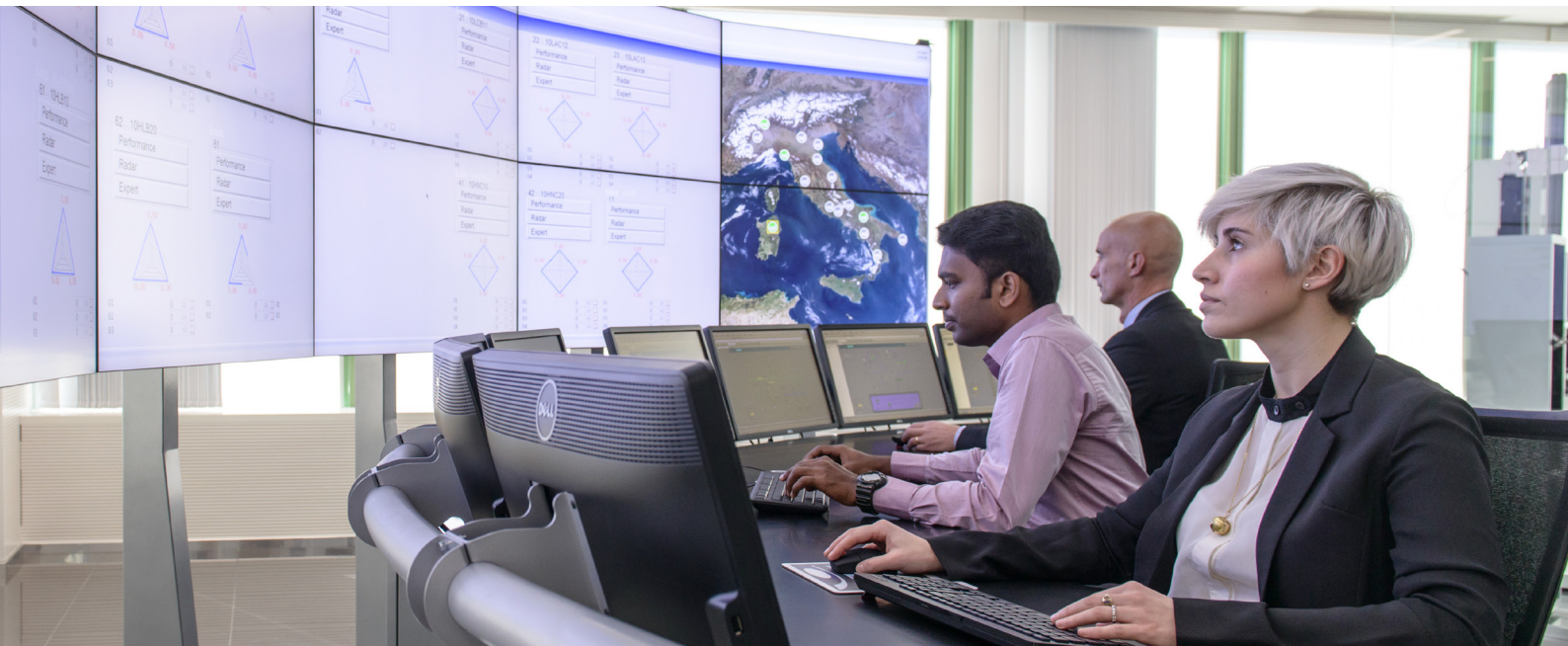
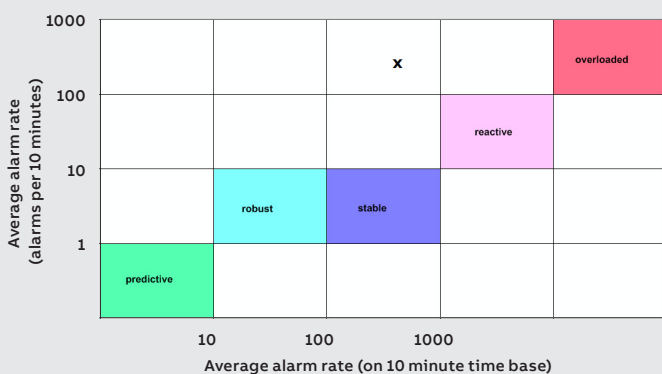


BROCHURE

# ABB Ability™ Symphony® Plus Alarm Portal



## ALARM PERFORMANCE LEVELS



## ALARM PORTAL

Bring attention to alarms that need action and define alarm relevancy to the operator, keeping the operator focused on plant performance.

Monitor, manage and optimize alarms with the collection of alarm analysis tools in Alarm Portal.

Build reports to analyze all types of plant alarms.

Assess alarms via alarm rationalization packages.

Assign priorities to most frequent alarms.

# Alarm Portal



The configuration of alarms historically has been expensive, because each alarm required extra hardware and wiring. Therefore the designers of a plant put considerable thought in the decision of whether an alarm was meaningful or not. This form of implicit alarm management often resulted in good quality operator interfaces. In the current generation of control systems, the cost associated with alarm configuration has been significantly reduced. Therefore, it is easy to configure several alarms on each and every tag.

Today, integrated and interconnected digital devices and systems generate all types of alarms too easily, which leads to a flood of alarms that can overwhelm the operator. The maximum number of alarms the human mind can deal with is just seven, give or take two in a 10-minute period. However, process operators in most control rooms today are bombarded with a constant stream of alarms. In the power industry, operators typically deal with 2,000 alarms per day and 350 in a 10-minute peak alarm period. These types of alarm rates lead to highly distracted operators, decreased vigilance, lower awareness and overload of the operator's short-term memory. Therefore, a high-quality alarm management system is an essential tool for operators to "filter out the noise" and run a plant alertly, safely and efficiently.

Alarm Portal, Symphony Plus' advanced alarm management system, provides all the necessary instruments for efficient and stringent alarm management. Its advanced alarm handling and analysis tools support implementation of alarm management strategies based on EEMUA 191 and ISA 18.2 requirements, thereby ensuring that each alarm generated will alert, inform, and guide the operator to take the proper action. Symphony Plus's Alarm Portal includes the following pre-configured alarm report types:

## Alarm Priority Distribution

EEMUA 191 and ISA 18.2 propose to use at most 3 or 4 different alarm priorities, because it is very difficult for

operators to use more priorities efficiently. This report presents the distribution of assigned alarms by category over a given period. Effective alarm management is represented when High priority alarms are reflected in the lowest distribution. (See example in Figure 1).

## Alarm Duration

By measuring and reporting plant alarms with a high total duration, nuisance alarms can be identified, handled or reprioritized.

## Alarm Performance levels

The alarm performance level report presents the quality of an alarm management system from one view. Specifically, this report compares the system quality to other plants by using an industry standard graphical analysis of maximum alarm rates and average alarm rates per ten minute time base. (See example in Figure 2).

## Alarm and event frequency

Analyzing alarm frequency over a given time helps determine bad actor alarms and frequency of events in the plant. Often, few alarms may contribute to the noise and by assessing those alarms or fixing the cause, the operator will have higher priority, more actionable alarms on which to focus. (See an example in Figure 3).

## Alarms over time

By collecting alarms from various parts of the plant, large events can be captured in a plot of alarms over time. Generally, spikes indicate an increased amount of alarms due to an incident or precursor to something more drastic. These alarm bursts can then be analyzed in further detail.

## Time to acknowledge

All new alarms require acknowledgment, but not all alarms require immediate action. If many operators acknowledge one alarm, or one operator must acknowledge many alarms, each signal has a potential to be inappropriately handled. This tool measures the time to acknowledge alarms to ensure operator response processes are working as expected.



**The Problem**

As plants become more digitalized, signals can reach the operator at significantly overwhelming rates. Though not all alarms are actionable, the operator must acknowledge and act on or dismiss each alarm, causing for distraction from the alarms that truly matter. Because of this, operators must make a personal judgement on which alarm to tend to, rather than addressing the issues themselves.



**The Situation**

Alarm management is crucial to running a plant safely and efficiently. More effectively using the operators to maintain the plant ensures operator focus, plant safety and equipment efficiency.



**The Solution**

EEMUA 191 and ISA 18.2 compliant Alarm Portal has the tools required to configure and analyze the alarms that are most important to the plant's efficiency. Providing the operator with prioritized signals and timely fault prompting allows them to act quickly and appropriately to the plant's needs to keep the equipment running.

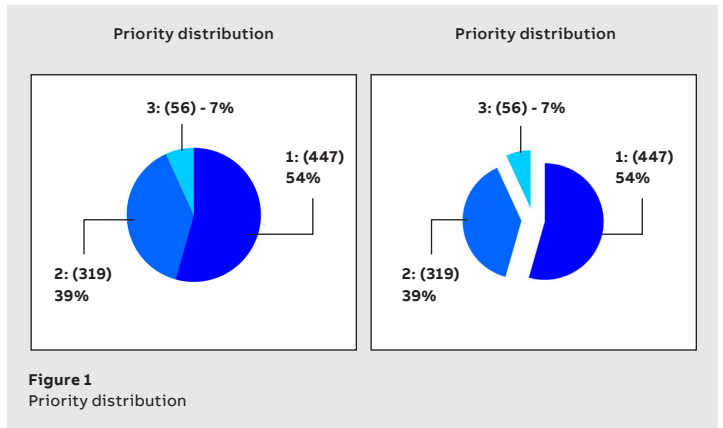


Figure 1  
Priority distribution

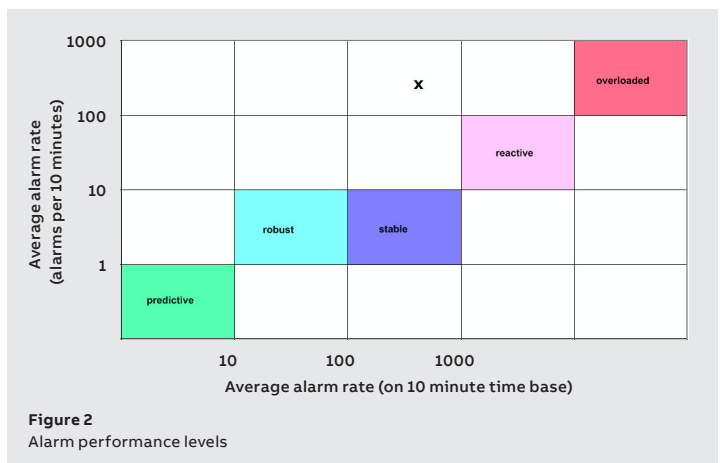


Figure 2  
Alarm performance levels

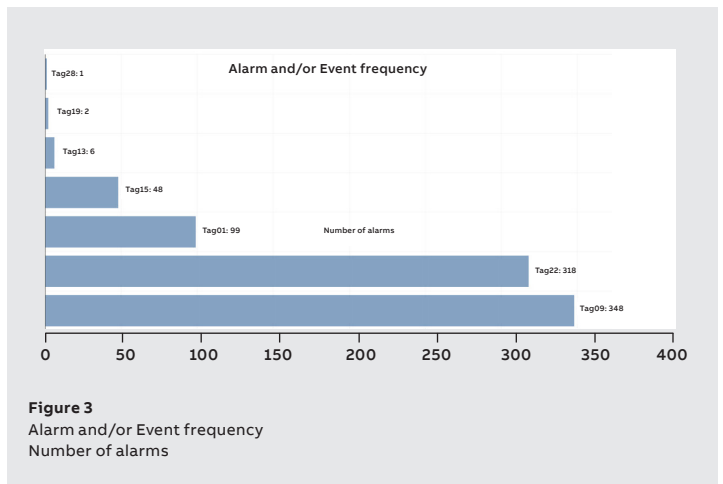


Figure 3  
Alarm and/or Event frequency  
Number of alarms

# The Value

**Remove unnecessary alarms to bring those alarms that need action to the forefront and define alarm relevancy to the operator.**

**Monitor, manage and optimize alarms with a collection of alarm analysis tools in Alarm Portal.**

### Co-occurrences

The CoOccurrences report measures how often two alarms occur in the same interval. Alarms that often occur in the same interval might be redundant. Removing redundant alarms, simplifies the alarm list and helps the operator focus on the alarm events that are most critical.

### Detailed event sequence

This report tests filters for other reports. For example several reports like the alarm performance level report show high level KPIs that are difficult to verify. Using the same filter for the detailed event sequence report shows the individual alarms and enables operators to verify them. Many problems in the filter settings can be discovered with the help of this report. (See example in Figure 4).

Other graphical and analytical alarm management tools

- Control loops in manual mode
- Standing alarms
- Operator actions
- Intervals exceeding threshold

PLM_Event_ID	Time	ms	Active Time	AC/RT	WS	Event Category ID	Disc	Name	Description	SubCondition	Event Category	Event Cookie	Rev State	Event Type	Alarm Key Hash	Quality	Condition	Severity	
5171	5/8/2017 2:30:00 PM	888	5/8/2017 2:30:00 PM	-	S	8	1	Tag09	Kapreare Real Tag 9	HL_HI	SYSTEM MESSAGE	8	ENA	SIMP	18819377	49152	PVLEVEL	1000	
5170	5/8/2017 2:30:00 PM	883	5/8/2017 2:30:00 PM	+	S	1	1	Tag09	Kapreare Real Tag 9	HL_HI	LEVEL	2104321	ACT	ENA	COND	18819377	1610670080	PVLEVEL	1000
5168	5/8/2017 2:29:56 PM	886	5/8/2017 2:29:55 PM	-	S	8	8	Tag09	Kapreare Real Tag 9	HL_HI	SYSTEM MESSAGE	8	ENA	SIMP	49030281	49152	PVLEVEL	1000	
5169	5/8/2017 2:29:56 PM	886	5/8/2017 2:29:55 PM	-	S	8	2	Tag09	Kapreare Real Tag 22	HI	SYSTEM MESSAGE	8	ENA	SIMP	233776354	49152	PVLEVEL	955	
5167	5/8/2017 2:29:59 PM	881	5/8/2017 2:29:59 PM	+	S	1	1	Tag09	Kapreare Real Tag 9	HL_HI	LEVEL	2104321	ACT	ENA	COND	49030281	1610670080	PVLEVEL	1000
5166	5/8/2017 2:29:55 PM	887	5/8/2017 2:29:50 PM	+	S	1	2	Tag09	Kapreare Real Tag 22	HI	LEVEL	2103297	ACT	ENA	COND	233776354	536928256	PVLEVEL	955
5165	5/8/2017 2:29:54 PM	882	5/8/2017 2:29:54 PM	+	S	1	1	Tag09	Kapreare Real Tag 1 Ramp Function	HI	LEVEL	2103297	ACT	ENA	COND	32187521	536928256	PVLEVEL	1000
5164	5/8/2017 2:29:51 PM	885	5/8/2017 2:29:50 PM	+	S	1	2	Tag09	Kapreare Real Tag 22	HL_HI	LEVEL	2104321	ACT	ENA	COND	233776354	1610670080	PVLEVEL	955
5162	5/8/2017 2:29:50 PM	886	5/8/2017 2:29:50 PM	-	S	8	8	Tag09	Kapreare Real Tag 9	HL_HI	SYSTEM MESSAGE	8	ENA	SIMP	49228169	49152	PVLEVEL	1000	
5163	5/8/2017 2:29:50 PM	886	5/8/2017 2:29:50 PM	+	S	1	2	Tag09	Kapreare Real Tag 22	HI	LEVEL	2103297	ACT	ENA	COND	233776354	536928256	PVLEVEL	955
5161	5/8/2017 2:29:50 PM	881	5/8/2017 2:29:50 PM	+	S	1	1	Tag09	Kapreare Real Tag 9	HL_HI	LEVEL	2104321	ACT	ENA	COND	49030281	1610670080	PVLEVEL	1000
5160	5/8/2017 2:29:46 PM	888	5/8/2017 2:29:46 PM	-	S	8	8	Tag09	Kapreare Real Tag 9	HI	SYSTEM MESSAGE	8	ENA	SIMP	9775609	49152	PVLEVEL	1000	
5159	5/8/2017 2:29:46 PM	883	5/8/2017 2:29:46 PM	+	S	1	1	Tag09	Kapreare Real Tag 9	HI	LEVEL	2103297	ACT	ENA	COND	9775609	536928256	PVLEVEL	1000
5158	5/8/2017 2:29:40 PM	878	5/8/2017 2:29:35 PM	-	S	8	2	Tag09	Kapreare Real Tag 22	LO	SYSTEM MESSAGE	8	ENA	SIMP	176096636	49152	PVLEVEL	955	
5156	5/8/2017 2:29:39 PM	888	5/8/2017 2:29:39 PM	-	S	8	8	Tag09	Kapreare Real Tag 9	HI	SYSTEM MESSAGE	8	ENA	SIMP	9972217	49152	PVLEVEL	1000	

Figure 4 Detailed event sequence

Note:

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