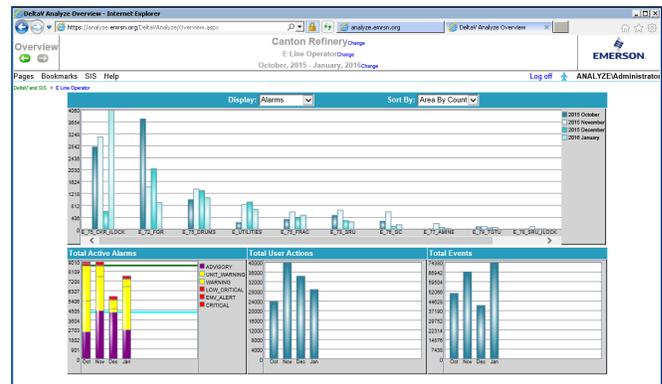


# DeltaV™ Analyze

- Continuous automated DeltaV™ System alarm system performance monitoring
- Trends of alarms, events, and user actions
- Identification of control modules and devices causing nuisance alarms
- Configuration-free web page viewing
- Alarm System Key Performance Indicator Reports per EEMUA-191, ISA-18.2, and IEC62682



The DeltaV™ Analyze Overview page summarizes your plant alarm and event performance.

## Introduction

Are you concerned about alarm performance and its impact on your operator effectiveness? Often, fewer than 10 modules will cause 75% or more of the system's alarm activations. So by addressing just a few alarms you can significantly reduce operator alarm loading.

DeltaV™ Analyze makes it easy to find the alarms that occur most frequently, stale alarms, fleeting alarms, chattering alarms, alarms that experience long delays for operators to acknowledge and those that are most often suppressed.

DeltaV Analyze is built-for-purpose, easy to install, and ready out-of-the box to gather, organize, and present information in point-and-click graphical webpages. Zoom from the big picture to details of interest, or schedule periodic Key Performance Indicator (KPI) reports, all with no user query writing, report design, or other burdensome configuration.

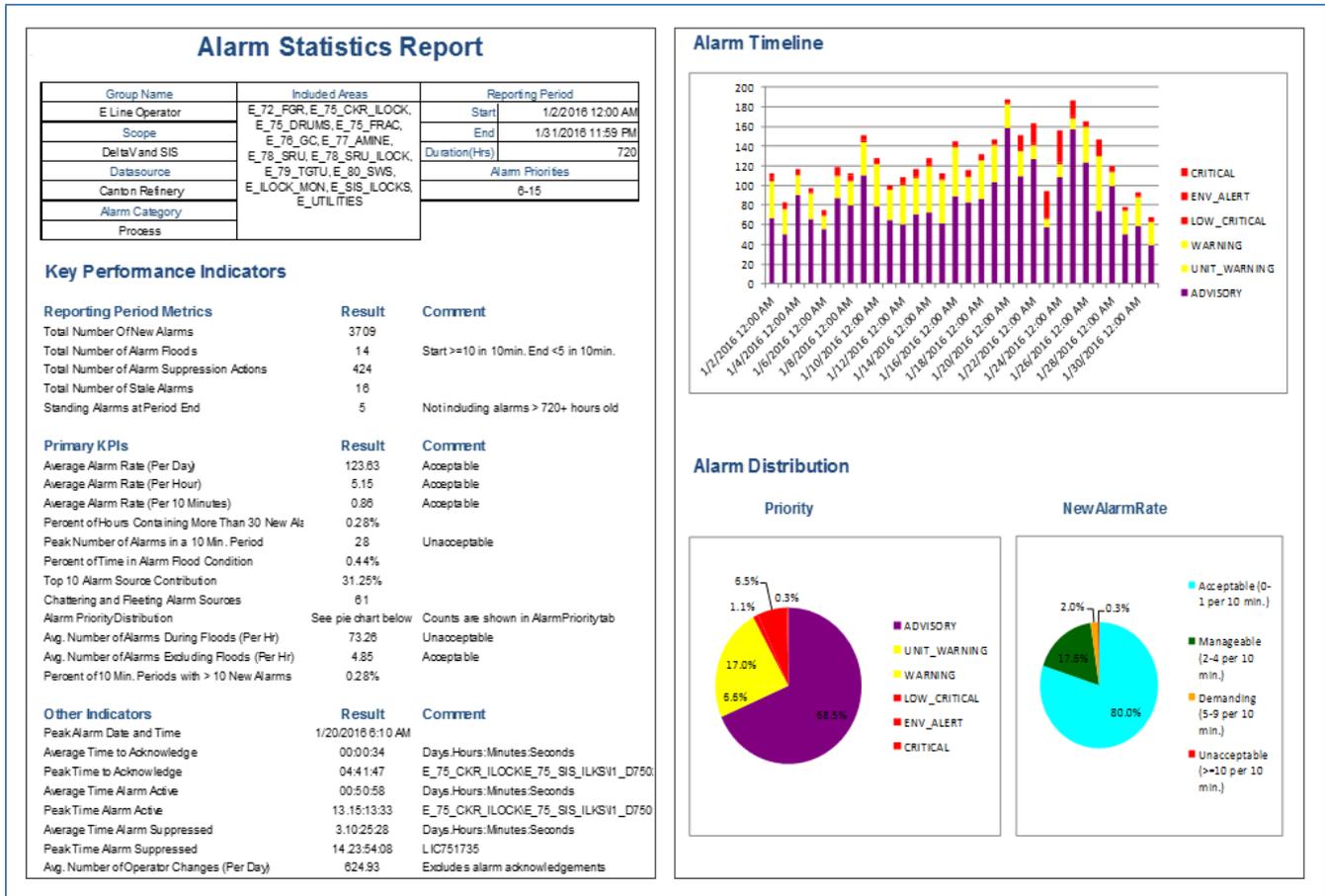
## Benefits

**Display up-to-date alarm performance.** DeltaV Analyze continuously processes your Event Chronicle or Plantwide Event Historian so that you have up-to-date performance information, whenever you need it.

**Display monthly trends of alarms, events, and user actions.** Compare any 12-month period to spot overall trends by process area, for the whole system or a specified operator workstation. At a glance, you can view any problems and see whether your plant is adhering to your alarm performance goals.

**Pinpoint control modules and devices causing excessive and nuisance alarming.** DeltaV Analyze identifies the modules and devices with the most frequently occurring alarms, and presents them in order of frequency. Thus, you can simply start at the top and work your way down the list of “noisy” tags.

**Configuration-free structured web page viewing throughout your enterprise.** Everything you need is laid out on DeltaV Analyze web pages. Simply select the page you want — Summary, Alarm Statistics, etc. — and the appropriate data is analyzed and presented. Drill in to evaluate a specific alarm priority or event type; further narrow your view to specific areas or units; or change the time span. With each choice, the whole page adjusts based on your selection.



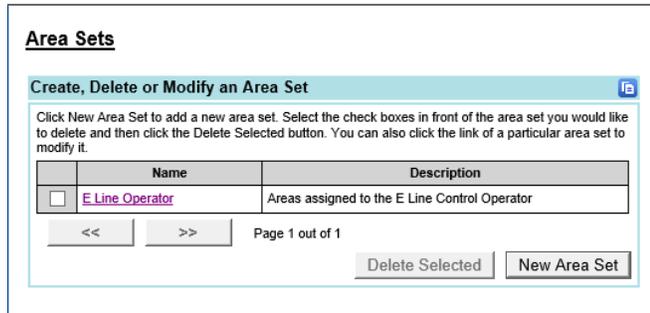
The Alarm Statistics Report provides Key Performance Indicators per EEMUA-191, ISA-18.2, and IEC62682 definitions, in an easy to share Microsoft Excel format. Additional pages (not shown) identify actionable lists of nuisance alarm sources.

**Alarm System KPI reports:** The EEMUA-191, ISA-18.2, and IEC62682 publications all stress the importance of periodic measurement of KPIs. DeltaV Analyze provides a ready-to-use KPI report that can be scheduled or run on-demand and optionally filtered by operator console position, alarm priority range, and alarm classification. The report contains twelve primary KPI calculations, eight secondary alarm performance indicators, pie charts for alarm priority and rate distribution, and timeline alarm activity charts for the report period and day with the most alarms. Also, the report contains top-twenty lists of frequent, fleeting, stale, most slowly acknowledged, and most often-suppressed alarms, and a list of disabled alarms, and a summary of individual alarm floods. Information sharing is simplified with the report's Microsoft Excel format and user control over file naming and destination folder. Reports can be produced on demand or scheduled by shift, day, week, or month.

Compare your plant's incoming alarm rates to the EEMUA-191 benchmark, or to your own benchmarks. The primary measure of alarm system performance is the incoming rate of alarms that require operator acknowledgment, measured per operator position.

Alarm Rate	Per 10 Minutes
Acceptable	0 – 1 alarms
Manageable	2 – 4 alarms
Demanding	5 – 9 alarms
Unacceptable	>= 10 alarms

DeltaV Analyze allows you to edit or create new alarm rates and thresholds according to your local alarm philosophy, or use the default EEMUA-191 alarm rates.



Organize Views and Reports by Operator Position.

Identify the DeltaV Process and SIS Areas assigned to each operator console position, then let DeltaV Analyze do the rest; presenting views and reports according to console position, applying your alarm rate benchmarks and KPI computations per EEMUA-191, ISA-18.2, and IEC62682.

### Alarm system performance metrics contained in the DeltaV Alarm Statistic Report

- Annunciated alarms per day
- Annunciated alarms per hour
- Annunciated alarms per 10 minutes
- Percentage of hours containing more than 30 alarms
- Percent of 10 minute periods with more than 10 alarms
- Peak number of alarms in a 10 minute period
- Percent of time in alarm flood condition
- Percent contribution of top 10 most frequent alarm sources
- Count of chattering and fleeting alarm sources
- Count of alarms active more than 24 hours
- Annunciated alarm priority distribution
- Alarm rate distribution
- Annunciated alarms per hour during alarm floods
- Annunciated alarms per hour excluding alarm floods
- Standing alarms at close of report period
- Average time to acknowledge alarms
- Peak time to acknowledge an alarm

- Average time an alarm is active
- Peak alarm active time
- Average time an alarm is suppressed
- Peak alarm suppression time
- Average number of operator changes per hour

## Product Description

DeltaV Analyze provides a comprehensive view of the DeltaV alarms, events, and user actions recorded in the Event Chronicle (active data set) of the system where it is installed or from multiple DeltaV system events that have been consolidated into a Plant Event Historian.

The Overview page is displayed when DeltaV Analyze is first accessed (see illustration on cover page). By default, the Overview page shows the monthly alarm, event, and user actions accumulated for the past 12 months.

Alarm rate thresholds (either the default EEMUA-191 benchmarks or your own) are displayed on the Overview screen and other relevant pages. A casual look at the Overview page may be all that is needed to know that alarm system performance meets your plant criteria.

If you want more detail, select the month and operator console (or individual area) of interest. Several pages are provided to highlight various specific alarm and event issues. So it is simple to find the tags causing the most problems. A common approach in plants is to target the top 10 high-frequency tags for alarm review each month.

In-Depth Analysis pages (some of which are discussed in more detail below) provide point-and-click filtering and drill-down capabilities to closely examine event records for time ranges of up to 31 days. These include pages for Alarm Statistics, Alarms, Events, Log Alarms, Log Events, Module Errors, Summary, System, and User Actions.

The Summary page provides module or device activity for alarms, events, and user actions (see illustration on following page). The modules or devices with the most alarms, events, and user actions are displayed in scrollable tables. Data in these and other tables can be selected and copied into other applications such as Microsoft Excel.

**Summary**

Area	Total	ACT/UNACK	Events	User Actions
E_76_CKR_ILOCK	50337	4050	53600	2657
E_76_DRUMS	20291	1065	10001	15105
E_72_FGR	5361	907	620	3525
E_78_SRU_ILOCK	4641	7	4605	29
E_76_FRAC	4313	473	400	3374
E_UTILITIES	3567	674	981	1912
E_77_AMINE	3291	34	3053	204
E_76_GC	1179	161	562	468
E_78_SRU	1100	240	17	834
E_ILOCK_MON	396	0	396	0
E_79_TGTU	272	58	0	214
E_80_SWS	81	2	0	79

**Alarms**

Module	Description	ACT/UNACK	Total
I3C	SIS Module	1620	3240
I3A	SIS Module	1444	2923
I3B	SIS Module	591	1404
FIC751288	H7501 HCOGO PUMPAROUND	208	951
I7510	P7511A/B Qnch H2O Pmp Trip	52	657
A1722008	Ckr Fir Nitrogen	202	606
FIC72145	C7210A Seal Flush	100	302
PDI72225	Svc Liquid E7210 DP	95	301

**Events**

Module	Description	Total
I3_3D	SIS Module	28978
I7500_11_12_20	Coker BD Interlocks	7647
I3B	SIS Module	6140
SRU_P_LIGHT_SEQ	SIS Module	4546
L177129	REGEN REBOIL CND LVL	3032
I3C	SIS Module	1608
I3A	SIS Module	1445
I4	SIS Module	1420

**User Actions**

Module	Description	Total
FIC751769	QNCH H2O TO D7501/2	1694
TC751968_FC1906	FG to HTR Coil 2	1071
FIC751349	NET LOGSO	1052
FIC751288	H7501 HCOGO PUMPAROUND	1032
FIC751030	D7501/2 TOTAL STM FLOW	852
TC751993_FC1897	H7501 FG to HTR Coil 1	870
TIC751067	BD C CONDENSER	755
TIC751679	BD A Condenser	743

**Alarm Priority**

- 52.3% UNIT\_WARNING
- 34.9% ADVISORY
- 8.9% WARNING
- 3.2% ENV\_ALERT

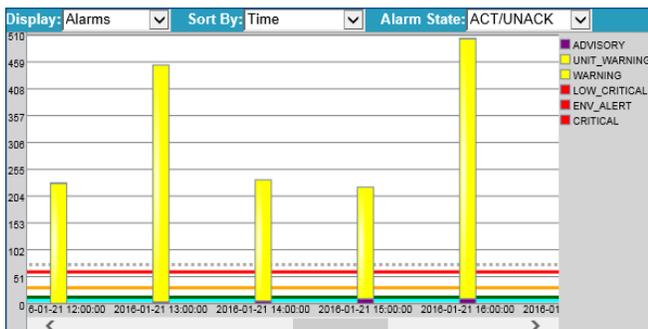
**Alarm Category**

- 90.0% INSTRUMENT
- 48.0% PROCESS
- 0.1% DEVICE
- 0.1% SYSTEM

**Events**

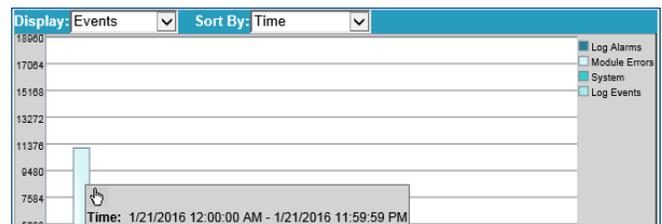
- 98.8% Module Errors
- 2.7% Log Alarms
- 0.5% System
- 0% Log Events

The Summary page shows modules with the most alarm annunciations, events, and user actions.



Click to zoom to a per-hour, 10-minute, or one-minute view.

It is easy to bookmark a favorite page and filter combination so that you can quickly return to the same date and information, or to always look at a relative time for specific data. For example, a bookmark might show alarm information for the last week for each shift.



Drill into events or user actions.

Switch between views of alarms, events, and user actions to identify factors contributing to alarms and operator changes. Web pages are provided (not illustrated) to drill into event and user action details.

Alarm Statistics					
Pages Bookmarks SIS Help					
DeltaV and SIS > E Line Operator					
Summary					
Area	Suppressed Alarms	Disabled Alarms	Average Acknowledgement Time	Average Activation Time	Total Activation Time
E_75_CKR_LOCK	14	246	00:01:44	00:37:26	105:06:01:21
E_72_FGR	87	0	00:00:24	00:52:25	35:03:14:13
E_UTILITIES	75	9	00:00:26	00:54:57	27:15:15:43
E_75_DRUMS	243	69	00:00:21	00:25:37	20:07:17:14
E_75_FRAC	36	0	00:00:43	00:04:21	1:12:24:50
E_77_AMINE	13	0	00:00:41	00:47:11	1:09:01:54
E_76_GC	16	0	00:00:25	00:08:58	1:00:05:37
E_78_SRU	33	0	00:00:26	00:03:10	13:36:12
E_79_TGTU	0	0	00:00:12	00:02:35	02:33:08
E_78_SRU_LOCK	0	0	00:00:29	00:12:29	01:14:59
E_80_SWS	0	0	00:00:15	00:02:58	00:05:57

The Alarm Statistic page gives instant access to alarm system KPIs.

You can view and drill into alarm statistics to determine which alarms were active for long (or short) periods of time, as well as alarms that have been repeatedly suppressed or disabled. A copy to clipboard control is provided for all data grids for easy transfer to spreadsheets.

### Security

DeltaV Analyze user access is based on Windows security. Simply select the Windows users who have permission to view DeltaV Analyze web pages. They log in with the same Windows user name and password.

### Automatic Processing

DeltaV Analyze automatically processes events from the DeltaV Event Chronicle active data set or Plantwide Event Historian (PEH) on a scheduled basis.



DeltaV Analyze installed on the same DeltaV workstation as the Event Chronicle.

### Off-System Processing

With the off-system processing option, event processing (the creation of intermediary XML data files) can be performed on-demand on Event Chronicle files, including files from other DeltaV systems. The processed XML files can be shared with other sites that have DeltaV Analyze, even if they don't have the off-system processing option.

Processing an entire Event Chronicle may be resource-intensive, and a dedicated computer should be considered when selecting this option.

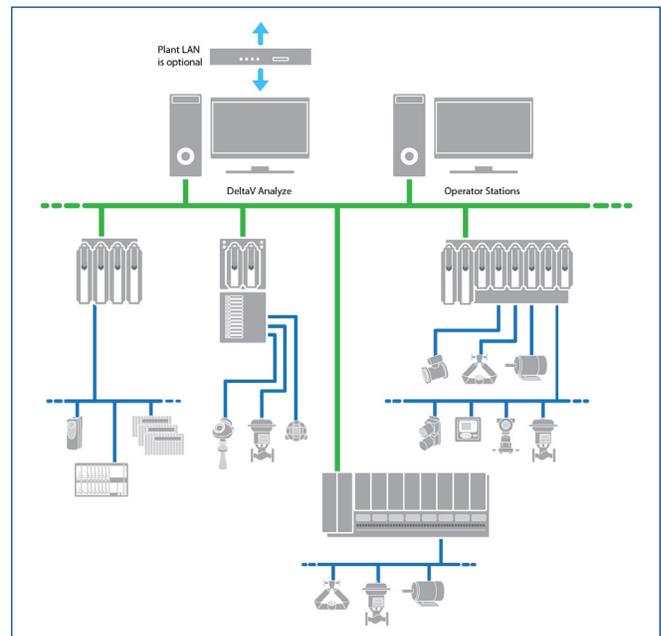
Off-system processing is not available when DeltaV Analyze is used with PEH on a non-DeltaV computer. Processing of Event Chronicle text archives is not supported.

### Installation

DeltaV Analyze may be installed on the same or a different workstation than the workstation that has the event database to be analyzed.

If DeltaV Analyze is installed on an Application station, the Event Chronicle on that station needs to be licensed and enabled even if DeltaV Analyze is pointing to a different workstation as its event database source.

Microsoft Excel must also be installed on the workstation to support creation of Alarm Statistics reports.



DeltaV Analyze installed on the same DeltaV workstation as the Event Chronicle.

Microsoft’s Internet Information Services (IIS) must be enabled on the workstation, making it the DeltaV Analyze web page server. The release notes provide detailed instructions for IIS setup. Note that Microsoft IIS does not support workstation names containing an underscore ( \_ ) where a DeltaV workstation otherwise allows it.

DeltaV Analyze can be set up as a standalone system (webpages can only be viewed from that workstation) but IIS is still required. The release notes provide details for this type of installation.

The DeltaV Analyze Administrator allows customization of: event file processing frequency, alarm priority colors, plant shifts, alarm rate bands, areas associated with operator console positions, and scheduled reports.

It is recommended that corporate PCs have IT include the DeltaV Analyze webpages in the Enterprise Mode Site List for Microsoft Edge with Internet Explorer (IE mode) enabled.

Please refer to Knowledgebase Article NK-2200-0182 for additional information.

## Multiple DeltaV System Applications

Several approaches can be taken to accommodate multiple DeltaV systems, with various tradeoffs.

Strategy	Considerations
One DeltaV Analyze System per DeltaV system.	Fully automatic event processing for local system alarm analysis.  To compare multi-system performance, corporate analysts would need to receive the Excel Alarm Statistics reports or XML files from each system (typically monthly), or alternately if WAN system connectivity permits, switch between webpages hosted by each system.
Just one of the multiple DeltaV systems has DeltaV Analyze (could be a Simulate System) with the off-system processing option.	Manual recurring effort (typically monthly) to harvest and process event chronicle files from the non-Analyze systems.  A lower-cost solution.
Each DeltaV system has an OPC A&E Server and PEH single-client connection, to transfer information to a central PEH with a single DeltaV Analyze system for PEH.	Fully automated event processing for local and corporate system alarm analysts.  Needs multiple OPC connections to transport raw alarm and event information to a central PEH database.  Potential sorting/reporting conflicts if systems have like-named areas.

## Disk Space Usage

Disk space usage varies based on the amount and type of events processed. Typical disk space usage is estimated at 1Mbyte/day/ system. Disk space used can be up to 20 Mbyte/day for facilities with hundreds of thousands of events/day.

Disk Space Usage	Typical	Maximum
Application	680 Mbyte	700 Mbyte
Processed files	1Mbyte/day	20Mbyte/day*

\*DeltaV Analyze can process event records up to a maximum rate of 1 million records per day.

## System Compatibility

DeltaV Analyze v4.3 from a Microsoft Edge enabled browser in IE mode is compatible with DeltaV v14.LTS, v14.FP1, v14.FP2, v14.FP3 and v15.LTS. DeltaV Analyze v4.2 is compatible with DeltaV v13.3.1 and v14.LTS.

DeltaV Analyze v4.3 is compatible with non-DeltaV workstations for Windows Server 2016 or Windows Server 2022.

DeltaV Analyze v4.3 supports Microsoft Edge in the Internet Explorer mode (IE Mode).

DeltaV Analyze v4.3 supports Microsoft Office 2019 (32-bit) and Microsoft Office 2021 (32-bit).

Recommended client memory is 500 Mbytes. Concurrent user timeout is 20 minutes. For best results, the resolution of the client display should be 1280 x 1024 or greater.

Standard DeltaV workstation hardware specifications are suitable for DeltaV Analyze.

DeltaV Analyze may be used on DeltaV systems configured as either domains or workgroups.

Remote access of DeltaV Analyze web pages on other workstations require a domain name service (DNS) server. DeltaV domains have a DNS server defined. DeltaV workgroups may need to have a DNS server defined for remote access.

When DeltaV Analyze is applied to the PEH, both are installed on the same computer, which may be either a DeltaV Application Station or a non-DeltaV computer.

DeltaV Analyze may be installed on DeltaV Simulate and System Integrator DeltaV systems.

DeltaV Analyze v4.3 can present webpages and produce alarm statistic reports using intermediate (XML) files previously created with prior versions of DeltaV Analyze.

## Ordering Information

DeltaV Analyze for DeltaV Workstations (Connects to the workstation's Event Chronicle data source)	Model Number
DeltaV Analyze, Version v4.3 (Includes license and v4.2 software media).	VE2133
DeltaV Analyze for non-DeltaV Workstations (Connects to a PEH data source)	
DeltaV Analyze v4.3 for non-DeltaV Workstations (Includes license and v4.3 software media)	VF1008
Option for Off-System Data Processing*	
Off-System Data Analysis Upgrade to VE2133 DeltaV Analyze v4.3 for DeltaV Systems (also for DeltaV Analyze Simulate Standalone).	VE21UPG008
Off-System Data Analysis Upgrade to DeltaV Analyze v4.3 Running on a DeltaV Simulate Multi-node System	VX21UPG008
Software Media Alone	
DeltaV Analyze v4.3 Software for Demo Systems (Includes v4.3 software media with no license)	VEANALYZEDEM

\*Off-system processing is not available for DeltaV Analyze for non-DeltaV Workstations.

## Licensing Notes

- Licenses originally purchased with DeltaV Analyze v2.0, v3.0, and v4.0 can be used with DeltaV Analyze v4.3
- DeltaV Analyze v4.3 will be provided to Guardian Support subscribers for DeltaV systems that are licensed for previous versions of DeltaV Analyze.
- Licenses issued after 2012 permit DeltaV Analyze installations on any type DeltaV workstation.
- If DeltaV Analyze is installed on an Application station, the Event Chronicle on that station needs to be licensed and enabled even if DeltaV Analyze is pointing to a different workstation as its event database source.

## Related Products

- **DeltaV Event Chronicle.** Captures process, system, and user alarms and events and stores them in a Microsoft SQL Server database.
- **Plantwide Event Historian.** Captures process, system, and user alarms and events and stores them in a Microsoft SQL Server database.
- **OPC Events Server.** Exposes all DeltaV alarm and event information using the industry standard OPC Alarms and Events interface.
- **Alarm Help.** Provides Operators with in-context access to approved alarm response procedures and Control Engineers with native system configuration capability to administer alarm rationalization data per ISA-18.2 - Management of Alarm Systems for the Process Industries.

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*EEMUA Publication 191 – Alarm Systems: A Guide to Design, Management and Procurement – Third edition, published by the Engineering Equipment and Materials Users Association in 2013. ISBN 978-0-85931-192-2.*

*ANSI/ISA-18.2-2016 Management of Alarm Systems for the Process Industries – approved March 17, 2016. ISBN: 978-1-941546-86-4*

*IEC62682 Management of alarms systems for the process industries, published by the International Electrotechnical Commission in 2014, ISBN 978-2-8322-1868-6.*

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