

# 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*

### Benchmark Alarm Performance

*Benchmarks alarms vs. established standard EEMUA 191 recommended best practices*

### Deliver Alarm Information in Industry Standard Reports

*Complies with standards set by OSHA PSM 1910.119*

### Leverage the Power of Microsoft® Excel

*Alarm Analytics is built on top of widely used Microsoft Excel*

### 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*

### Easy Configuration with Industry Standard Predefined Reports

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

### Identify Areas for Improvement

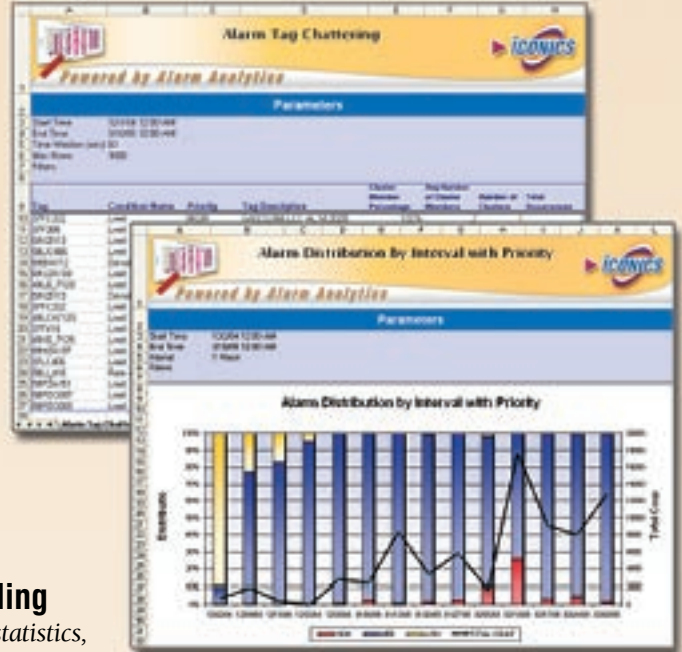
*Built-in Pareto charts help to rank alarms by frequency and categorize problematic areas such as tag chattering*

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

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

### Simplify Incident Investigation

*Easily access all recorded events and operator actions*



**"Turn Raw Data Into Your Competitive Advantage!"**



**Visualize Your Enterprise!™**



# Alarm Analytics™



## Alarm Management, Reporting and Analysis

**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 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 225,000 systems running in over 40,000 plants worldwide. The following industries are benefiting 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
- Semiconductors
- Water & Wastewater

For further information call

**508-543-8600**

or visit our website

**www.iconics.com**



Visualize Your Enterprise!™

### The Push for Operational Excellence

ICONICS' Alarm Analytics product 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 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 descending by whatever the user selects while executing the report.

Standing alarms are the ones that show up on the AlarmWorX32™ 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** report by interval shows operator actions as defined in OPC Tracking event in GenEvent audit tracking system.

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