g	
RX_FULL_VAC_SP	-0.90	bar-g	
RX_PRESS_SP	0.00	bar-g	
RX_TEMP_HI_ALM_SP	65.00	\B0\C	
RX_TEMP_SP_SP1	35.00	\B0\C	
RX_TEMP_TERGAT_SP	62.00	\B0\C	
TDI_CHG_AMT_SP	2075.60	kg	From 50000.000000 To 2075.6 kg
TDI_FIC_SP	3500.00	kg/h	From 4500.000000 To 3500 kg/h
TEMP_TARGET_SP	62.50	\B0\C	From 62.000000 To 62.5 \B0\C

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## RECIPE USAGE

Provides recipe set points and usage.

The screenshot shows a software interface with a 'Name' field containing 'Usage' and a sub-section labeled 'Recipe usage'. Below this is a 'Match Filter' section containing the text '\_AMT' and '\_RP'.

After the **Match Filter** is applied, the *Recipe Value* and *Report* records are used to formulate the output.

### Settings

- **Match Filter**  
Only the entries in the history log that *end* with the **Match Filter** will be considered in the output.

### Columns

- **Set point**  
The set point value (Recipe Value)
- **Actual**  
The actual value (Report)
- **Delta**  
The difference in the set point and actual

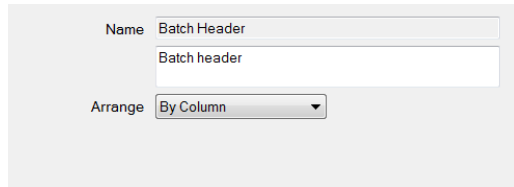
### Output

Description	Setpoint	Actual	Delta
TDI_CHG	1460.2	1460.363	0.163
SLO_FEED	300		
TDI_REC_CHG	1385.4	1385.853	0.453
SLO_FEED	300		
TDI_ETH_CHG	0	0	0
ETHC_CHG	7942.5	7944.294	1.794
SLO_FEED	300		
ETHA_CHG	1677.2	1677.372	0.172
SLO_FEED	300		

---

## BATCH HEADER

Provides the recipe header.



The screenshot shows a configuration window for 'Batch Header'. It has a 'Name' field containing 'Batch Header' and a sub-field containing 'Batch header'. Below this is an 'Arrange' dropdown menu set to 'By Column'.

### Settings

- **Arrange**  
Indicates if the output is shown in column or rows

### Columns

- **Start Date**  
The start date of the batch
- **End Date**  
The end date of the batch
- **Duration**  
The difference between the start and end date

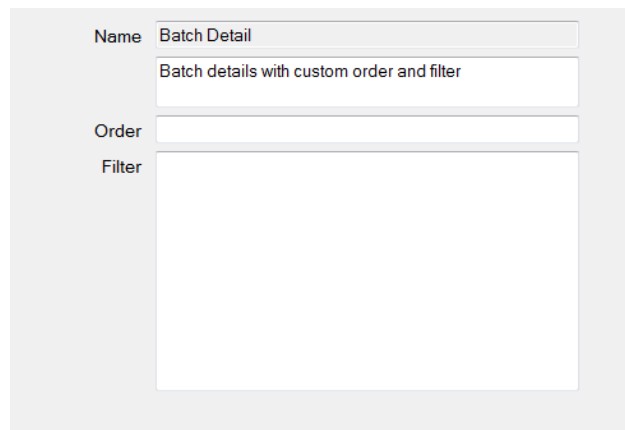
### Output

Start Date	7/22/18 15:42
End Date	7/24/18 1:51
Duration	34:09:15
Batch ID	AB8Z22M069
Recipe	XYPRENE_TS900A
Description	TS800A

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## BATCH DETAIL

Provides raw batch information using the filter and order settings. The Batch Details template is an illustration of how this sub report can be used.



The screenshot shows a configuration window for 'Batch Detail'. It has a 'Name' field containing 'Batch Detail' and a sub-field containing 'Batch details with custom order and filter'. Below this are 'Order' and 'Filter' fields, both currently empty.

### Settings

- **Order**  
The order of the displayed information using SQL syntax.
- **Filter**  
The filter that is applied to determine the displayed information using SQL syntax.

### Columns

Refer to the Emerson Basic Batch documentation

## Output

BatchID	Recipe	Descript	Event	PValue
AB8Z21M346	XYPRENE_W500_TS450		Event File Name	D:\DeltaV\ID\
AB8Z21M346	XYPRENE_W500_TS450	Version	Recipe Header	
AB8Z21M346	XYPRENE_W500_TS450	Version Date	Recipe Header	11:08:14 Aug
AB8Z21M346	XYPRENE_W500_TS450	Author	Recipe Header	Mast
AB8Z21M346	XYPRENE_W500_TS450	Product Code	Recipe Header	UNDEFINED
AB8Z21M346	XYPRENE_W500_TS450	Description	Recipe Header	W500
AB8Z21M346	XYPRENE_W500_TS450	Class or Instance	Recipe Header	Class
AB8Z21M346	XYPRENE_W500_TS450	Recipe Type	Recipe Header	BP
AB8Z21M346	XYPRENE_W500_TS450	Area Model File Name	Recipe Header	D:\DeltaV\ID\
AB8Z21M346	XYPRENE_W500_TS450	File Name	Recipe Header	D:\DeltaV\ID\
AB8Z21M346	XYPRENE_W500_TS450	Scale	Recipe Header	
AB8Z21M346	XYPRENE_W500_TS450	AGIT_SPEED_SP	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	AGIT_SPEED_SP1	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	BLEND_TIMR1_SP1	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	DRUM_TOTE_VAC_SP	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	ETHA_ATR_SP	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	ETHA_CHG_AMT_SP	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	ETHA_FIC_SP	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	FEED_TEMP_PV_SP	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	FUNNEL_AMT1_SP	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	FUNNEL_VAC_SP	Recipe Data	
AB8Z21M346	XYPRENE_W500_TS450	FUNNUL_LIQUID_A	Recipe Data	BzCl
AB8Z21M346	XYPRENE_W500_TS450	LIQUID_A	Recipe Data	LIQUID_A
AB8Z21M346	XYPRENE_W500_TS450	REWORK DRUM AMT1 SP	Recipe Data	

## Batch Phase Details

Provides the phase details along with the start and end of each phase.

Name

Show Recipe Values

Filter

Show Report Values

Filter

Remove Phases that contain no values

### Settings

- Show Recipe Values**  
 Displays the initial recipe values and an optional filter to determine the displayed information using SQL syntax
- Show Report Values**  
 Displays the initial report values and an optional filter to determine the displayed information using SQL syntax
- Remove Phases that contain no Values**



## Output

```
XYTHANE_8000D\CON_8000D_UP:1-1\INITIAL_RX_CONV_OP:1-1\RX_INITIAL:1-1
Start          7/25/2018 5:11
End            7/25/2018 5:28
              FULL_VAC          -0.9 bar-g
              RX_PRESS_SP        -0.9 bar-g
              RXSETUP_TIMR1       15 min
XYTHANE_8000D\CON_8000D_UP:1-1\RX_TEMP_CTL_CONV_OP:1-1\RX_TEMP_CTRL:1-1
Start          7/25/2018 5:28
End            7/25/2018 5:28
              RX_TEMP_SP          55 \B0\C
XYTHANE_8000D\CON_8000D_UP:1-1\FEED_DRUM_CONV_OP:1-1\DRUM_TOTE:1-1
Start          7/25/2018 5:28
End            7/25/2018 6:29
              AGIT_SPEED          25 %
              DRUM_TOTE_VAC        -0.9 bar-g
              RX_TEMP_HI_ALM       85 \B0\C
XYTHANE_8000D\CON_8000D_UP:1-1\HOPPER_CONV_OP:1-1\HOPPER:1-1
Start          7/25/2018 6:29
End            7/25/2018 6:38
              HOPPER_VAC          -0.1 bar-g
              SOLID_A              SOLID_A
              HOPPER_AMT1          1000 kg
```

---

## BATCH SEQUENCE

Provides the duration of each Unit Procedure, Operation and Phase of the batch.

Name: Sequence  
Batch sequences and durations

Display:  
 Unit Procedures  
 Operations  
 Phases

### Settings

- **Display**  
Select the step sequences to display

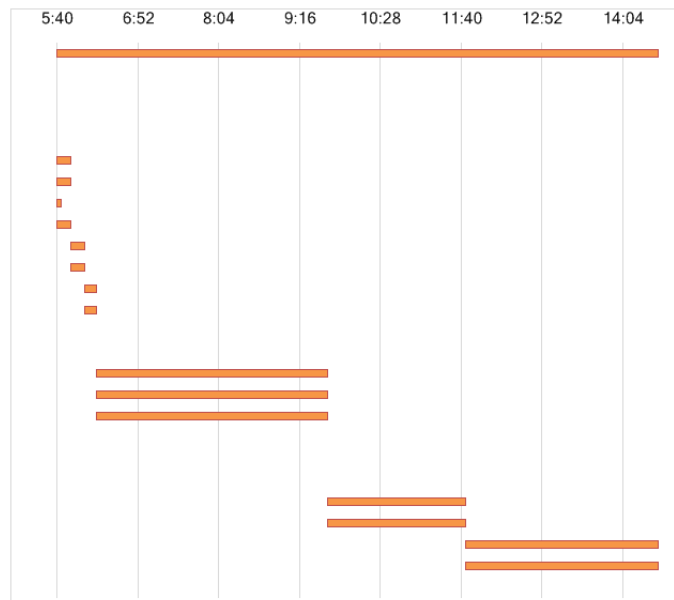
### Columns

- **Start Date**  
The start date of the sequence
- **End Date**  
The end date of the sequence
- **Duration**  
The duration of the sequence
- **Sequence**  
The step sequence name
- **Type**  
The step sequence type

## Output

Start Date	End Date	Duration	Step	Type
7/21/2018 5:40	7/21/2018 14:36	8:55:27	CON_L167_R450_UP:1-1	Unit Procedure
7/21/2018 5:40	7/21/2018 5:41	0:00:12	INITIAL_RX_LF_OP:1-1	Operation
7/21/2018 5:40	7/21/2018 5:41	0:00:10	RX_INITIAL:1-1	Phase
7/21/2018 5:41	7/21/2018 5:41	0:00:13	RX_TEMP_CTL_LF_OP:1-1	Operation
7/21/2018 5:41	7/21/2018 5:41	0:00:12	RX_TEMP_CTRL:1-1	Phase
7/21/2018 5:41	7/21/2018 5:53	0:12:21	AGITATE_LF_OP:1-1	Operation
7/21/2018 5:41	7/21/2018 5:53	0:12:21	FEED_DRUM_LF:1-1	Operation
7/21/2018 5:41	7/21/2018 5:44	0:03:33	AGITATE_ST:1-1	Phase
7/21/2018 5:41	7/21/2018 5:53	0:12:21	DRUM_TOTE:1-1	Phase
7/21/2018 5:53	7/21/2018 6:05	0:11:51	HOPPER_LF_OP:1-1	Operation
7/21/2018 5:53	7/21/2018 6:05	0:11:50	HOPPER:1-1	Phase
7/21/2018 6:05	7/21/2018 6:16	0:10:28	BLEND_LF_OP:1-1	Operation
7/21/2018 6:05	7/21/2018 6:16	0:10:27	BLEND:1-1	Phase
7/21/2018 6:16	7/21/2018 6:16	0:00:13	AGITATE_LF_OP:2-1	Operation
7/21/2018 6:16	7/21/2018 6:16	0:00:12	AGITATE_ST:1-1	Phase
7/21/2018 6:16	7/21/2018 9:41	3:25:41	FEED_ETH_A_LF_OP:1-1	Operation
7/21/2018 6:16	7/21/2018 9:41	3:25:41	RX_FULL_COOL_LF:1-1	Operation
7/21/2018 6:16	7/21/2018 9:41	3:25:41	FEED_ETH_A:1-1	Phase
7/21/2018 6:16	7/21/2018 6:16	0:00:25	FULL_COOL:1-1	Phase
7/21/2018 9:41	7/21/2018 9:42	0:00:09	NOR_REACTION_LF_OP:1-1	Operation
7/21/2018 9:41	7/21/2018 9:42	0:00:09	RX_REACTOR_TIMER:1-1	Phase
7/21/2018 9:42	7/21/2018 11:45	2:03:12	REACTION_LF_OP:1-1	Operation
7/21/2018 9:42	7/21/2018 11:45	2:03:12	REACTION:1-1	Phase
7/21/2018 11:45	7/21/2018 14:36	2:51:06	SAMPLE_LF_OP:1-1	Operation
7/21/2018 11:45	7/21/2018 14:36	2:51:04	SAMPLE:1-1	Phase

Using the Start Date and the duration, the output can be displayed as a Gantt chart as follows:



## BATCH COMMENT

Provides the comments, response and response time that occurred during the batch

### Columns

- **Prompt**  
The prompt made to the operator
- **Response**  
The response from the operator
- **Start Date**  
The date when the prompt occurred
- **End Date**  
The date when the operator responded
- **Duration**  
The time take for the operator to respond

## Output

Operator	Message	Response	Prompt Time	Response Time	Duration
Chopan	Proceed with opening drumming automated valve?	<no response>	7/21/18 5:41	7/21/18 5:41	0:00:13
Chopan	Do the drum add complete?	<no response>	7/21/18 5:42	7/21/18 5:53	0:11:20
	Proceed with hopper charge? If yes, change the local switch to on!		7/21/18 6:00		
Chopan	Acknowledge to check 410tank ready or not?	<no response>	7/21/18 6:16	7/21/18 6:17	0:00:53
Chopan	prepare absolute vacuum by ramp control	<no response>	7/21/18 9:42	7/21/18 9:42	0:00:09

# Scheduled Reports

In a previous section, we discussed how to produce reports on-demand. In this section, we will show how, with minimal changes, we can automate the process so that a batch report is produced each time a batch is completed.

---

## Report Names

The **Report Names** of a template determines the name of the report when it is produced.

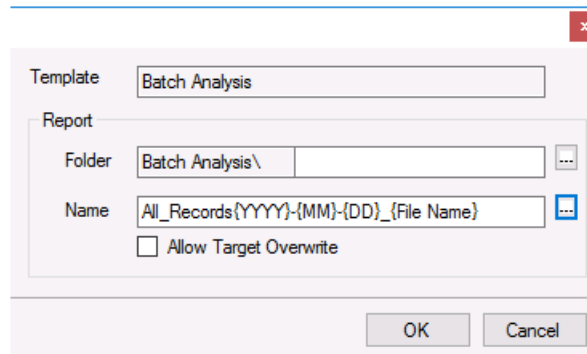
Open the *Batch Analysis.xlsx* template and select **Report Names** from the **XLReporter** ribbon in Excel.



This will open the **Report Names** dialog.

For scheduled reporting, configure the **Workbook Name** to include the variable *File Name*, or whichever **Variable** was chosen to represent the **File Variable** setting of the **Basic Batch Data Connector**.

It is also suggested to include a **Calendar** expression, such as *Year-Month-Day*, in the workbook name, so that scheduled report files are named with respect to the EVT file used to generate the report, as well as the date on which it was generated



---

## Schedule

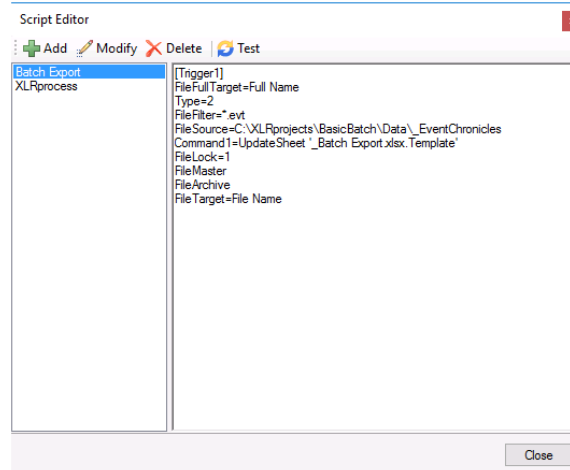
The schedule will process the template to produce a report using the naming convention discussed in the previous section.

Select **Schedule** from the **XLReporter** ribbon in Excel.



## Default Schedule

In order to generate reports automatically, it is recommended to add **Schedule Actions** into the **Batch Export** schedule script created by the **Basic Batch Data Connector**.



## Viewing Scheduled Reports

To view the scheduled reports, select **View, Workbook Reports** from the **Home** tab of the **XLReporter Project Explorer**.

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