

Did You Know?

Proficy Historian and Operations Hub: Data Analysis in Context

The combination of Proficy Historian and Operations Hub provides a powerful data management solution with asset model context and visualization.

With Proficy Historian and Operations Hub, you achieve:

- Aggregation of data across multiple data sources or Historians
- Asset model context to data
- Advanced trend analysis of Historian data

Overview of Proficy Operations Hub

Operations Hub is an end-to-end solution for developing, managing, and delivering applications to leverage the capabilities of big data analytics and the internet of things.

Using Operations Hub, you can create applications that will collect and analyze data from a machine or a server, and trigger actions based on certain events.

Operations Hub provides you with a user-friendly interface to create components of an application such as queries, database tables (called entities), events, email templates, users, and so on without the need to use your programming skills. You can also design pages and dashboards using these components.

Advantages of using Operations Hub:

- Operations Hub is quick, easy, and cost-effective. You do not need programming skills to develop an application.
- The Operations Hub applications use HTML5 and CSS3, and hence, they are platform-independent.
- You can access an application using a computer or a mobile device.
- You can provide controlled access to an application and data based on user roles.
- You can create entities and queries for a relational database.

Using Proficy Operations Hub & Proficy Historian

Proficy Operations Hub & Proficy Historian are tightly integrated. Configuring a Historian data source (System API or REST API) in Operations Hub only involves configuration, no programming required.

Operations Hub allows you to create and/or import a model. There is tremendous value in creating a structure for you data as opposed to a flat set of data.

You can then use the trend widget to trend model-based Historian data or trend data directly from a Historian.

It is also possible to create Historian REST queries and use these queries in the page designer to display pieces of data in the context of a dashboard and/or an HMI display.

The following sections will walk you through a few examples that highlight the great flexibility of Proficy Operations Hub.

Create a Model for Operations Hub to use with Historian

Proficy Operations Hub allows you to create a model structure. Object types define the structure of the equipment pieces within your model. For each object type, such as a “Storage Tank”, you set up all the data variable names, such as “Tank Level”, that any asset object associated with this type can reuse in its own definition. Below is an example using a displacement pump.

NOTE: The following steps assume that Historian Data Sources are properly configured for Operations Hub.

Create an object type:

The screenshot shows the 'Admin' console with the 'Object Types' section selected. A new object type, 'DisplacementPump', is being created under the 'DemoRoot' asset. The configuration page includes a search bar, a 'New' button, and fields for 'Name' (DisplacementPump) and 'Object Type' (DisplacementPump). Below these fields are tabs for 'Data Variables' and 'Contained Types'. The 'Data Variables' tab is active, displaying a table with columns for 'Variable', 'Data Type', and 'Description'. Each row has a checkbox in the first column.

<input type="checkbox"/>	Variable	Data Type	Description
<input type="checkbox"/>	Mounting	STRING	
<input type="checkbox"/>	RunningStatus	BOOLEAN	
<input type="checkbox"/>	Head	STRING	
<input type="checkbox"/>	OperatingMode	BOOLEAN	
<input type="checkbox"/>	Manufacturer	STRING	
<input type="checkbox"/>	HP	STRING	
<input type="checkbox"/>	ControlMode	BOOLEAN	
<input type="checkbox"/>	Pressure	NUMBER	

Create an Object based on the New Type

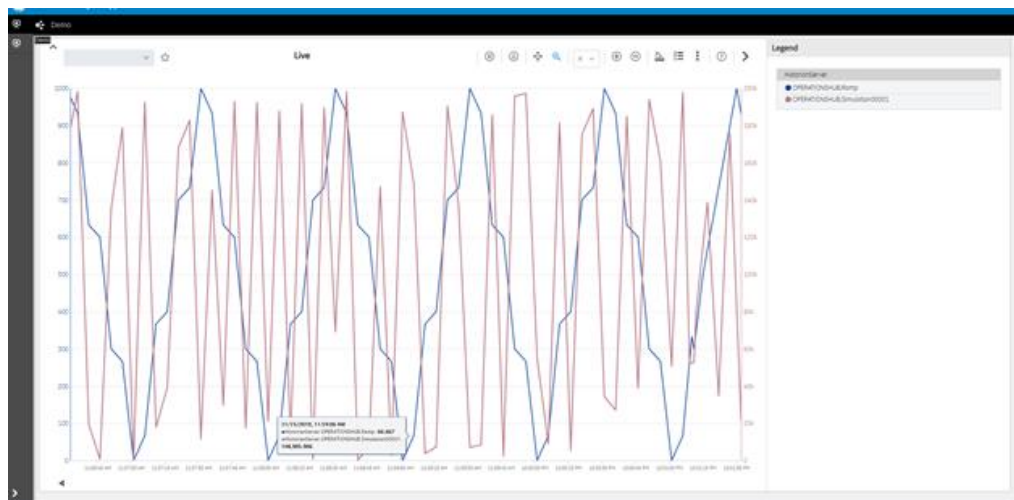
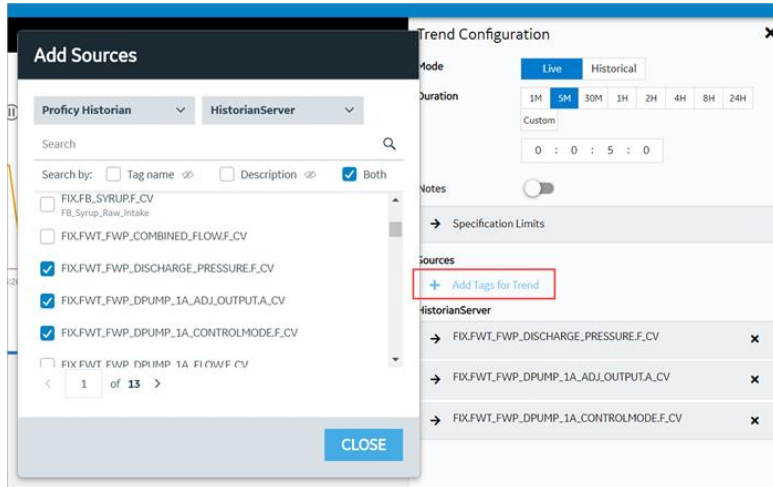
The screenshot shows the 'Admin' console with the 'Objects' section selected. A new object, 'DisplacementPump1A', is being created under the 'Demo' asset. The configuration page includes a search bar, a 'New' button, and fields for 'Name' (DisplacementPump1A) and 'Object Type' (DisplacementPump). Below these fields are tabs for 'Data Variables' and 'Contained Objects'. The 'Data Variables' tab is active, displaying a table with columns for 'Variable', 'Data Type', 'RealTime Data All', 'Real Time Data Sr', 'Historical Data A', and 'Historical Data Sr'. Each row has dropdown menus in the last two columns.

Variable	Data Type	RealTime Data All	Real Time Data Sr	Historical Data A	Historical Data Sr
Mounting	STRING	...	...	Histori	FIX.FWT_FWI ...
RunningStat	BOOLEAN	...	...	Histori	FIX.FWT_FWI ...
Head	STRING	...	...	Histori	FIX.FWT_FWI ...
OperatingMc	BOOLEAN	...	...	Histori	FIX.FWT_FWI ...
Manufacture	STRING	...	...	Histori	FIX.FWT_FWI ...
HP	STRING	...	...	Histori	FIX.FWT_FWI ...
ControlMode	BOOLEAN	...	...	Histori	FIX.FWT_FWI ...
Pressure	NUMBER	...	...	Histori	FIX.FWT_FWI ...

Tie the properties of the Data variables to the Historian data source. Done!

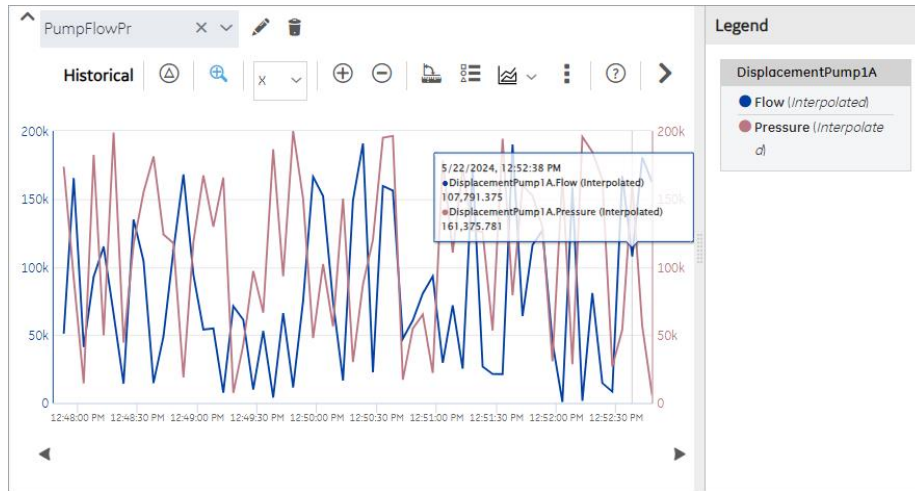
Use the Trend Widget for Historian Data Source

With Proficy Historian and Operations Hub, you can quickly move from code-free configuration to advanced trend analysis using the built-in Trend Widget. You can choose to use a model - data is then displayed in the context of the asset model - or directly browse the Historian or OPC UA servers. Once you have selected your data source, you can add tags from the assets to the trend chart.



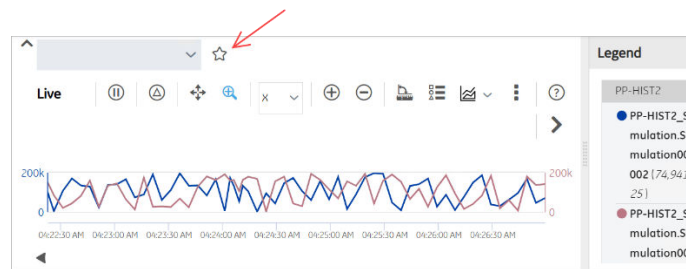
Trend Card

The Trend Card widget allows you to plot real-time data from historical data from Historian servers and OPC UA servers.



Trend Charts are very versatile. These are the actions you can perform after the chart is plotted.

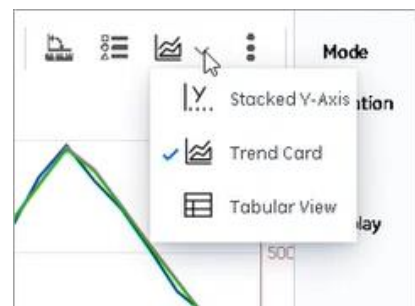
Mark a View as a Favorite



Perform Data Analysis

Visualize real-time and historical data trends to monitor performance, identify patterns, and make informed decisions. You can switch between three chart types:

- Trend Card (default): Displays data in a single chart & view the statistics of tags on a Trend Chart and the delta between two Data Points
- Stacked Y-Axis: Displays multiple charts stacked vertically, sharing a common X-axis but with individual Y-axes.
- Tabular View: Displays data in a table format.



Control Data Updates

These functions allow users to control how data is displayed and refreshed.

- View Real-time Updates: Displays real-time values and units as they update.
- Pause the Data Flow: Helps you analyze a specific moment without new data appearing on the chart.
- Reset the Trend Chart: Revert all changes made to the trend chart (duration, start time, axis preferences, etc.).

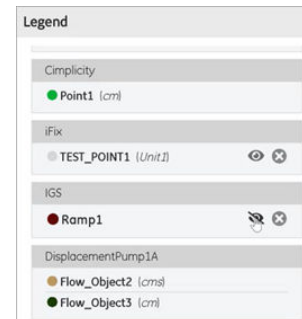
Use Trend Tags Input for Flexible Trending

Dynamically update the trend chart using the “Trend Tags Input” property: instead of selecting tags manually at runtime, bind a global variable that stores and updates the list of tags automatically.

Use Legend to Interpret Data

The legend helps you track and manage displayed data.

- Remove a Property: Simplify the display by deleting specific plotted data.
- Show or Hide Plotted Data: Control the visibility of plotted data to focus on specific points by hiding unnecessary trends.
- Display Engineering Units: If a source tag has engineering units (EGU), they appear in the legend, tooltip, and Y-axis.



Move Around the Trend Chart

- Pan across the chart, scroll through data, zoom in for details, or expand the view to focus on specific trends.
- Scroll Through Historical Data: Provides options to navigate through past data efficiently.
- Drill Down into a Trend Chart: Explore data in more detail.
- Pan Across a Trend Chart: The pan icon is visible only in the Live mode. In Historical mode, use the scrollings icons.
- Increase the Trend Chart Area: Maximize the chart view by hiding unnecessary elements to create more space for the data.

Download or Share the Chart

Download your chart as a file to save or share with others.

- Export Trend Chart Data: The trend chart data is exported and saved as a CSV file.
- Print a Trend Chart: Print the data from a trend chart.

Create a Sample Page with Historian Data in a few minutes!

You can create a page to display Historical data in 10 easy steps:

1. Create an application.
2. Create a page.
3. Add a widgets to the page such as a gauge, line graph, etc.
4. Select the graph in the page container to access its PAGE DATA.
5. Under the page data tab, select Tag Browser from the dropdown list.
6. Select Historical data from the dropdown list.
7. Select Browse to search the data source and select tags.
8. Drag this data and drop it on the graph.
9. Select Save App.
10. Select Open App.

The application page opens in a web browser.

About GE Vernova Proficy

Software & Services

GE Vernova's Proficy® Software & Services empowers teams, illuminating the path to a greener, more profitable future. Our proven industrial software accelerates innovation, enables connected workers, and operationalizes sustainability. We're driving measurable progress for over 20,000 diverse customers around the world.

The Proficy portfolio includes cloud-based and on-prem HMI/SCADA, MES, industrial data management, and analytics. Our software solves the toughest industrial challenges and is used in applications such as discrete, hybrid, and continuous manufacturing; utilities automation; metro transit; and much more. Proficy offers architecture flexibility including single machines, remote substations, and complex, distributed networks that span multiple factories and geographies.

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