# Centum VP Interface Training

INSTRUMENT UNIT

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# PREFACE

Centum VP R6 is the latest in the line of Yokogawa's DCS CENTUM series. This document aims to give an overview of the graphical user interface of the Centum VP, highlighting the commonly used software features for monitoring and operation. The objective of this training document is to familiarize the user with the basic features of Centum VP software and enable him/her to navigate through the interface.

*Note: Please zoom in the pdf to clearly view any details on the screenshots that are not otherwise visible.*

# GENERAL NAVIGATION

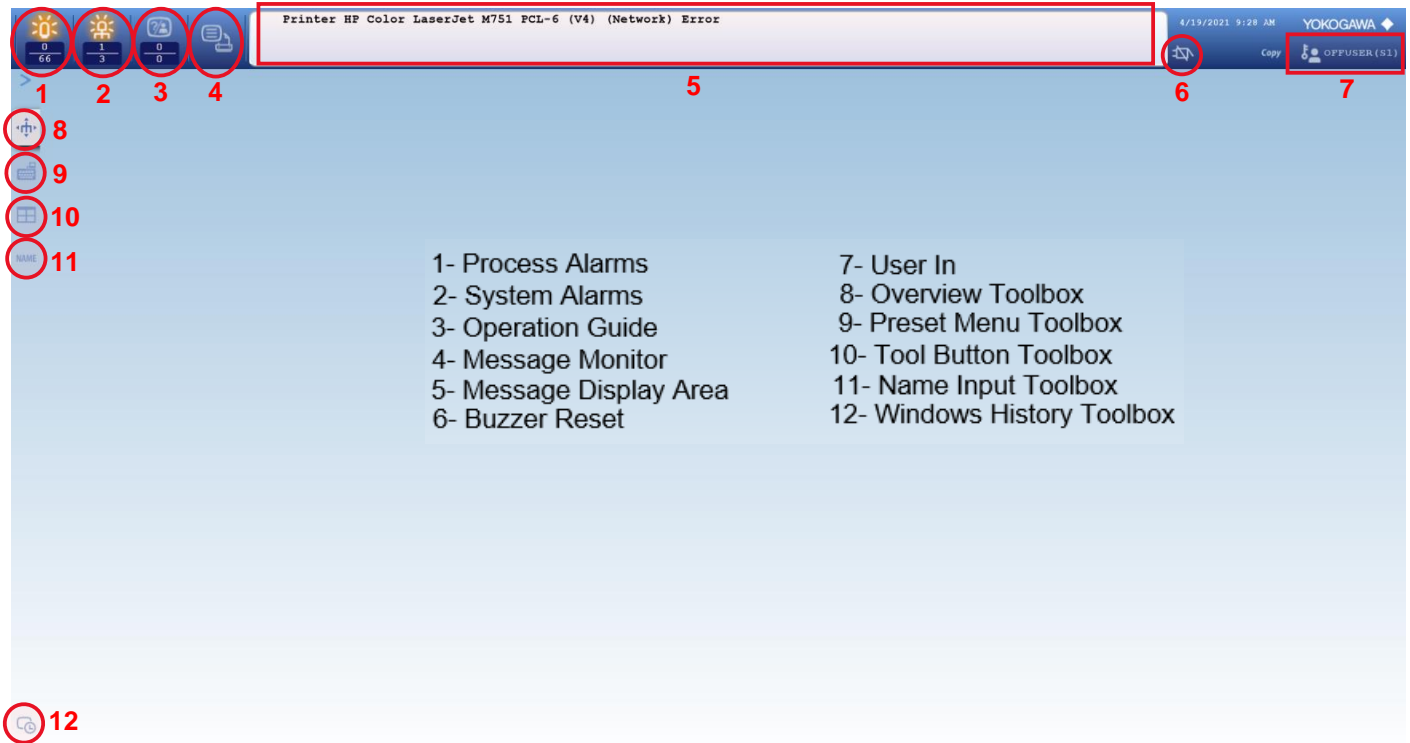The home page of the Centum VP is depicted in the labelled screenshot below:



1- Process Alarms
2- System Alarms
3- Operation Guide
4- Message Monitor
5- Message Display Area
6- Buzzer Reset

7- User In
8- Overview Toolbox
9- Preset Menu Toolbox
10- Tool Button Toolbox
11- Name Input Toolbox
12- Windows History Toolbox

*Figure 1: Home page of the Centum VP with each button labelled*
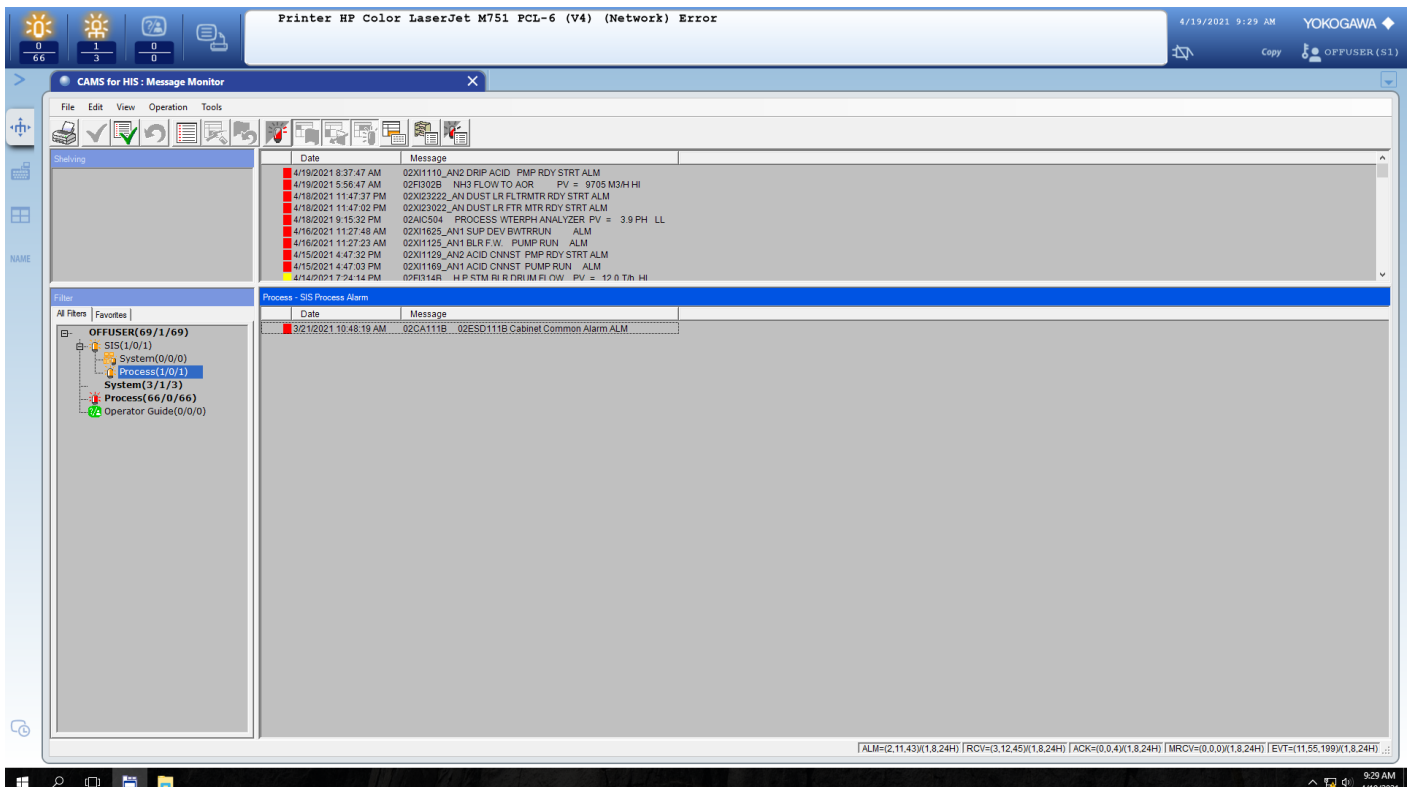
## 1- Process Alarms



*Figure 2: Process alarms being displayed in the CAMS for HIS window*

This button opens the window that lists down all the process alarms in reverse chronological order, as shown above.

## 2-    System Alarms

The system alarms button opens the list of system alarms in reverse chronological order, showing the latest alarm at the top.
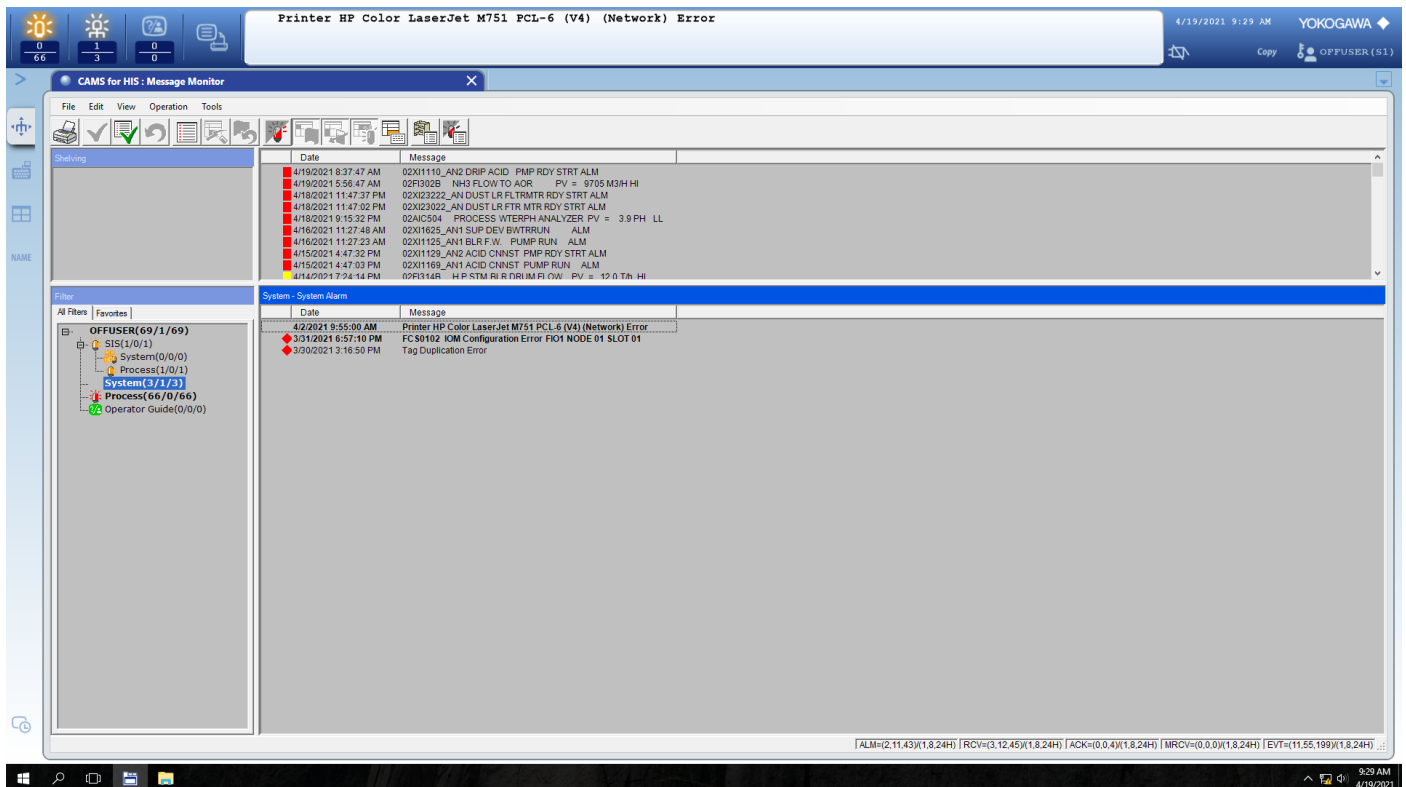


*Figure 3: System alarms being displayed in the CAMS for HIS window*

## 3-    Operation Guide

Operator guide messages are displayed upon pressing this button, to guide the operator regarding monitoring and operation. These messages are configured by the user, like process alarms.

The process alarms, system alarms and operator guide messages can also be toggled from the list in the bottom left half of the Consolidated Alarm Management Software (CAMS for HIS) window as shown in previous screenshots. Setting filter conditions allows the selection and display of necessary alarms and events only.

*Note: HIS is the acronym for Human Interface Station, which is an HMI system interfaced with the FCS (Field Control Station) of the DCS.*

## 4-    Message Monitor

The message monitor window is opened by this button.

## 5- Message Display Area

All the latest system and process alarms, as well as messages are displayed in this area for unhindered view.

## 6- Buzzer Reset

This button is used to reset the buzzer that is turned on upon occurrence of an alarm.

## 7- User In

Different users are defined in Centum VP and each user is given a different privilege level according to requirement. Through this button, we can login to any user by entering the username and corresponding password.
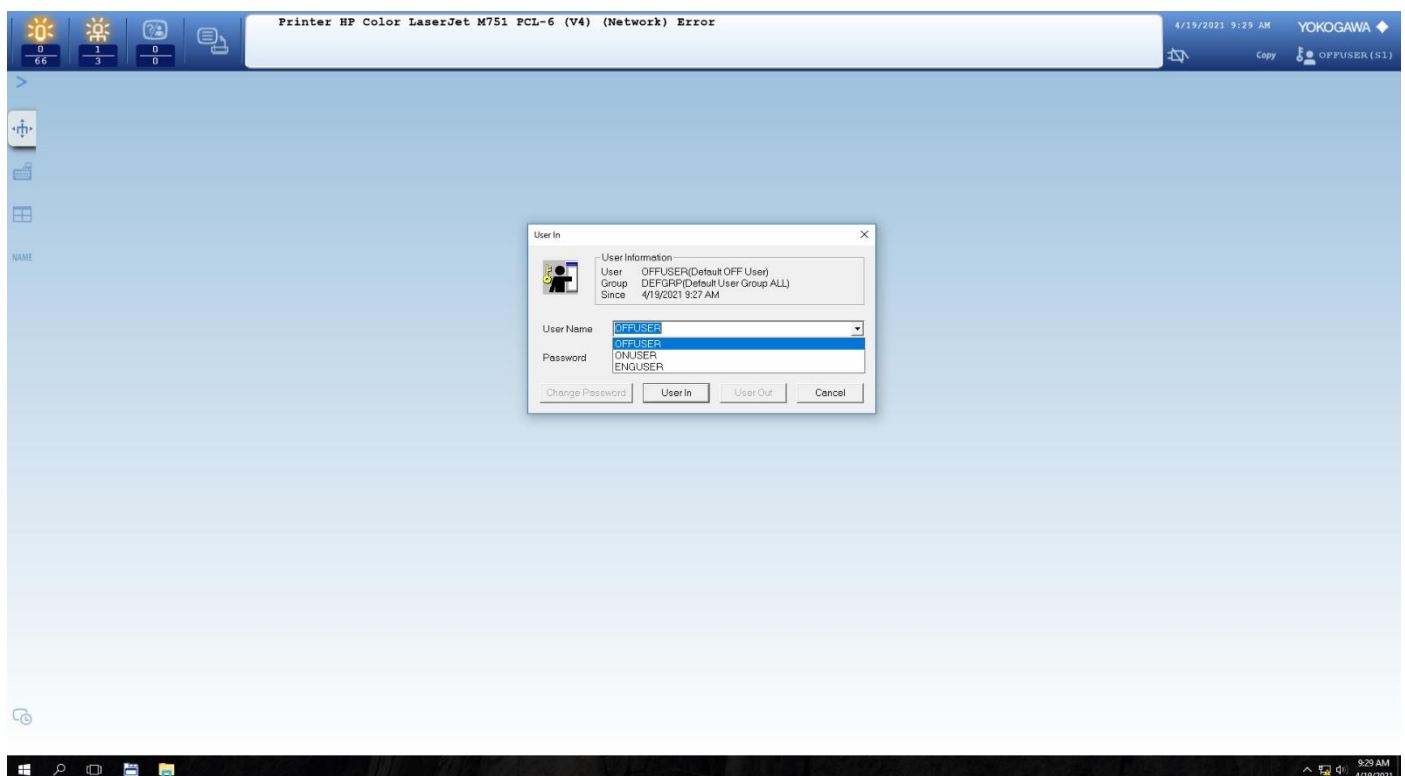


*Figure 4: User-in window that allows different users to login and exercise their corresponding privilege level*

## 8- Overview Toolbox

This toolbox gives access to the different graphics pages used for monitoring of process parameters, as well as pages for controlling of certain parameters such as bypassing of plant securities. In addition, we can view trends of process parameters using this toolbox.

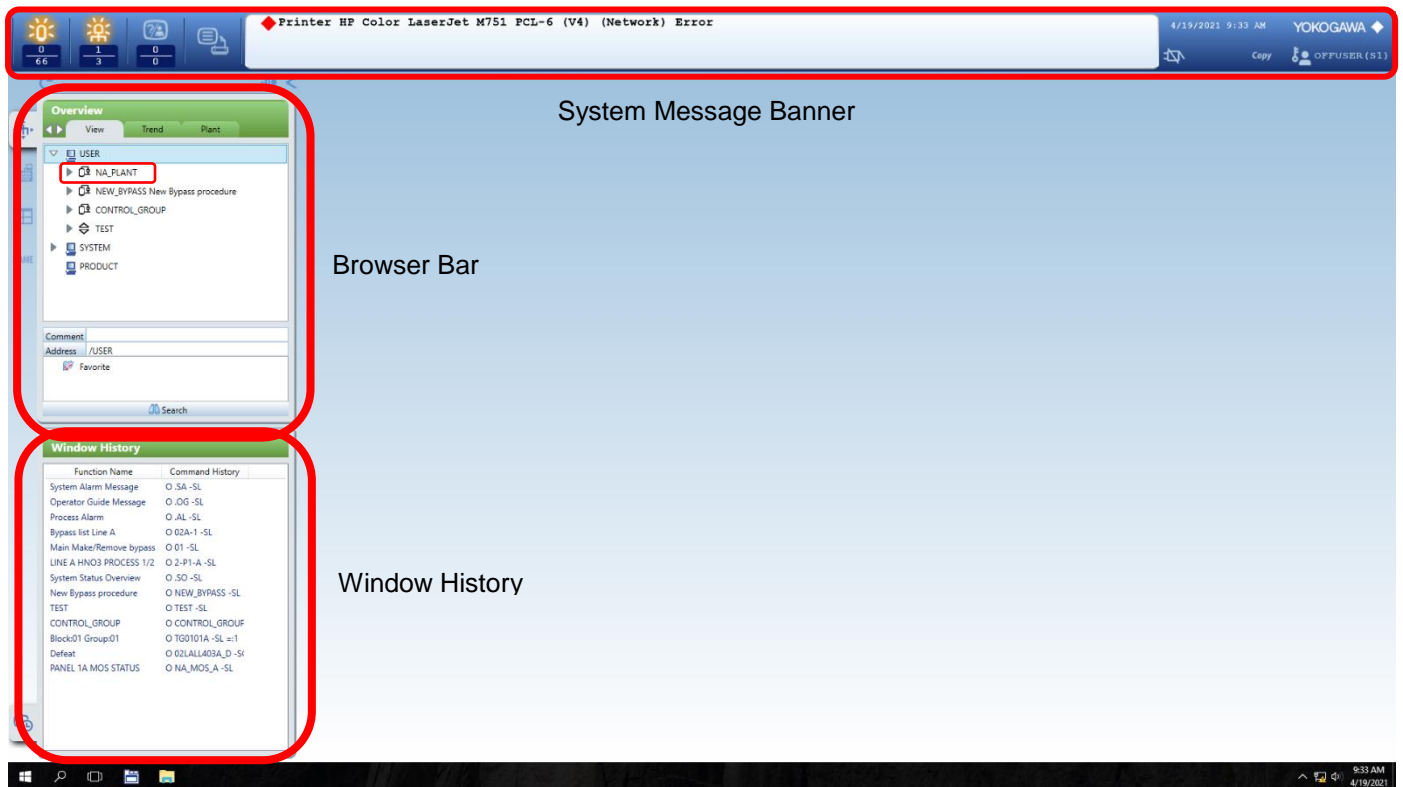The screenshots below paint an elaborate picture of the features of overview toolbox.

System Message Banner

Browser Bar

Window History

*Figure 5: Labelled home page with the overview toolbox open*

The view tab in the browser bar gives us access to all the graphics pages configured for the plant. This includes various types of pages including those for monitoring of parameters, interlock securities, alarm windows as well as bypass of securities.

The trend tab lists groups of parameters for viewing of trends in graphical form. Ways to access trends will be covered in the "TRENDS" section of this document.

Within the view tab, an expanded view of the plant (in our case NA_PLANT) will open the list of all graphics pages. Clicking on any of the page titles in the list will open that graphic page. Shown in figures 6-11 below are some of the graphic pages configured for NNA plant.
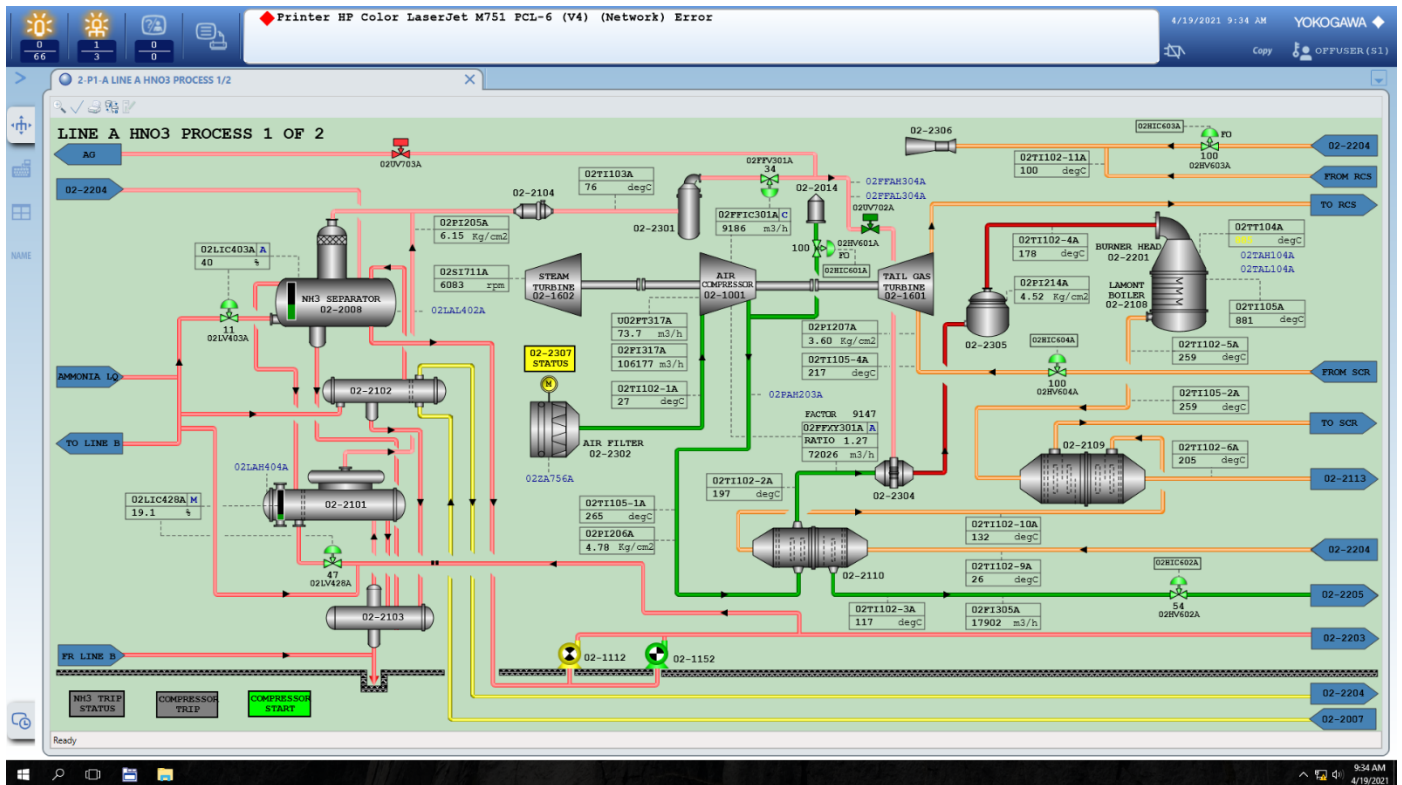
*Figure 6: Graphic page showing a drawing of the plant equipment along with live process parameters*
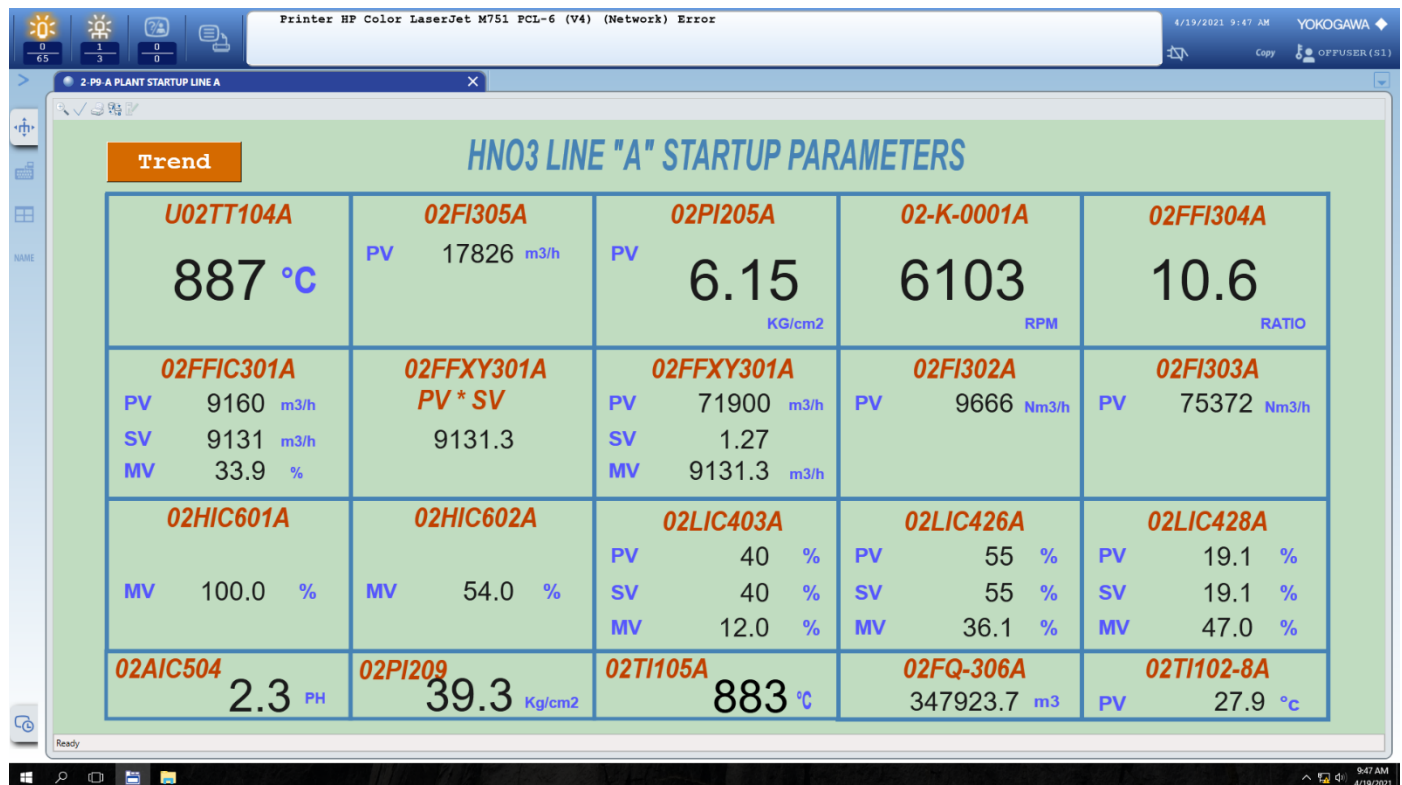


*Figure 7: Graphic page showing main startup parameters of the entire plant for easy monitoring. The trend button on top left would open the trends of each of these parameters*
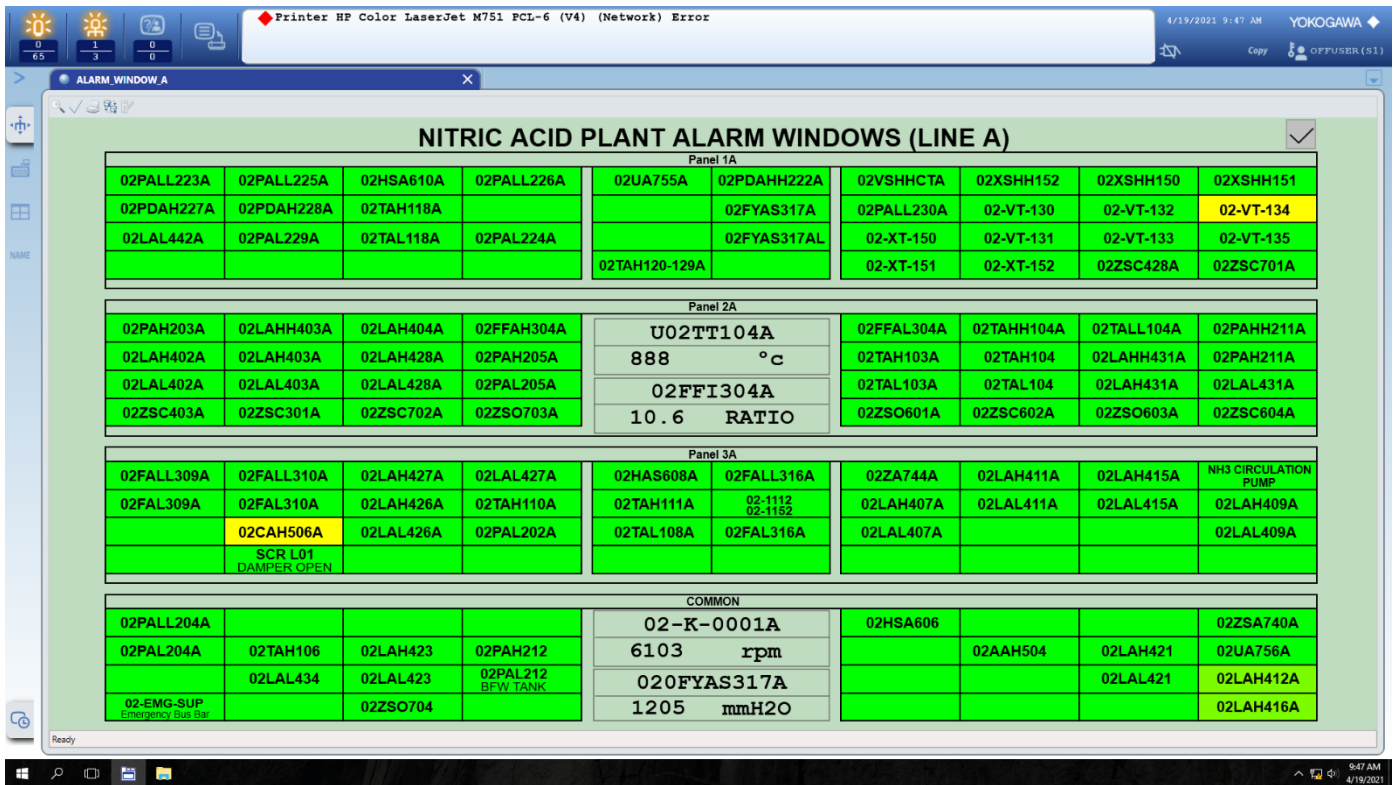
*Figure 8: Alarm window graphic page showing alarm status of major parameters*



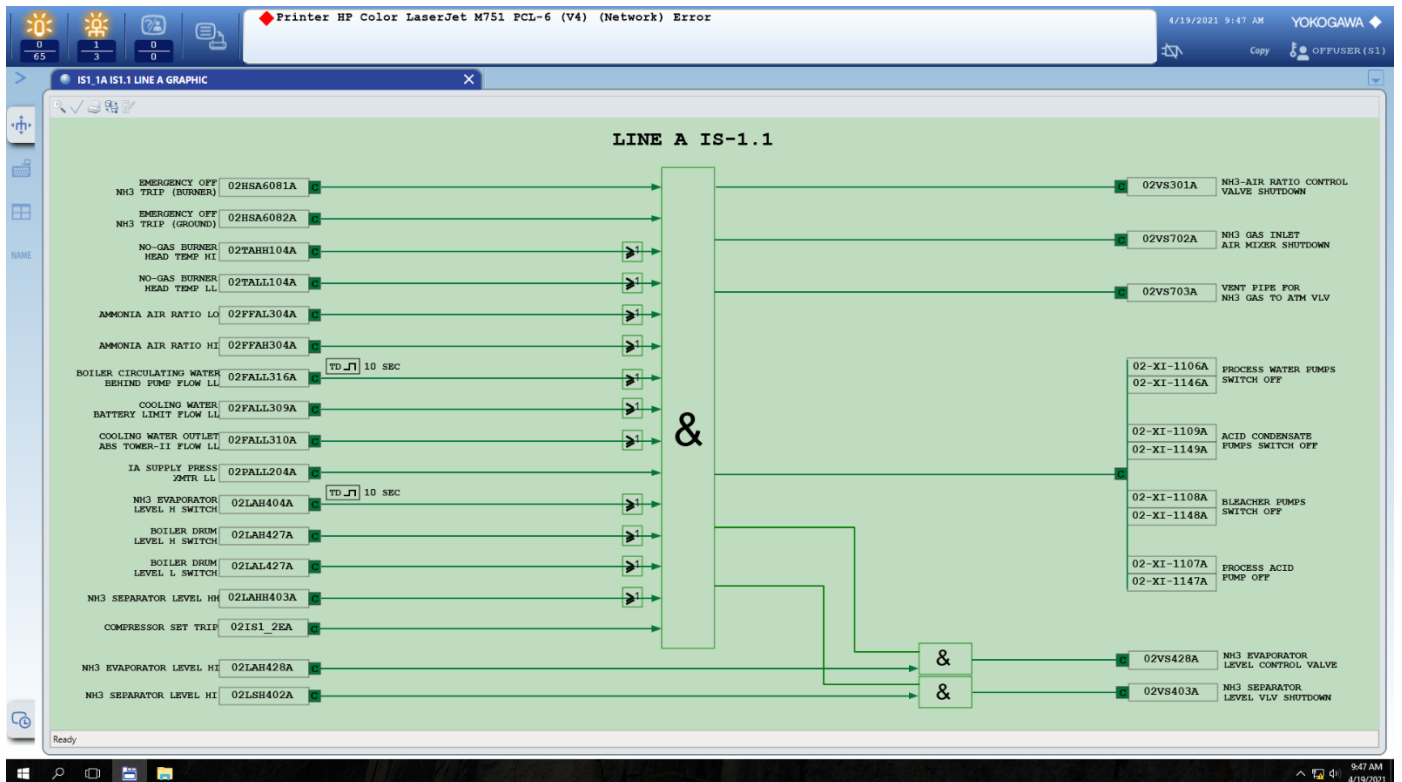*Figure 9: Custom graphic page showing vibrations taken from Bently Nevada BN3500*

*Figure 10: Graphic page showing status of interlock securities at NA Plant*
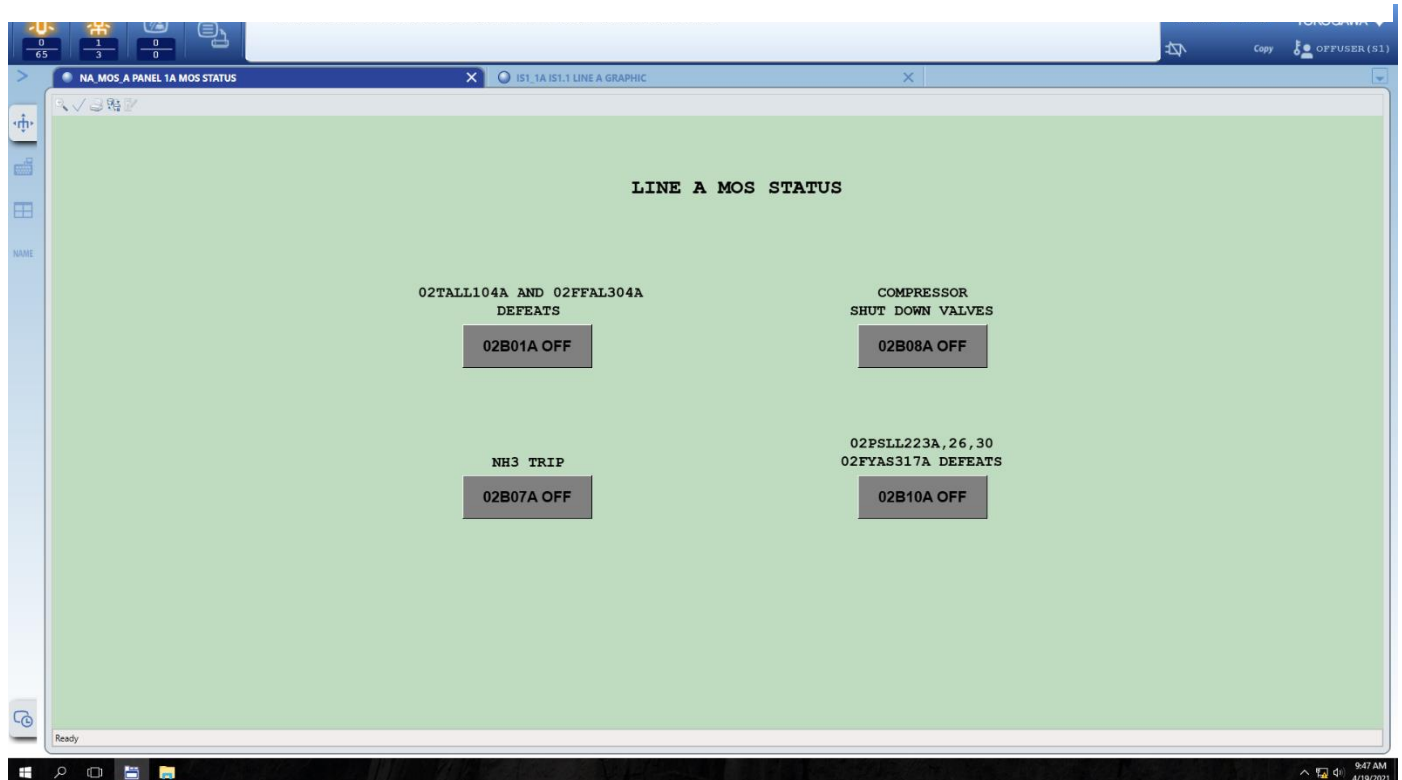


*Figure 11: Graphic showing MOS (Manual Override System) Status for some security defeats. The boardmen can turn the defeats on or off as required, by pressing the buttons on this page.*

We can locate any parameter on the process diagram of the plant and view additional details of that specific tag number such as its faceplate, tuning parameters, related process alarms and trend. We can access these features by right-clicking on any tag in the diagram as shown in the figure below.
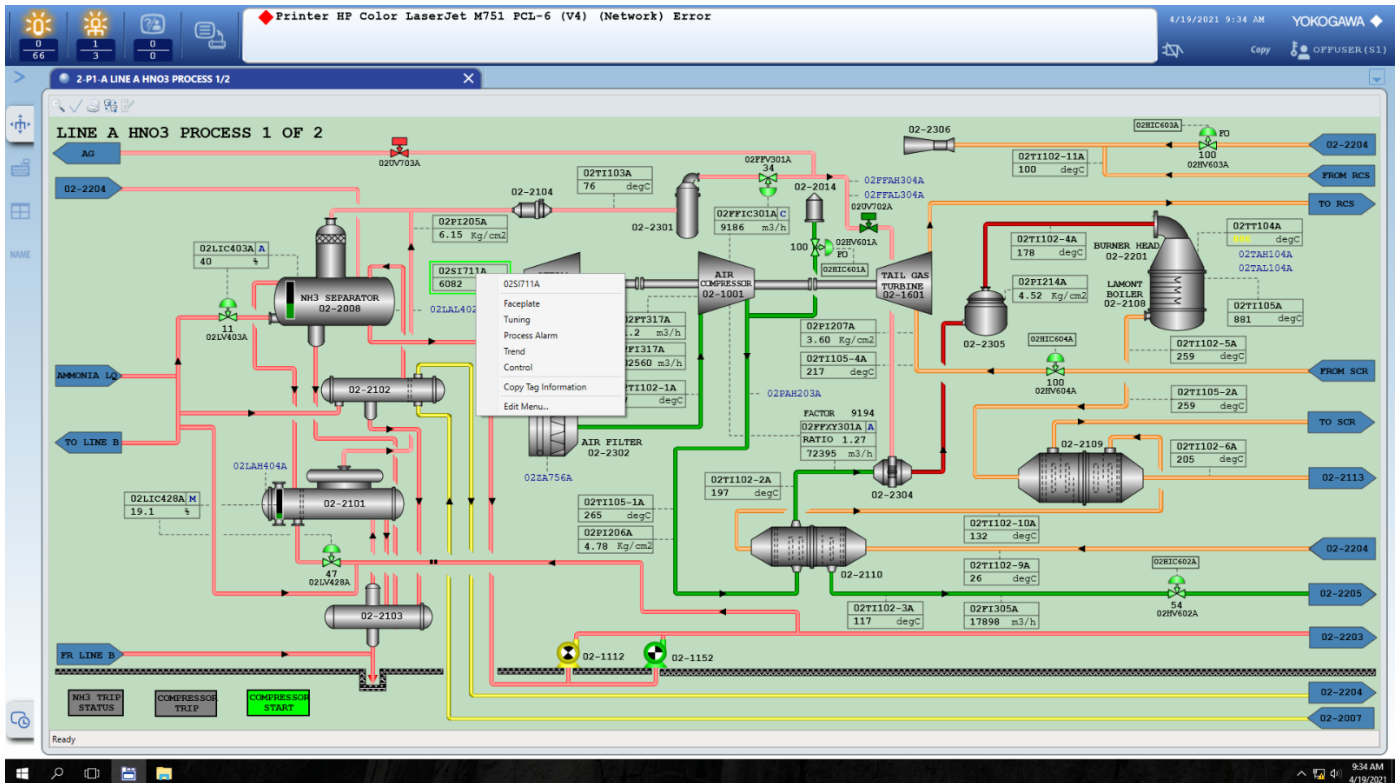


*Figure 12: Right-clicking on any tag number on the process diagram shows options for additional information regarding the tag's parameter*
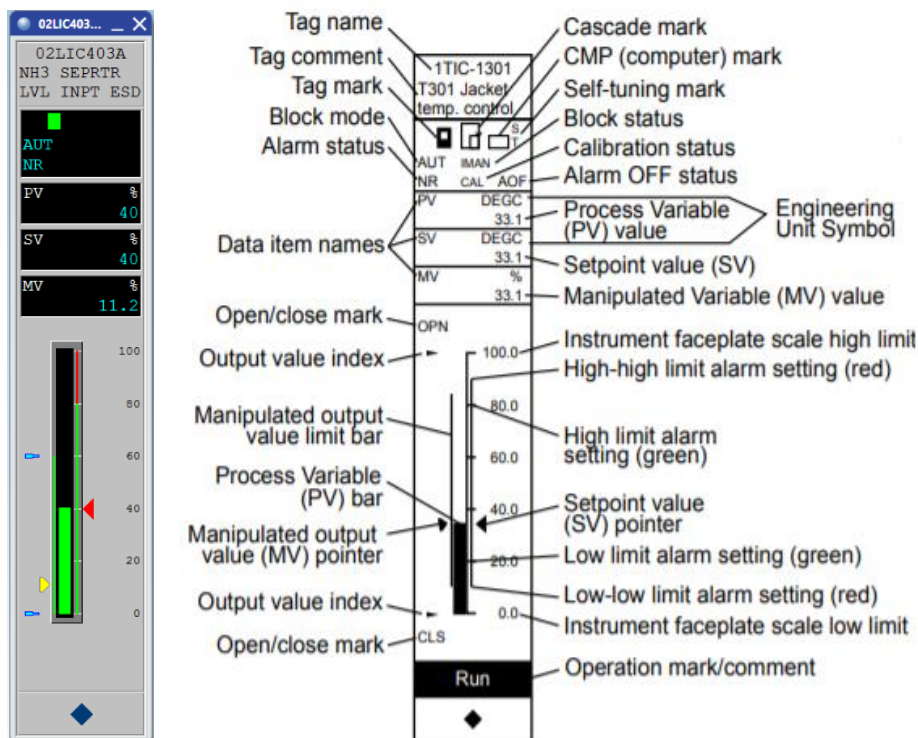


*Figure 13: The faceplate as opened through the right-click menu (left) and the different features of the faceplate labelled in detail (right)*

The boardman has the option to manually adjust certain parameters such as the mode, SV or MV from the faceplate. For this purpose, certain buttons on the faceplate come in handy. The procedure for doing this is depicted in figures 14-16 below.
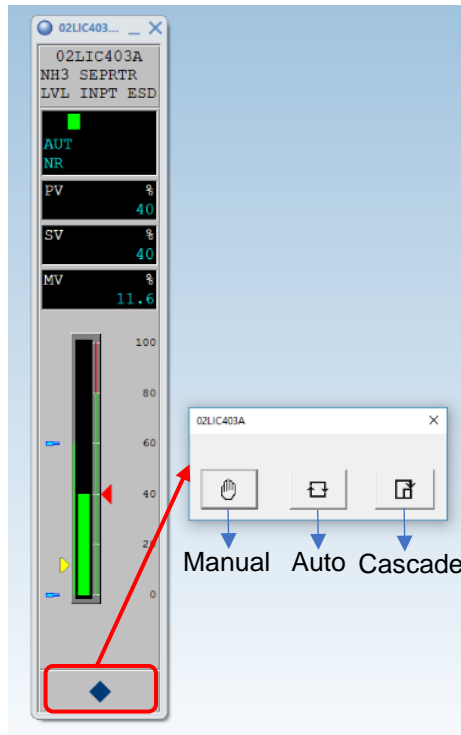


*Figure 14: By pressing the diamond symbol button below, we can change the mode of the loop*
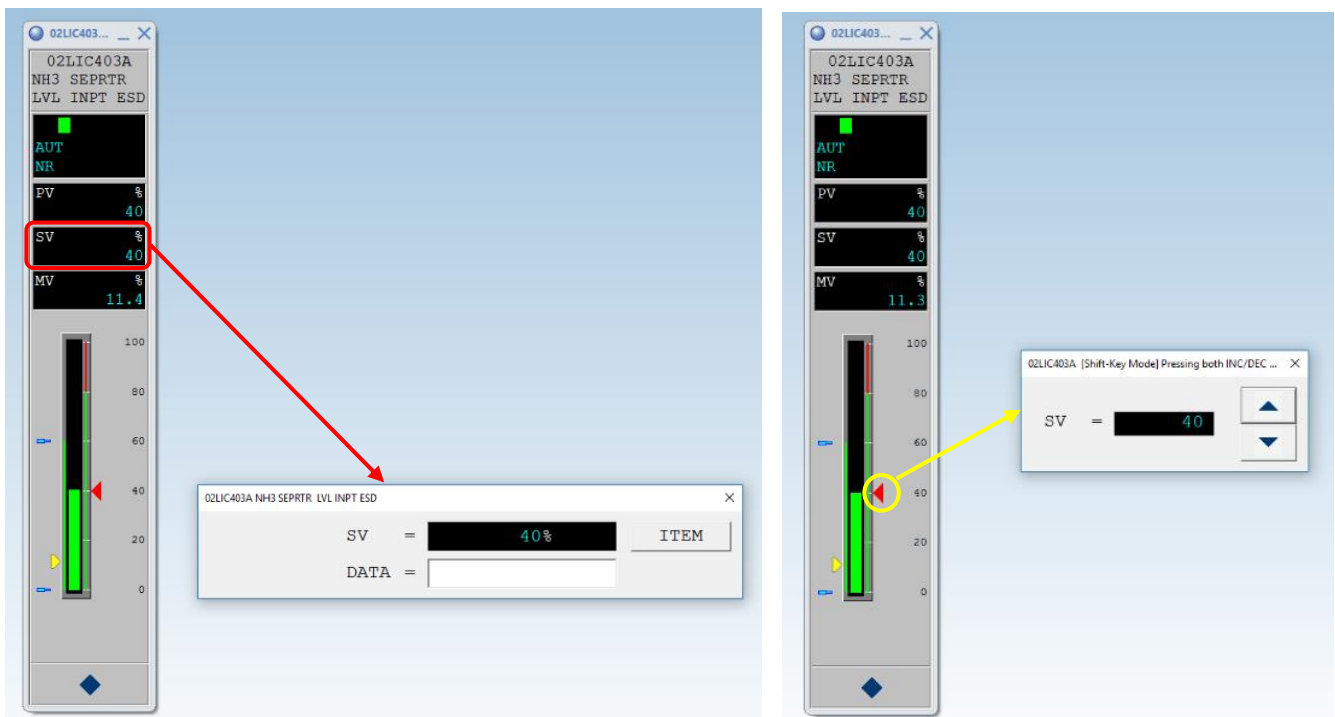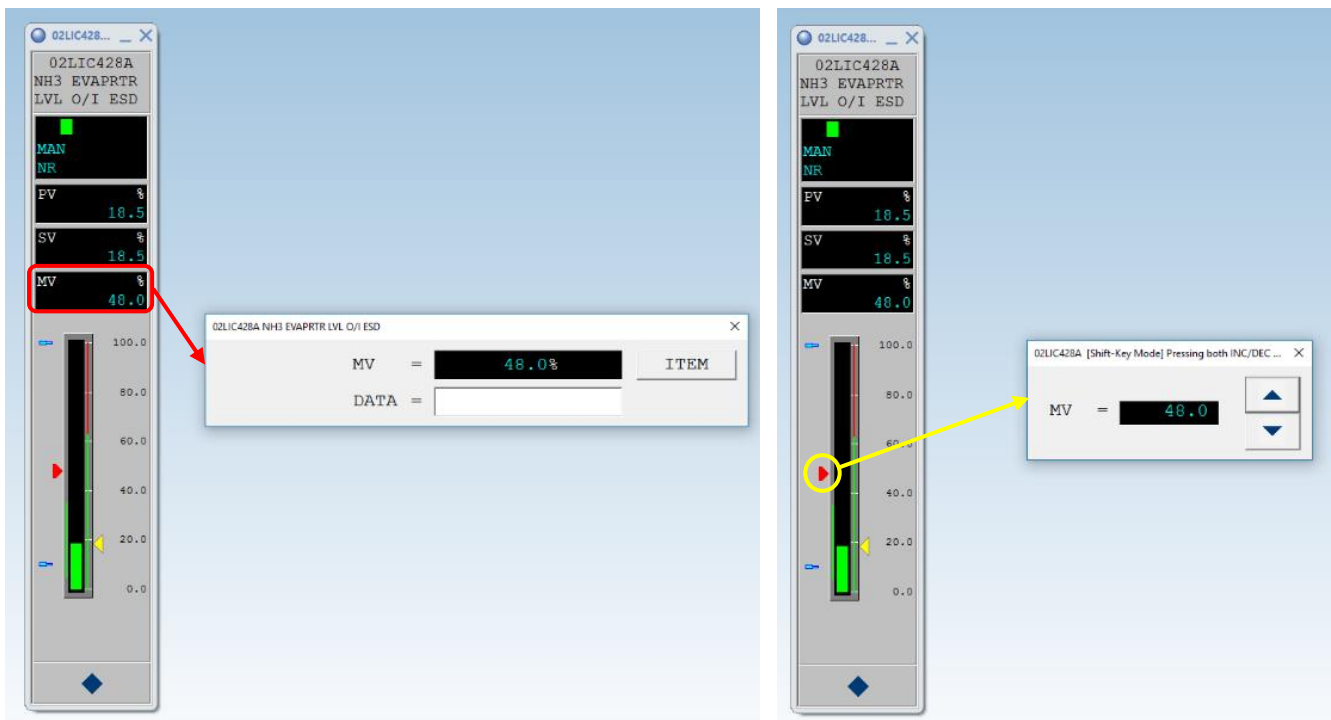


*Figure 15: Click on SV window on the faceplate to open the window where you can enter desirable SV value in the DATA field (left) or click on SV pointer to open the window where you can increase or decrease SV value in small steps (right). SV value is only adjusted when loop is in automatic mode.*

*Figure 16: Click on MV window on the faceplate to open the window where you can enter desirable MV value in the DATA field (left) or click on MV pointer to open the window where you can increase or decrease MV value in small steps (right). MV value is only adjusted when loop is in manual mode. Manual adjustment of MV value is frequently used for stroke checking of control valves.*

The tuning view is another important feature accessible through the right-click menu on any tag in the process diagram. The details of this window are shown in the figures below.
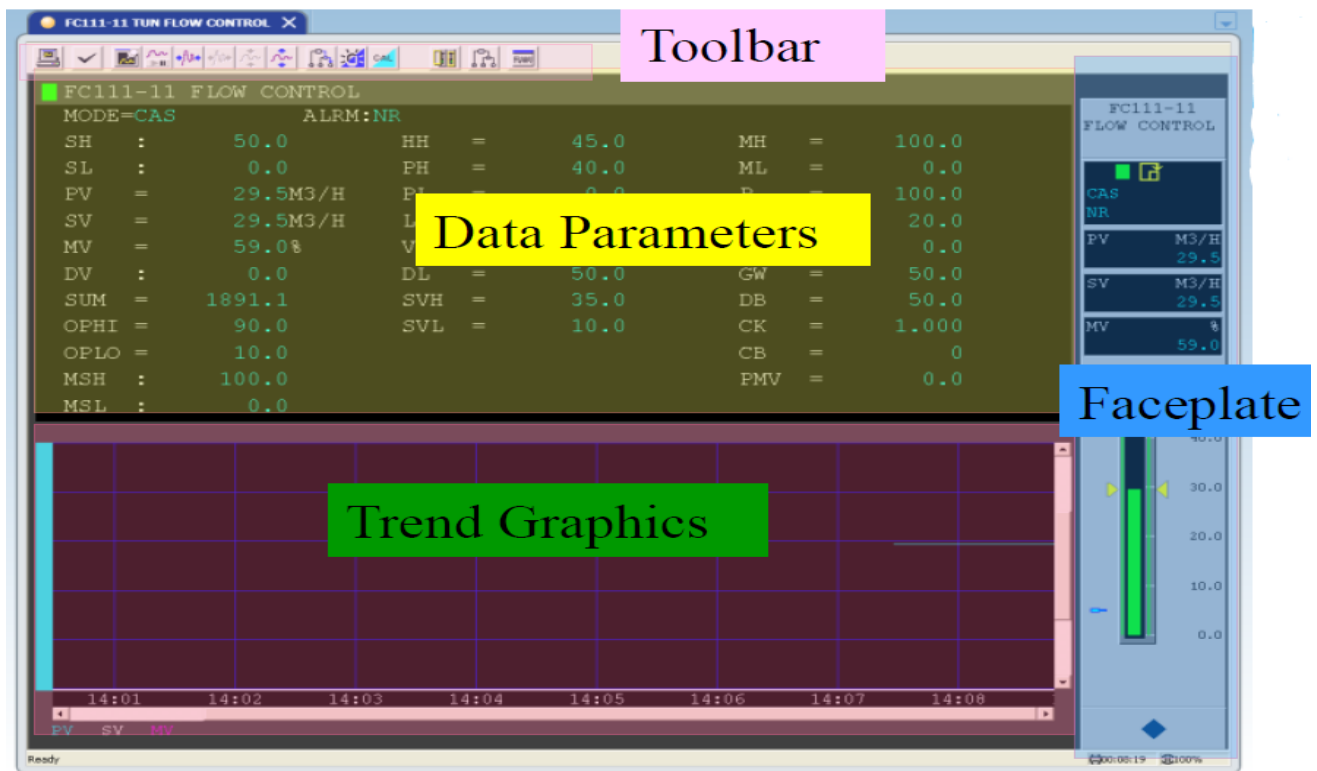


*Figure 17: A tuning parameters window showing tuning parameter values along with the faceplate and trend graphs of PV (process value), SV (setpoint value) and MV (manipulated value)*
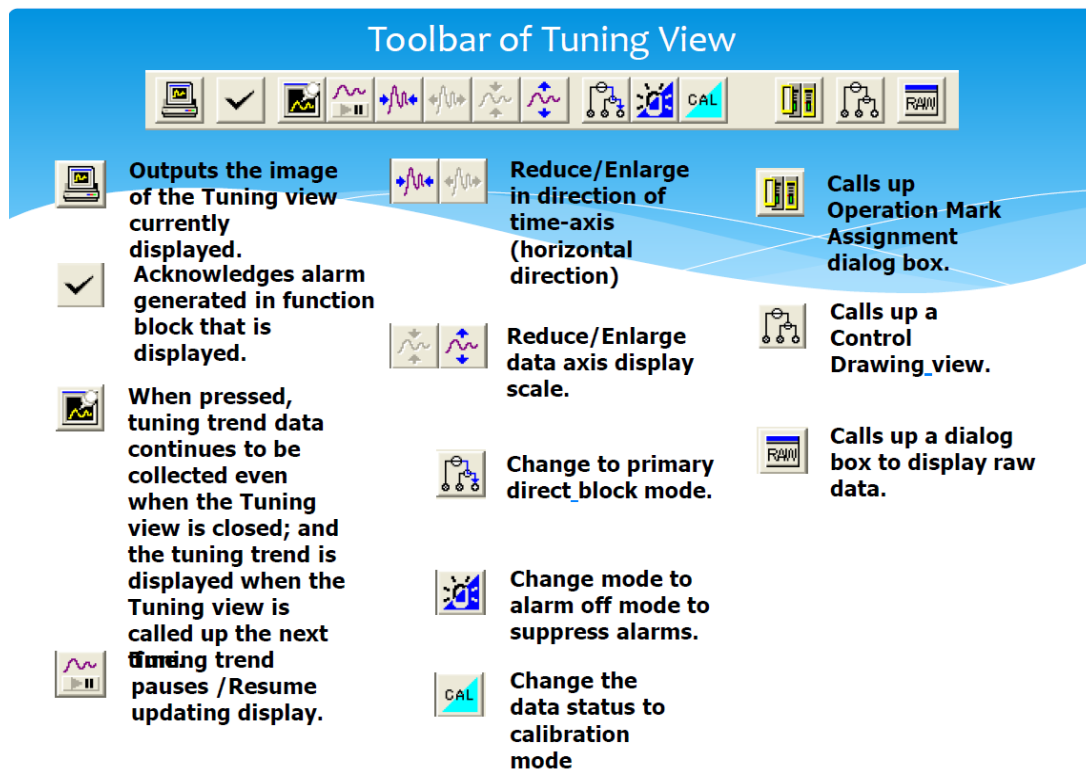
Figure 18: Information about the buttons on toolbar of tuning view

## 9- Preset Menu Toolbox

The present menu toolbox can be configured to contain certain functions that can be simply called by a preset menu.

## 10- Tool Button Toolbox
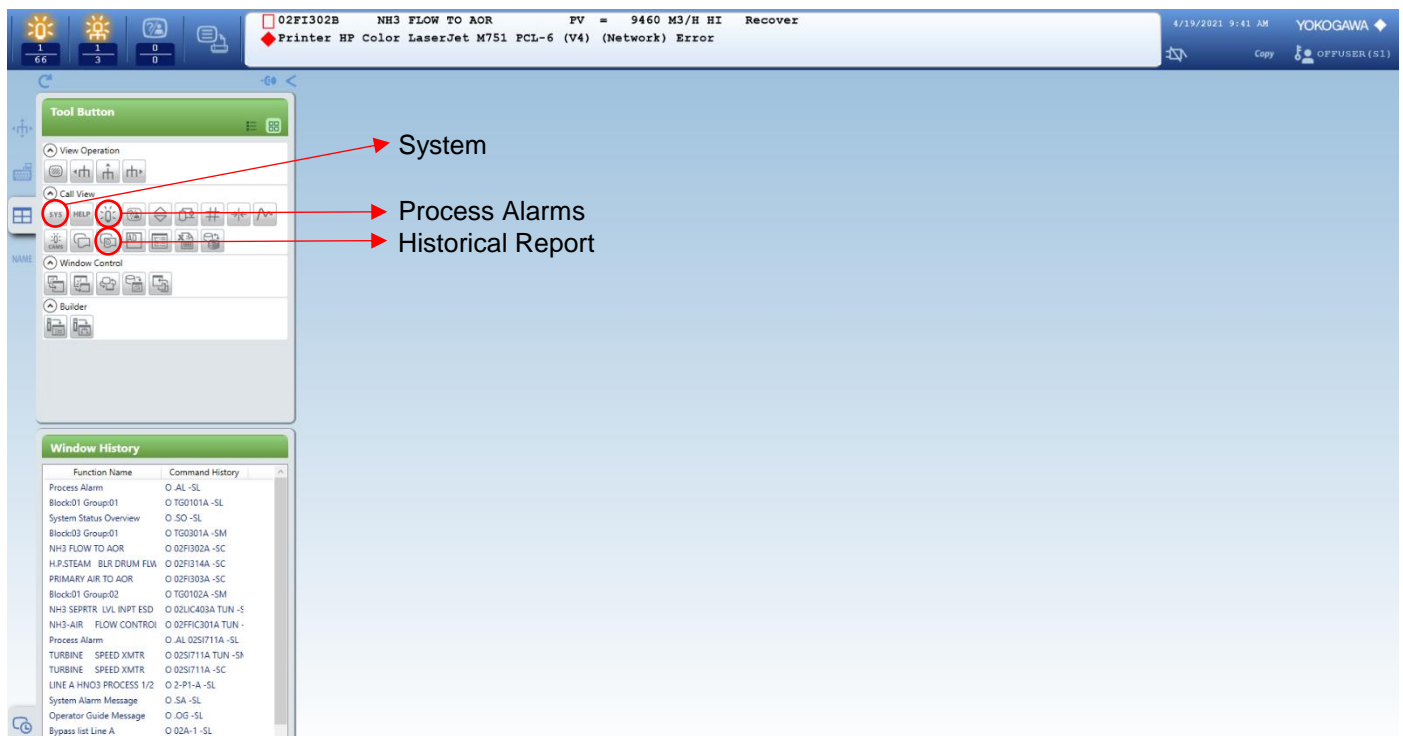


Figure 19: Overview of the Tool Button Toolbox

The tool button toolbox contains many useful tools categorized into four main categories: view operation, call view, window control and builder. The call view category contains some important functions from the operational perspective that will be discussed here. Window control contains some general tools regarding resizing and orientation of windows within Centum VP whereas the builder contains functions pertinent to design and editing of graphic windows.

*Note:* *If at any point you do not know what function a specific button in Centum VP performs, simply place the cursor over the button to view its name.*

Three important buttons under call view are system, process alarms and historical report. Process alarms performs the same function as discussed earlier i.e., it opens the CAMS for HIS to list down the process alarms. The other two buttons are discussed as follows:

### System

The system feature is a useful tool to monitor and check the health of the entire network, including the FCS and SCS (ESD) controllers, engineering workstation and all HIS, and the intra-network communication between each pair of devices. Figures 20-22 show how to navigate through the system tool.
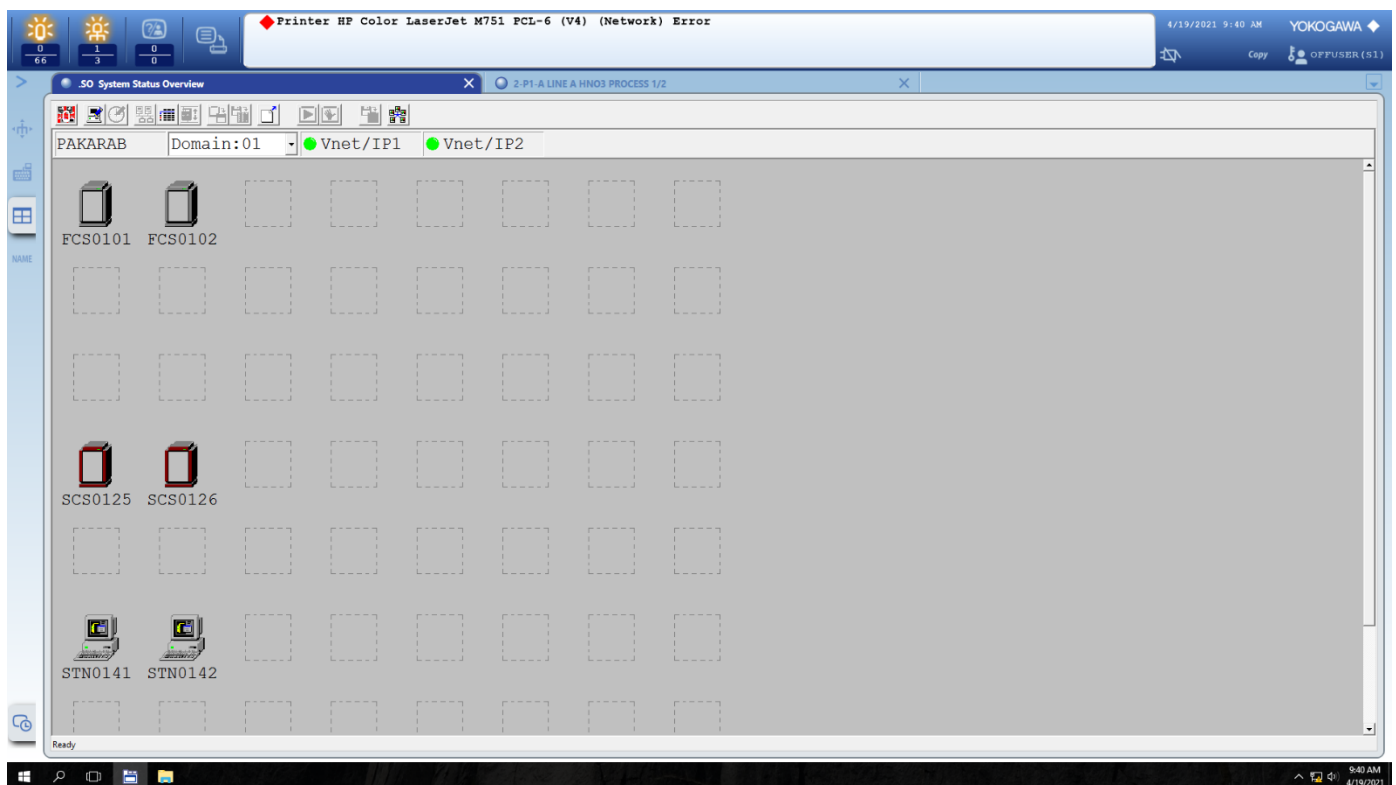


*Figure 20: The system status overview window showing the different stations in the network. You may double-click on any station to open its detailed information page*
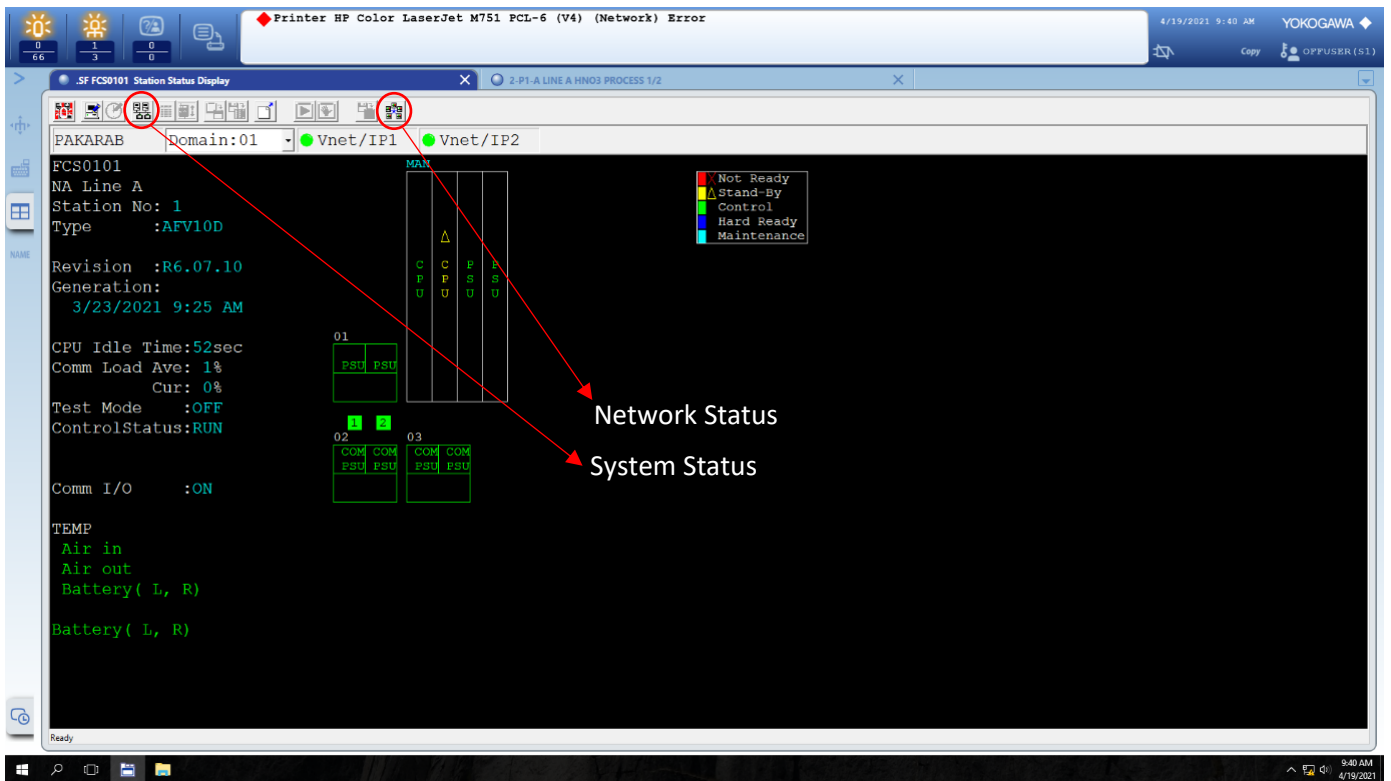
*Figure 21: The station status display showing the details of FCS0101 controller including status of its CPUs and PSUs etc. Double-clicking the CPU/PSU opens the detail of further breakdown of the equipment. The system status button opens the window shown in Fig 20 whereas the network status button opens the window shown in Fig 22.*
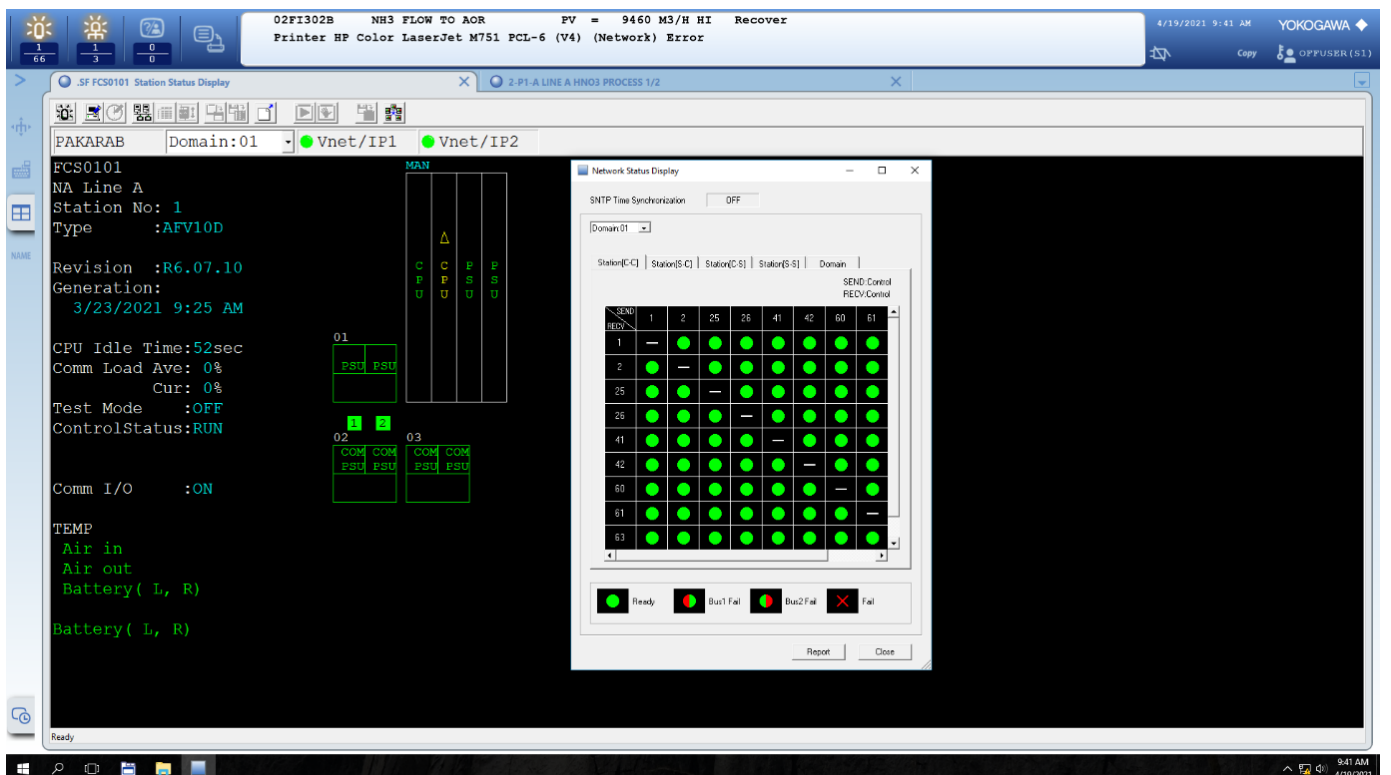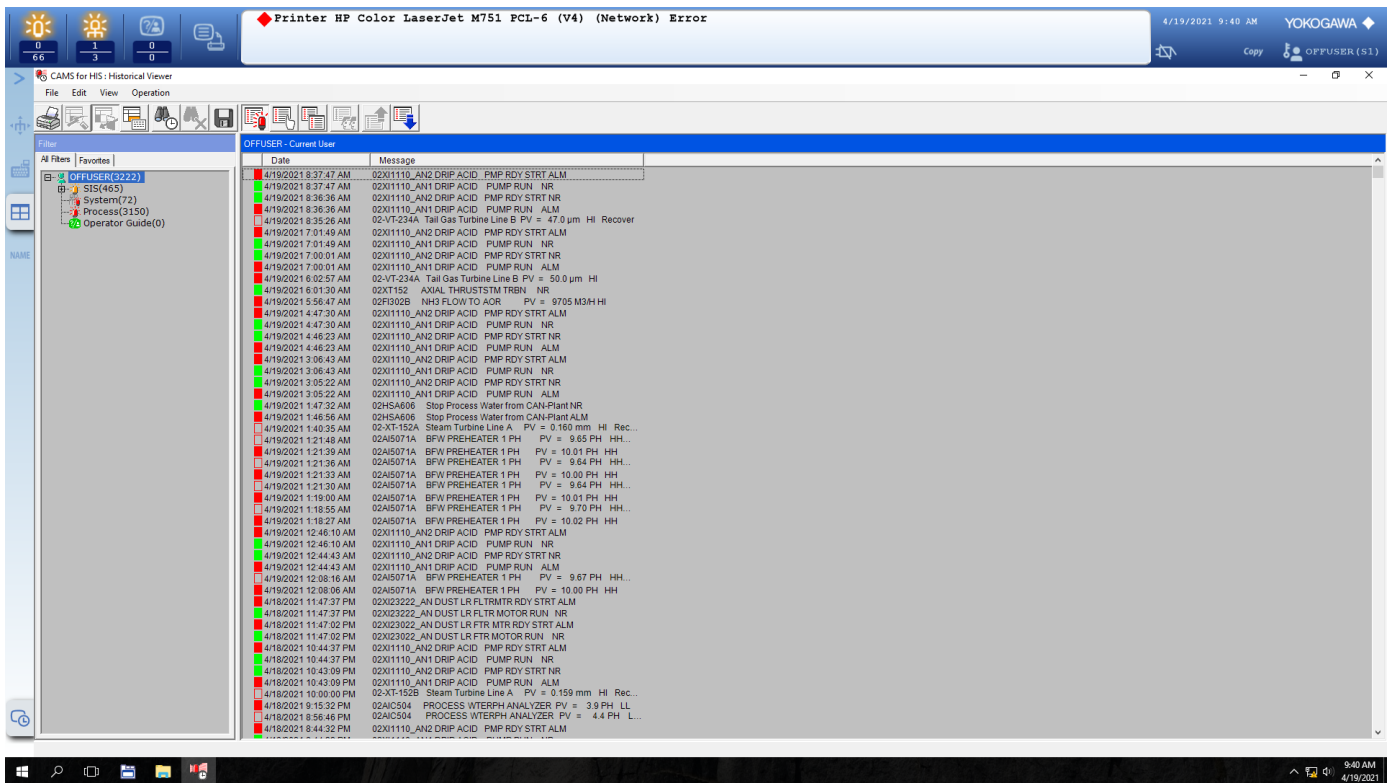


*Figure 22: The network status display window showing the communication status between each pair of stations in the network.*

## Historical Report

The historical report button opens a detailed report showing all alarms that occurred in reverse chronological order.



*Figure 23: Historical Report in the CAMS for HIS*

## 11- Name Input Toolbox

The name input toolbox is used to search any tags or windows by name. It is a convenient way to search your required tag. When you call the tag, its faceplate opens. This process is shown in Fig 24-25.
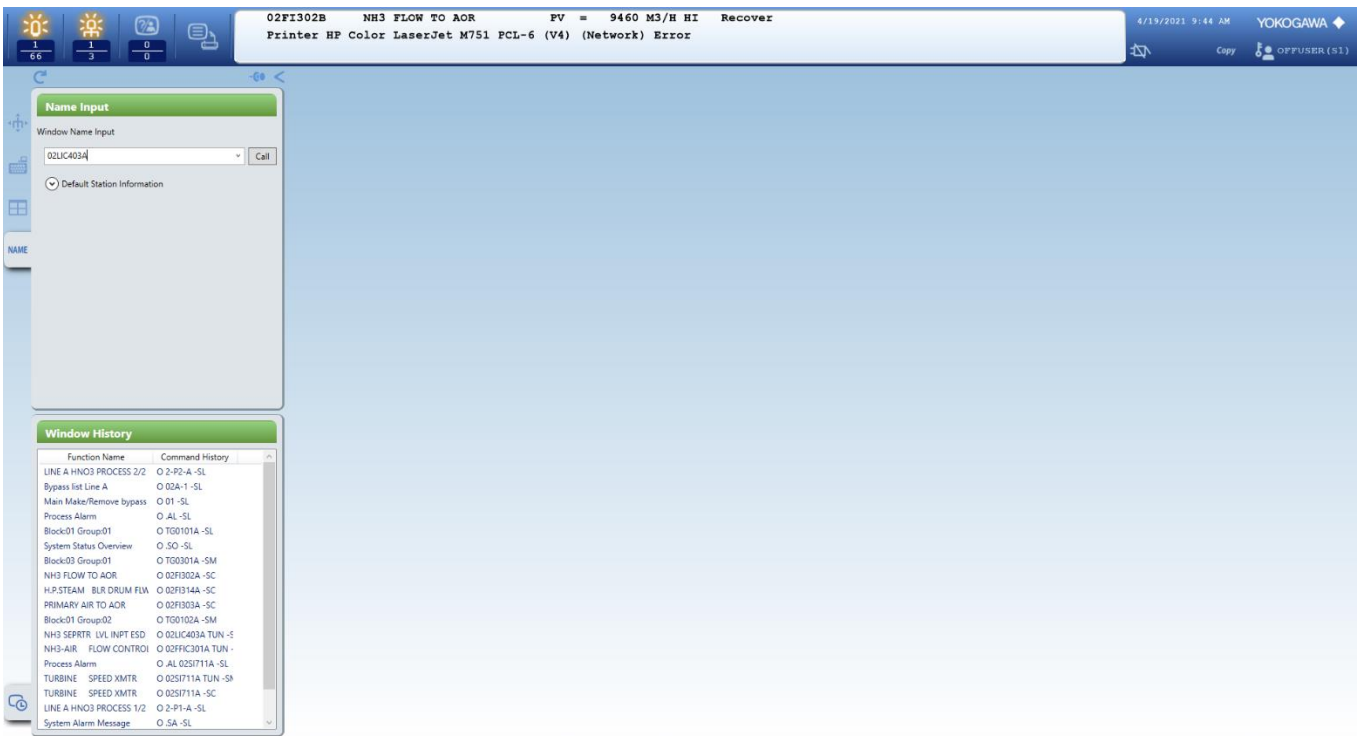
*Figure 24: Calling a tag using the name input toolbox.*



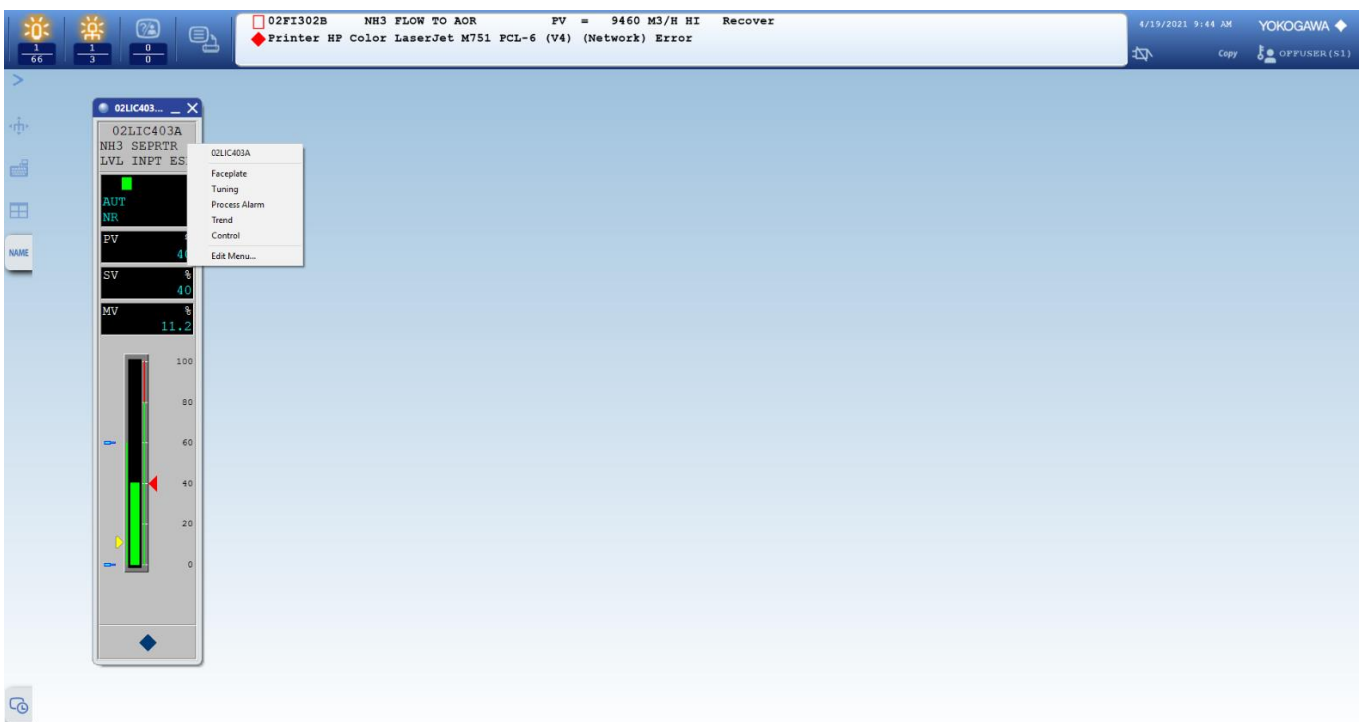*Figure 25: After calling a tag using the name input toolbox, its faceplate opens. Upon right-clicking on the faceplate, the same menu opens as the one on the process diagram. This menu can be used to access tuning parameters, process alarms and trend.*

## 12- Windows History Toolbox

The windows history toolbox is used to display the history of user and system actions in the Centum VP as shown in Fig 5.

# TRENDS

There are three main ways to open the real-time trend for a specific plant parameter, which are explained as follows:

**i)** **Through Graphic Page:** One way is to find the desired tag number on the process diagram graphic page accessed through the overview toolbox under the view tab. Right-clicking on the tag will show a menu as depicted in Fig 12. The trend option can be clicked to view the corresponding trend.

**ii)** **By Calling Faceplate in Name Input Toolbox:** Using the name input toolbox, we can call the faceplate of the desired tag. Right-clicking on the faceplate will show a menu as depicted in Fig 25. The trend option can be clicked to view the corresponding trend.

**iii)** **Through Trend Tab in Overview Toolbox:** The trend tab in the overview toolbox contains customized groups of plant parameters whose trends are grouped together as per operational requirement. Clicking on any of the parameters in these groups opens the corresponding faceplate, through which we can access the group of trends. The details are shown in the following figures.

*Figure 26: The trend tab in the overview toolbox contains groups of parameters whose trends can be viewed together.*
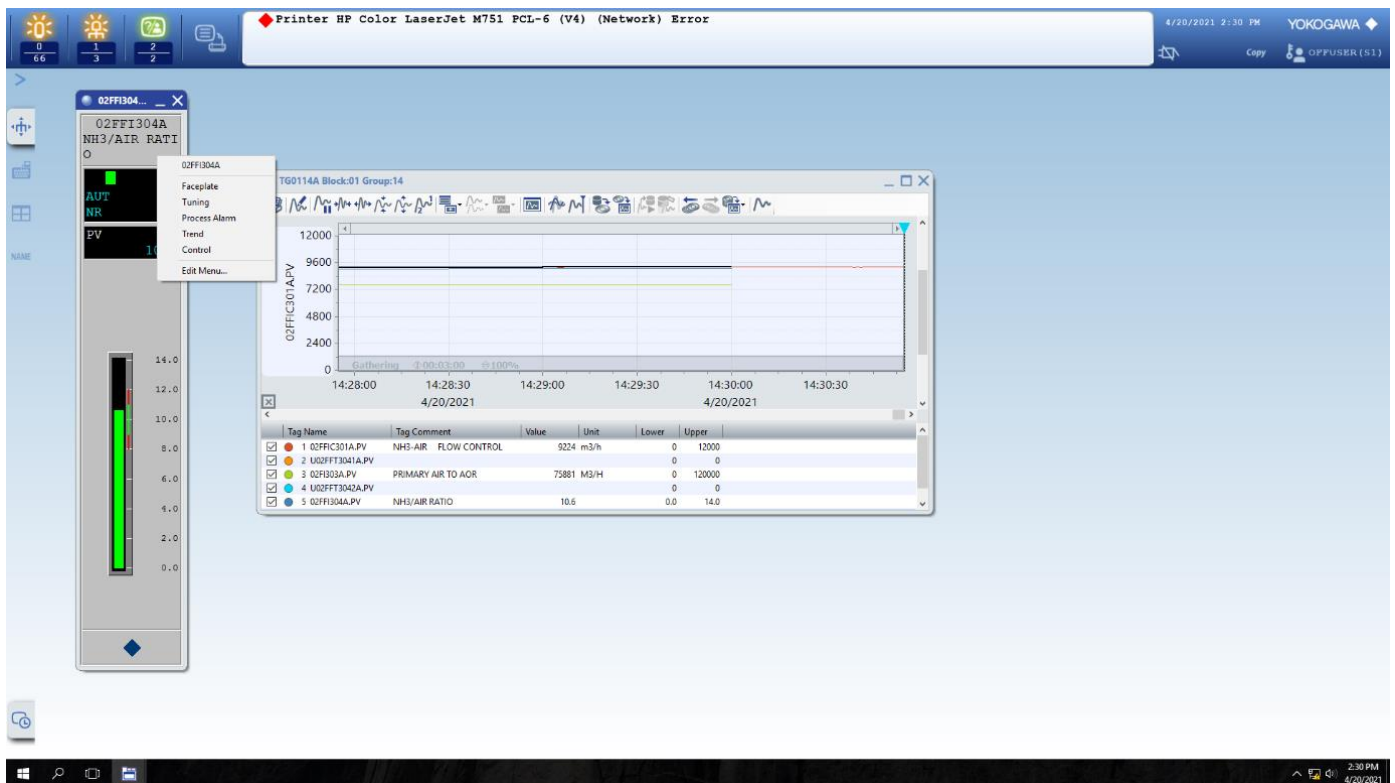


*Figure 217: Clicking any parameter from the group in the trend tab opens its faceplate. Right-clicking on the faceplate and selecting trend from the menu opens the trend window for the group. This contains the trends of all parameters in the group.*

The different features in the trend window are explained in the figures below.
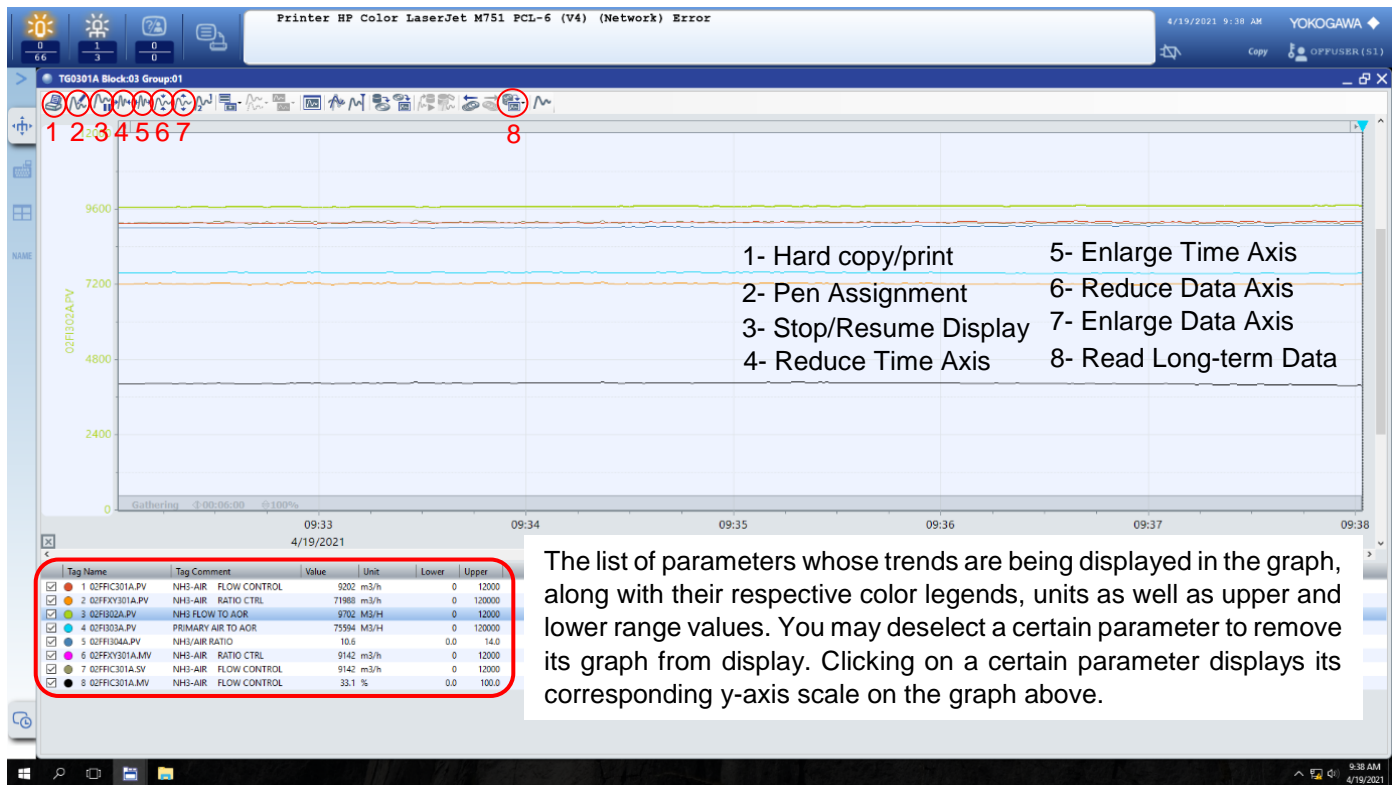


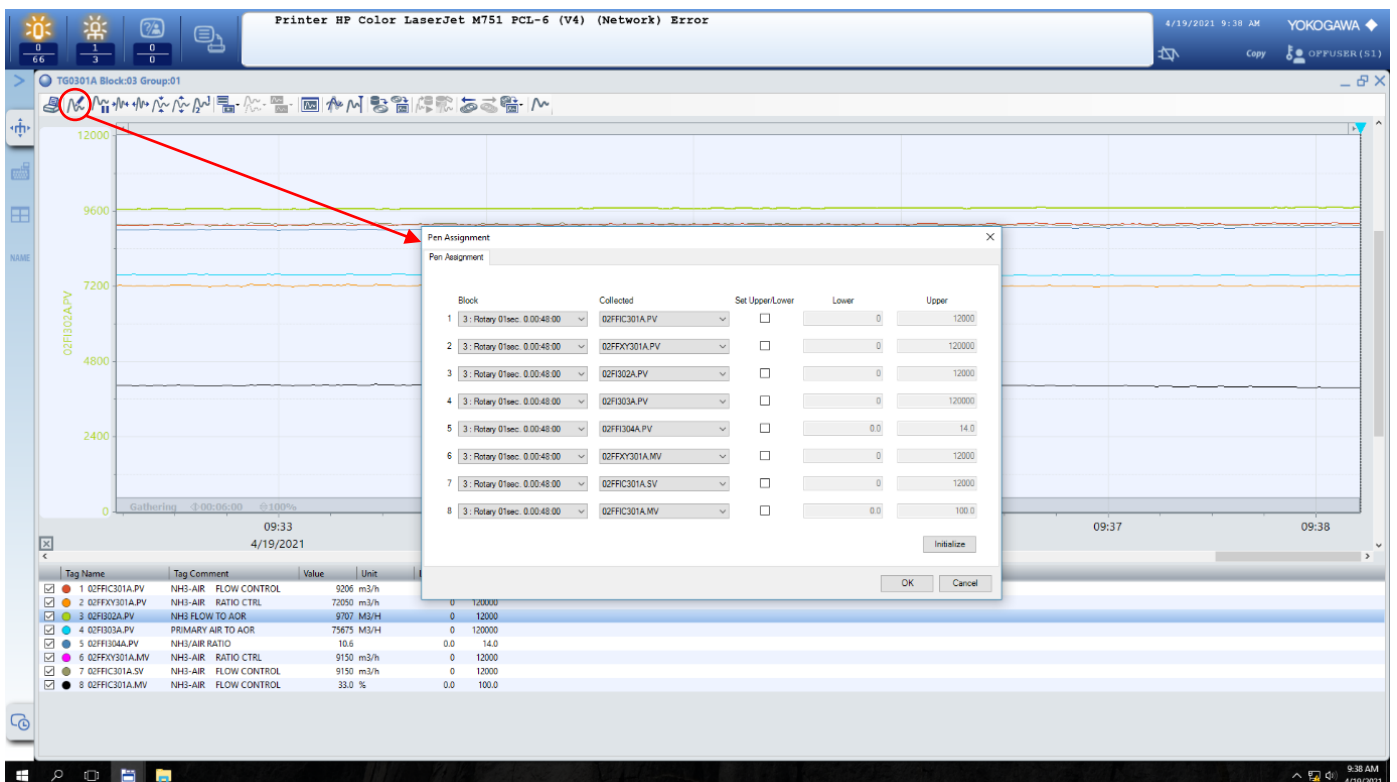*Figure 28: The trend window along with its different features explained*



*Figure 29: The pen assignment feature in the trend window allows us to customize the group of parameters whose trends we want on display. We can choose parameters from different blocks of second, minute or hour trends.*

There are two options for reading long term data in parameter trends. One option is to select the corresponding data file for display. (In our case at NNA, each file contains the trend for a 3-hour window). The second option is to specify the date and time in the 'set time' option of the 'read long-term data' button for the start and end of the required trend. The process is explained through figures 30-32.
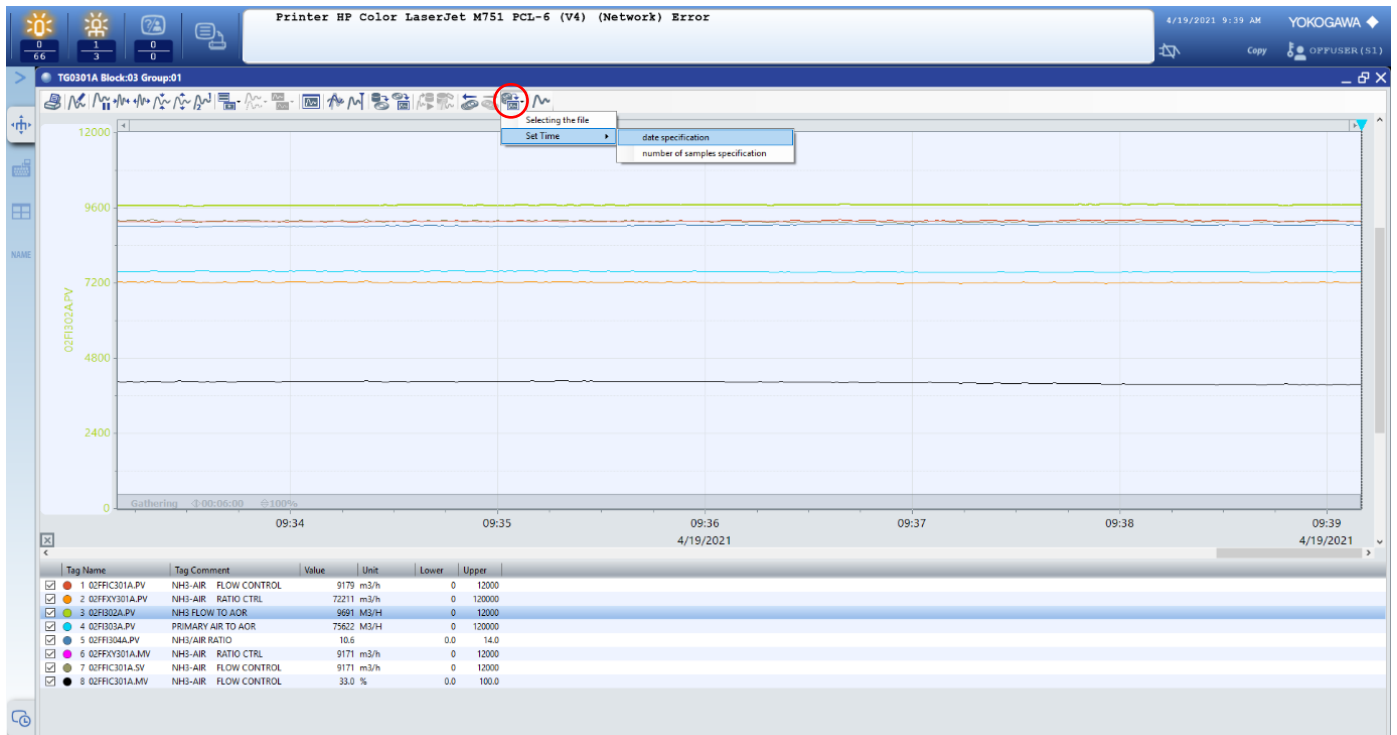


*Figure 30: The 'read long-term data' button has two options: to select a file or to set the required time and date specification.*
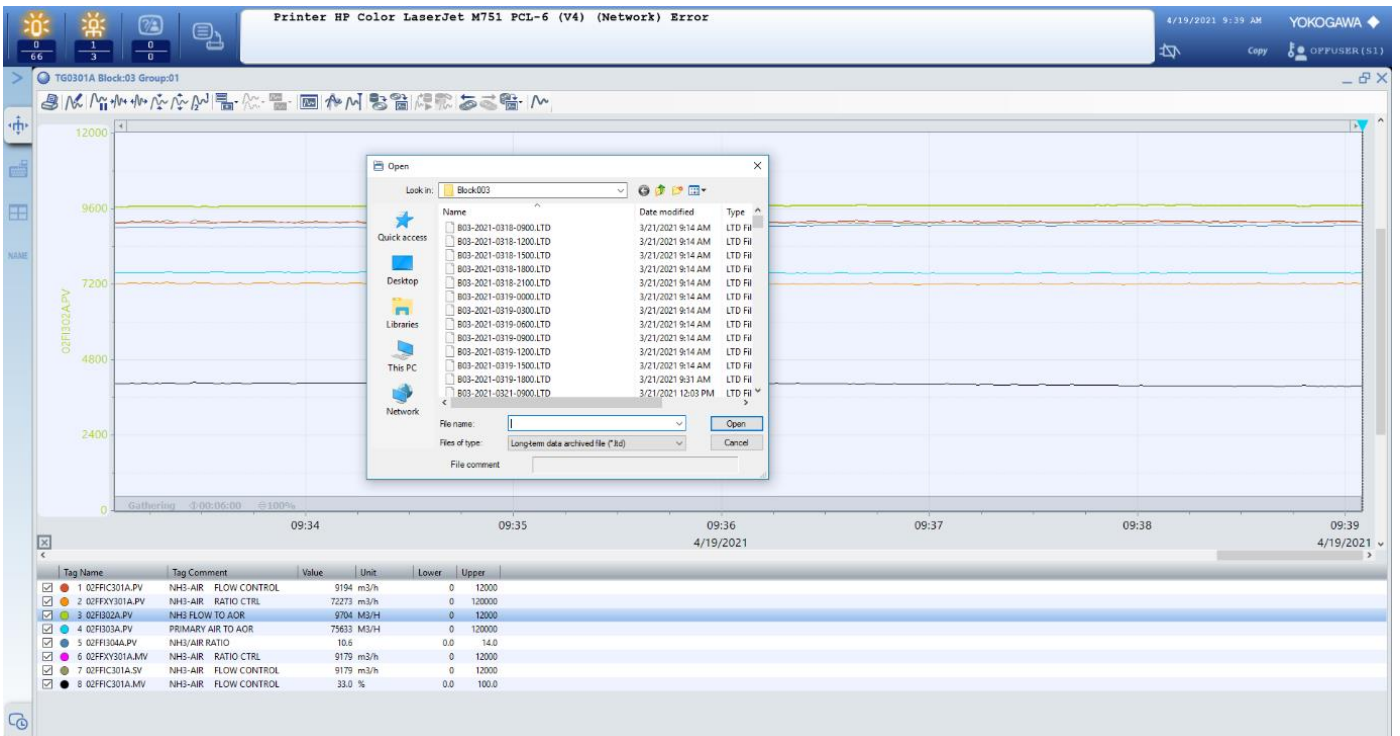
*Figure 31: Choosing the 'selecting the file' option opens a tab to browse for the required file. In our case at NNA, a backup of the trends is taken every 3 hours.*
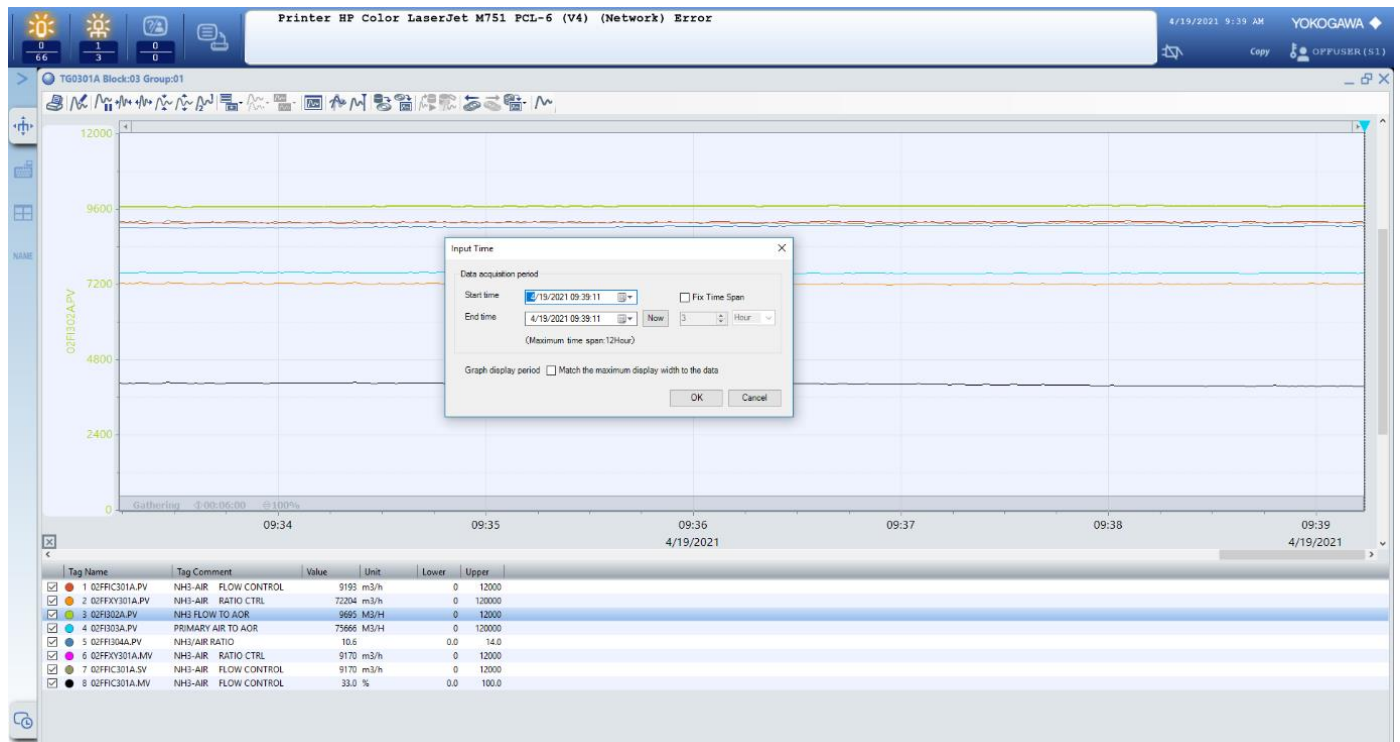


*Figure 32: Choosing the 'date specification' in the 'set time' option of 'read long-term data' button allows us to specify start date and time as well as end date and time for the trend.*

# BYPASSING SECURITIES

***Note:*** *This section is specific to New Nitric Acid plant since the graphic pages discussed here for bypassing securities are customized for the said plant. The procedure for any other plant would be similar if bypassing of securities is implemented in a congruent manner.*

There are two ways to access the graphic page for bypassing plant securities. One way is to call the graphic page by its name using the name input toolbox, whereas the second way is to access the graphic page under the view tab in the overview toolbox. The process is explained in the figures below.

Keep in mind that these tripping securities have been implemented in ESD, and DCS only provides a user interface to toggle them. Any action taken to bypass or put in service a security is subsequently communicated to the ESD.



*Figure 33: Accessing the make/remove bypass page using the view tab in overview toolbox*

*Figure 34: Accessing the main make/remove bypass page from the name input toolbox. As evident in Fig 33, the name for the concerned page starts with the number '01' and so it can be called by this number from the name input toolbox.*
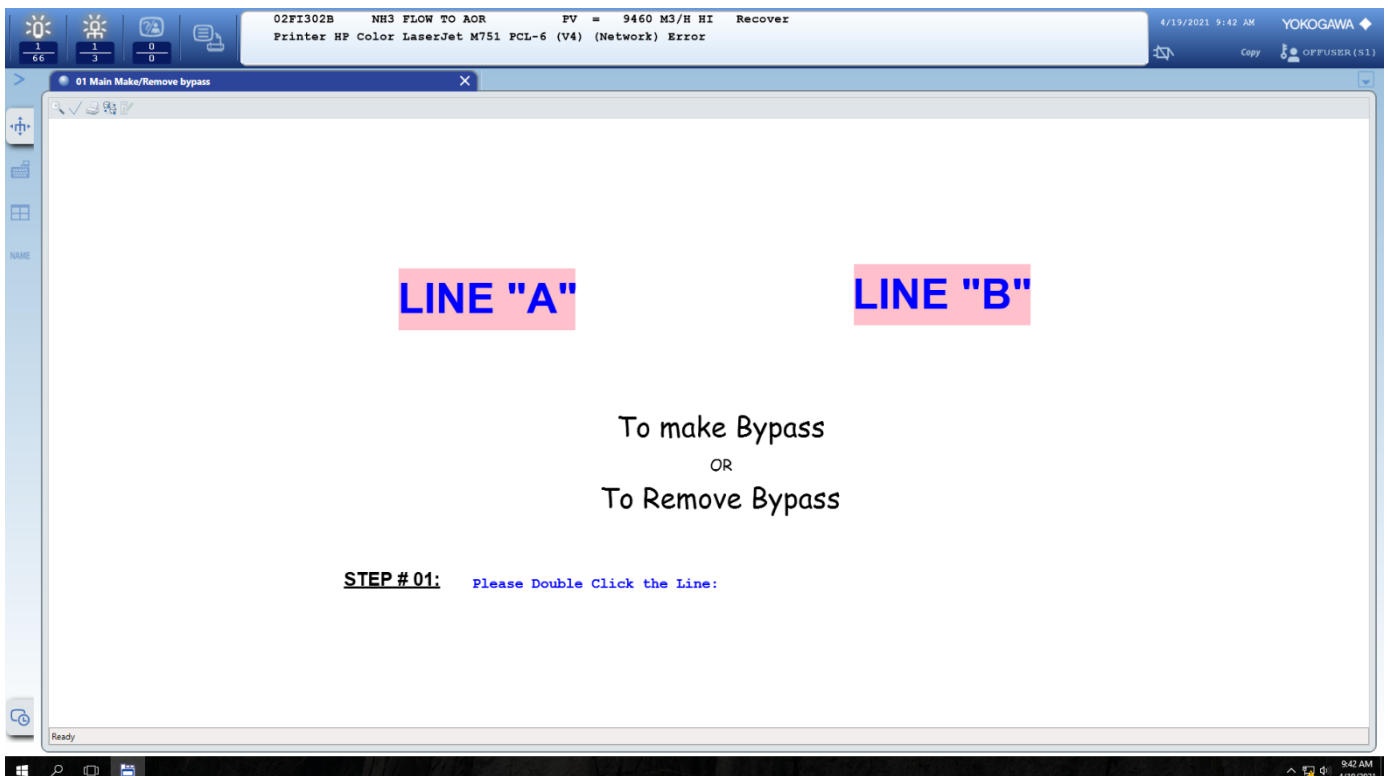


*Figure 35: The main make/remove bypass page. Double click on the line for which you have to make or remove security bypass.*
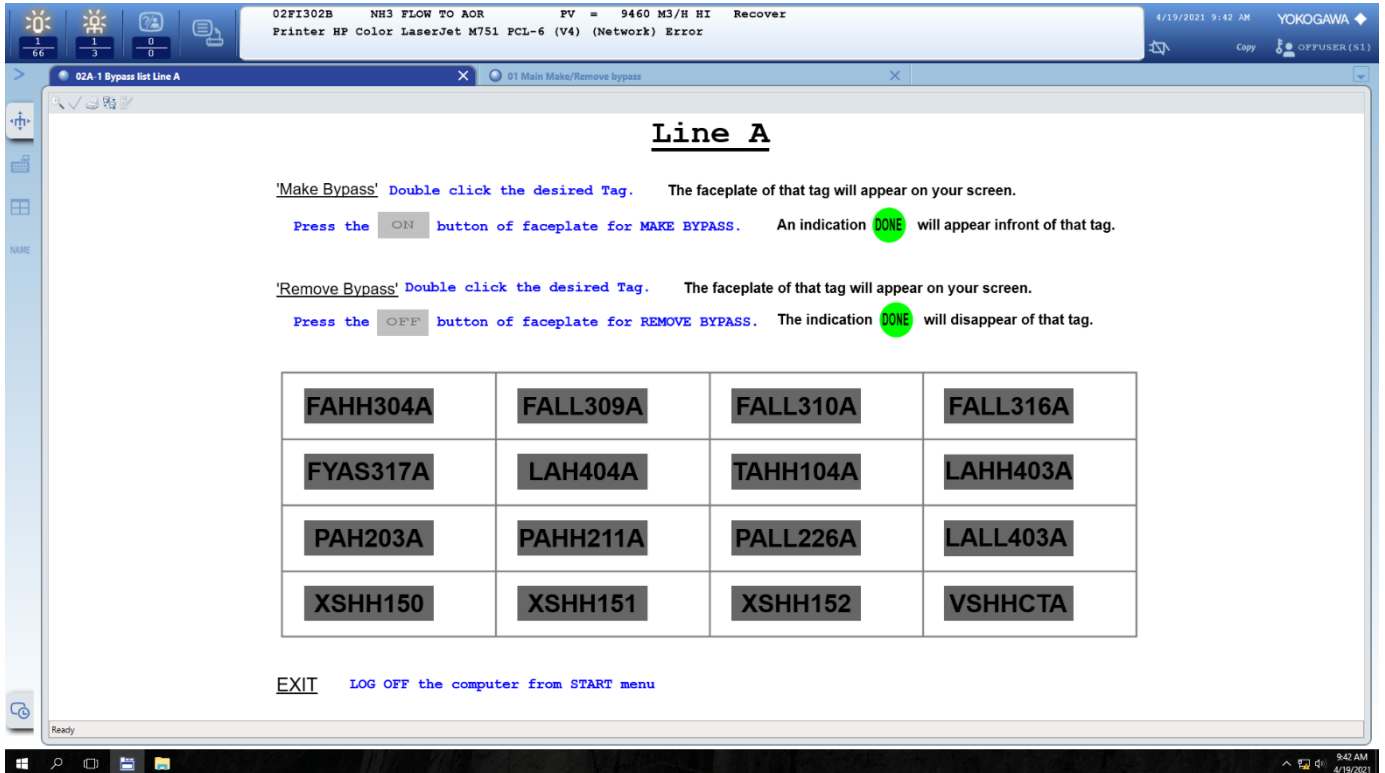
*Figure 36: The page containing tags for which we can make or remove security bypass. The instructions for doing so are mentioned on the graphic page.*