Jump Start: Plant View in Aspen Plus

A Brief Tutorial (and supplement to training and online documentation)

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# Contents

Introduction ........................................................................................................................................... 1
Activating Plant View .......................................................................................................................... 1
Interpreting the Flowsheet .................................................................................................................... 2
  Stream Color & Animations .............................................................................................................. 2
  Customizable Stream Tables ........................................................................................................... 2
  Composition Pie Charts .................................................................................................................. 3
  Hierarchy Blocks ............................................................................................................................ 3
  Stream Tables ................................................................................................................................ 4
Configuring the Server ......................................................................................................................... 5
Viewing Data ........................................................................................................................................ 6
  Mapping Plant Data to Stream Variables ...................................................................................... 6
  Data View Options .......................................................................................................................... 7
Plant Data ........................................................................................................................................... 7
Flowsheet Data Viewer ....................................................................................................................... 8
Stream Data Viewer ............................................................................................................................ 8
Time Filters ......................................................................................................................................... 9
Data Plots ........................................................................................................................................... 10
Importing & Exporting Data Maps to Microsoft Excel ........................................................................ 10
Use Case Scenarios ............................................................................................................................. 12
Additional Resources .......................................................................................................................... 12
Introduction

Plant View is a tool in Aspen Plus that enables users the ability to view plant data side by side with model results in the simulation environment. View real-time, time-averaged, or historical data side-by-side with predicted stream data. Plant View gives process engineers the ability to facilitate better, smarter operational decisions by promoting the use of simulation results in operations. This JumpStart Guide is a brief tutorial to help users get started with Plant View in less time.

This is not meant to be used as a stand-alone reference document. AspenTech recommends that a range of other resources referenced to give the new user a comprehensive view of how to use Plant View in Aspen Plus. These may include:

- AspenTech support website (support.aspentech.com)
- AspenTech courseware available in on-line and in-person versions
- AspenTech business consultants
- Additional Jump Start Guides—available on a variety of related topics

This document covers mapping specific plant data tags against selected model stream variables in Aspen Plus. It assumes that the user has Aspen Plus V8.0, a data historian such as IP.21, IP.21 Process Browser, and Internet Explorer 9 and above. Note: Internet Explorer 8 is also compatible; however, the Google Chrome Frame must also be installed.

Activating Plant View

Prior to activating Plant View, it is essential that the model has converged and simulation results are present. Once this is complete, Plant View can be activated by pressing the Plant View button in the Show group on the View Ribbon.

![Figure 1: The Plant View button is located in the Show group on the View ribbon.](image)

Clicking the Plant View button will create a new Plant View contextual ribbon and open a Plant View Flowsheet. The Plant View Flowsheet will be similar to the Main Flowsheet; however, it will contain stream animations, a table of mappings, and a reference key.
Integrating the Flowsheet

Stream Color & Animations

The Plant View flowsheet is unique in that it uses colors and animations to represent stream properties. The color of the stream indicates the phase of the stream and the animation represents the relative flow rate. On the right side of the flow sheet, there is a Stream Animation Legend.

Customizable Stream Tables

Stream tables can be activated by right clicking on the stream label and selecting Stream Table. Quickly and easily manage which stream variables are displayed in the stream table with the Stream Results group in the Plant View tab or by right clicking anywhere on the flowsheet, highlighting views with the
cursor, and then selecting “Filter Data Views”. Selecting “Filter Data Views” will open the Stream Data View Filter form.

![Stream Data View Filter Form]

**Figure 4: Stream Data View Filter Form**

**Composition Pie Charts**

Composition pie charts provide a quick visual representation of the predicted stream composition. Composition pie charts can be accessed via the Stream Data View Filter form (accessing this form is outlined in the Stream Tables section). In this dialogue box, users can specify the location of the pie chart and also either a molar or mass basis. Each colored piece of the pie chart represents presence of a different component. The key for the composition colors is located above the stream animation legend on the right side of the flowsheet.

![Stream table with the corresponding composition pie chart]

**Figure 5: Stream table with the corresponding composition pie chart**

**Hierarchy Blocks**

The Plant View flowsheet incorporates the same Hierarchy Block functionality as the Main Flowsheet; therefore, users can move into hierarchy block environments using a hierarchy browser. Users can also enter a hierarchy block by double clicking on the block itself.
Stream Tables
To view a stream table, right click on the stream label of choice and select the Stream Table option. The variables that appear in the stream table can be customized via one of two ways. The first option is to right click anywhere on the flow sheet and then highlight Views, then select Filter Data Views. The second option is to select or unselect variables in the Stream Results group on the Plant View Ribbon.
Figure 8: Customize Stream Tables via the Stream Results group on the Plant View ribbon

Figure 9: Filter Data Views

Configuring the Plant Data Server

In order to view plant data in the Plant View environment, the plant data source must be specified. Prior to mapping the data, IP.21 Process Browser must be installed on a separate server where it will point to a plant data server. Once this step is complete, specify the Plant Data Source by clicking on the Source button in the Plant Data group on the Plant View ribbon.

Figure 10: The Source button in the Plant Data group of the Plant View ribbon

This will open the Plant Data Source form where the web21 URL of the data server should be entered. Once the URL is specified, the data source name can also be specified. In this example, the data server is “plantdata” and the data source is also named PLANTDATA.
The general form of the web21 URL for the plant data source is:

http://<servername>/web21/processdata/atprocessdatarest.dll

**Viewing Data**

**Mapping Plant Data to Stream Variables**

In order to view plant data side-by-side with simulation results, it is necessary to map plant data tags to the stream variables. Right click on the stream of interest, and select “Tag Mapping”. This will open the “Stream Variable to Plant Tag Mapping” form.
The dialogue box is powered by Aspen Search which enables users to search for tags based on their name, unit of measure, tag ID, type, or description. Aspen Search also automatically filters by variable type. For example, when searching for a temperature it will automatically filter to show only data sources measured with units of temperature.

![Image of Aspen Search]

*Figure 13: Search results for the temperature Simulation Variable*

Once the tags are mapped, select OK and return to the flowsheet.

The next step is to activate plant data views in the Plant View Flowsheet by checking the Stream Data Viewer, Flowsheet Data Viewer, and/or Plant Data boxes in the Display Options group on the Plant View ribbon.

![Image of Plant Data box on the Display Options group of the Plant View tab]

*Figure 14: Plant Data box on the Display Options group of the Plant View tab*

**Data View Options**

**Plant Data**

The Plant Data Viewer attaches a plant data column to stream tables enabling a side by side comparison of plant data and simulation results.
Figure 15: Plant Data option box

| Temperature | 237 F | 236.5 C |
| Pressure    | 265 PSIG | 265 PSIG |
| Standard Volume Flow | 1.73E+04 CUFT/HR | 1.76E+04 CUFT/HR |

Figure 16: Plant Data option on a stream table

**Flowsheet Data Viewer**

The Flowsheet Data Viewer provides a table of every mapped variable in the flowsheet in one place. The Flowsheet Data Viewer allows for easy navigation of mapped variables in the Plant View environment.

Figure 17: Flowsheet Data Viewer box

**Stream Data Viewer**

The Stream Data Viewer option enables users to either activate or deactivate all of their stream tables.
Once the Plant Data Tags are mapped, the data can be manipulated by different time filters. Real time data is the actual data that is being written to the IP.21 database. Historical averaged data is viewed over a specified range of time, such as the past three months. Time averaged data is viewed over a specified time period, such as the past thirty minutes. All three data views are accessible via the Average Range button in the Plant Data group of the Plant View Ribbon.
Data Plots
Plant View enables users to view previews of IP.21 trends in plot form. To view, simply hover over the desired variable in the Flowsheet Data Viewer or Plant Data Viewer attached to the stream table.

![IP.21 trend plot](image)

To see more detailed views of the IP.21 trends, users can access the full IP.21 high performance trends in a supported web browser.

Importing & Exporting Data Maps to Microsoft Excel
Plant View enables users to compare multiple sets of plant data tags to one model by saving the data maps. Plant Data maps show up on the Flowsheet Data Viewer table.

![IP.21 Flowsheet Data Viewer table](image)

There are two different ways to export maps from Excel. The first type is time stamped and does not include the plant data tags. The second type includes plant data tags. Exporting without the tags is the best option for creating data fits in Excel.

To export time-stamped maps, click on the Excel icon near the upper right hand corner of the Flowsheet Data Viewer table.

![Excel export button](image)

The exported map will look like this:
Figure 25: Time stamped file exported into Excel

This can be saved and imported back into Plant View. This feature is convenient because it allows users to capture behaviors of the plant data at specific times.

To export a map with tags, click on the Export Map to Excel Button in the plant data group on the Plant View tab.

Figure 26: Export Map button in the Plant Data group of the Plant View ribbon

Figure 27: Excel file with Plant Data Maps
As shown in Figure 27, this map points to the data server; therefore, when the file is imported into Plant View, the data tags are live. By saving data maps and tags in this fashion, multiple tags can be mapped to the same models and vice versa which allows for case comparison and troubleshooting.

**Use Case Scenarios**

Plant View enables users the ability to view plant data side by simulation results—a technological first in the process modeling industry. This breakthrough can be applied to several different use case scenarios in plant operations.

Plant View promotes informed decision making by reducing the hassle and time required to compare simulation results with actual plant data. By using simulation results in conjunction with live plant data, process engineers can employ what-if studies prior to altering operating conditions in the plant resulting in better, more informed decisions.

Plant View can also aid in troubleshooting previous plant operational problems. View plant data corresponding to the incident, and then modify the model until the simulation results match the plant data. Once the simulation converges to match the plant data, process engineers can find the origin of the problem and avoid such problems in the future.

**Additional Resources**

On-Demand Short Videos

AspenTech YouTube Channel
[http://www.youtube.com/watch?v=Wr-ZAaPknSU](http://www.youtube.com/watch?v=Wr-ZAaPknSU)