

# Alarm Analytics™



## Alarm Management, Reporting and Analysis

### Store Alarms and Events to Popular Databases

Captures and archives alarms, operator actions and system events into SQL, Oracle, Access or MSDE

### Analyze Alarms in Real-time or By a Specified Time Period

Identifies unusual alarm occurrences, trends in plant alarms and control modules responsible for those alarms

### Real-time Alarm Analytics Drives Better Process Understanding

Alarm Analytics provides up-to-the-minute reports that show alarm frequency, statistics, user acknowledgements, alarm priority distributions or system events

### Identify Areas for Improvement

Built-in Pareto charts help to rank alarms by frequency and categorize problematic areas such as tag chattering

### Simplify Incident Investigation

Easily access all recorded events and operator actions

### Benchmark Alarm Performance

Benchmarks alarms using established standard EEMUA 191 recommended best practices

### Deliver Alarm Information in Industry Standard Reports

Complies with standards set by OSHA PSM 1910.119

### Easy Configuration with Industry Standard Predefined Reports

Predefined reports and wizards help focus on a plant area, time period or event type

### Robust Workbench Application

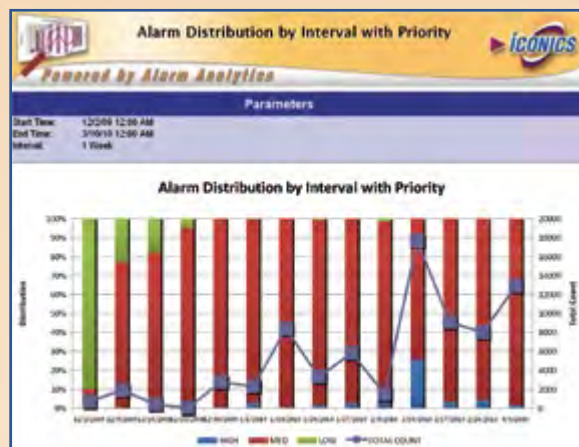
Provides a centralized Web-based environment for configuration and monitoring of all BizViz components with Pack and Go capabilities for rapid deployment

### Distribute Alarm Analytics Reports via E-mail or Fax

Users can view reports in Microsoft Excel, PDF, or HTML format on the Web or receive them via automated e-mail

### Advanced Alarm Key Performance Indicators

Alarm Analytics includes pre-configured Key Performance Indicator (KPI) templates



**“Turn Raw Data Into Your Competitive Advantage!”**



**Microsoft**  
GOLD CERTIFIED  
Partner

2008 ISV/SOFTWARE SOLUTIONS  
PARTNER OF THE YEAR-WINNER



**Visualize Your Enterprise™**



# Alarm Analytics



Alarm Analytics provides rapid analysis, visualization, reporting and management of alarms, resulting in improved plant reliability, faster response times and deeper process understanding. Operators improve efficiency by uncovering unusual alarm patterns, events and response times via this OSHA-/EEMUA-compliant tool.

**Advantages of Alarm Analytics**  
Alarm Analytics provides insight into alarm frequency, statistics, user acknowledgements, priority distributions and hidden correlations. Reports are provided in intelligent, industry standard formats and/or as Web documents for immediate access. Organize focus by plant area, time period or event type, visualizing the information in an easy-to-navigate tree.

**Multiple Report Templates with Advanced Alarm KPIs Included!**  
Alarm Analytics comes complete with over 15 specific report templates with advanced Alarm KPIs such as alarm distribution by priority/interval, alarm tag frequency/chattering, and cross-correlation, just to name a few.

**ICONICS Markets Served**  
ICONICS has more than 250,000 systems running in over 40,000 plants worldwide. The following industries benefit from ICONICS solutions:

- Aerospace & Defense
- Automotive
- Biotechnology
- Building Automation
- Chemical & Petrochemical
- Consumer Packaged Goods
- Financial
- Food & Beverage
- Government
- Machine Builders
- Metals & Mining
- Oil & Gas
- Pharmaceuticals
- Power & Utilities
- Pulp & Paper
- Renewable Energy
- Semiconductors
- Water & Wastewater

For further information call

508-543-8600

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www.iconics.com



Visualize Your Enterprise™

## Alarm Management, Reporting and Analysis

### The Push for Operational Excellence

ICONICS' Alarm Analytics product, part of the BizViz Analytics suite, enables plant personnel to visualize, analyze and manage alarm information in accordance with industry best practices. The push for operational excellence in the manufacturing industry is driving the need for more effective alarm analytics. Proper analysis of alarms and events in a manufacturing plant can reveal significant opportunities for improving current operations and mitigating abnormal situations. BizViz Alarm Analytics captures and analyzes all alarm and event information to identify frequent alarms, chattering alarms, cross-correlated alarms and many more alarm-related issues. This module also records, analyzes and displays operator-initiated process changes, which then yield significant insight into the performance of the entire system.

### Alarm Analytics – Industry Standard Based Alarm Reporting

Alarm Analytics, which is based on ICONICS' BizViz ReportWorX™ and AlarmWorX™32 Alarm Logger, provides advanced Alarm Analytics, Alarm Reporting and Alarm Management. Alarm Analytics supports industry standards for Alarm Management issued by OSHA and EEMUA. The Alarm Analytics module contains over 15 standard reports with advanced Alarm KPIs.



### Identify Frequent, Chattering and Cross-Correlated Alarms

The **Alarm Tag Frequency** report identifies alarm tags that go into alarm most often over a given period of time, using a Pareto chart to sort the alarms by number of occurrences. The "worst" alarm is the first one indicated in the chart. The user can configure the maximum number of rows to return in the report, effectively turning it into a "Top 10" or "Top X" Pareto chart.

The **Alarm Tag Chattering** report is represented by a table that shows alarm tags that go in and out of alarm repeatedly in a short period of time (chattering). Users specify a time window and the maximum number of rows. If an alarm repeats within the time window, it is considered a chattering alarm and part of a cluster. For each tag, the table also includes the number of clusters, the average occurrences per cluster and the total number of occurrences. The table can be sorted by the **Cluster Member Percentage**.

The percentage of occurrences that happen in a cluster (Cluster Member Percentage) is calculated by the following formula:

$$\text{Cluster Member Percentage} = (\text{Avg. occurrences per cluster}) * (\# \text{ of clusters}) / (\text{total occurrences})$$

**Cross Correlation Analysis** finds alarms that always (or usually) occur one after another, which suggests correlation between two alarms. This process compares all combinations of pairs of alarm tags and the results for each alarm pair are then displayed in tabular format providing the following:

- Occurrence Count – The number of times the child tag occurred after the primary tag, within the time window.
- Predictability – The percentage of time that the primary alarm occurred and the child alarm occurred within the time window (e.g. 100% if the child alarm occurred every time the primary alarm occurred).
- Significance – The percentage of time the child alarm occurs within the window of the primary (e.g. 100% if the child alarm only occurs after the primary alarm within the time window).

### Record, Analyze and Display Operator-initiated Process Changes

The **Operator Response Time** report analyzes the time it takes an operator to respond to each alarm condition (Acknowledge, or ACK for short) and the time for the condition to Return to Normal (RTN). Since each row summarizes multiple occurrences, the Min, Max and Average values are shown. The table is sorted in descending order by whatever the user selects while executing the report.

Standing alarms are the ones that show up on the ICONICS AlarmWorX™ viewer (e.g. active and/or unacknowledged alarms). A snapshot of the number of standing alarms is captured at the end of each interval and is displayed on a bar chart. The related reports include **Standing Alarms at Time** and **Standing Alarm Duration**. The **Operator Changes by Interval** report shows operator actions as defined in OPC Tracking event in the GenEvent audit tracking system.

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