



OASYS-AM

Solution Suite

INTELLIGENT ALARM MANAGEMENT

Real-time reasoning to reduce the number of alarms displayed to a control room operator, combined with clear explanation facilities, decision-support, in-time process advisories, and on-line cause-effect analysis.

The Challenge

With the adoption of Distributed Control Systems, automated safety systems and remote central control rooms, many alarms have been defined and are presented to the operator. It is humanly impossible for an operator to monitor more than seven events at the same time. The resulting information overflow increases the possibility of important information being missed.

In the presentation of an alarm message, correlation with other events does not exist. Furthermore, the upstream or

downstream consequences of such alarm messages are not provided. In several cases information overload has led to alarms simply being acknowledged, resulting in the escalation of an upset to an incident. In extreme cases, operating facilities have been damaged or destroyed, causing personal injury and damage to environment and market image. It is for these reasons a solution for intelligent real-time alarm management has been developed by UReason.

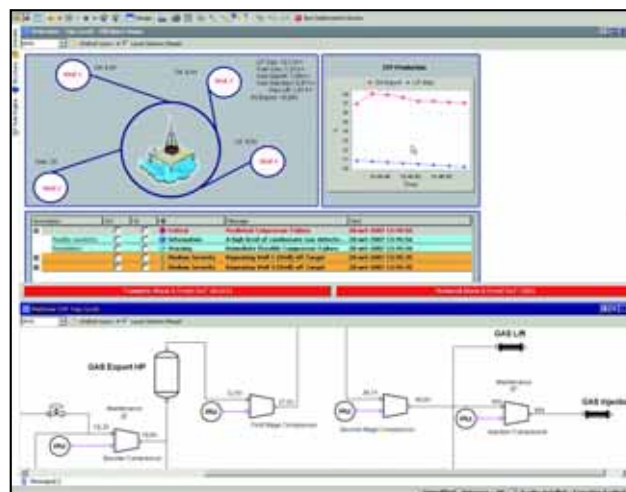
The OASYS-AM Solution

Academic research has proven that the simple suppression of alarms using a statistical approach is not sufficient. At all times, the operator should be able to review what is behind an aggregated alarm, how a certain state is derived for a context-sensitive alarm, what further effects a certain alarm can cause and what actions need to be taken. In other words, rather than merely acknowledging that a problem exists, the operator can be guided and assisted by the OASYS-AM solution in identifying and solving the problem.

OASYS-AM offers a collection of technologies to assist in the intelligent reduction and explanation of alarms:

- Model-Based Reasoning to trace the origin of disturbances or to estimate the consequences of an equipment failure
- Cause-Effect diagrams to proactively highlight the probable future effects of an alarm and hide the multitude of alarms that caused the situation
- Multi-Layer Models to show the interconnectivity of different equipment
- State identification to track the state of a process unit, detect components which are out of order and control diagnostic calculations based on defined states
- Signal Validation, signal filtering, alarm containment, alarm eclipsing and alarm suppression rules and
- Rule Induction from pattern analysis on your alarms logs.

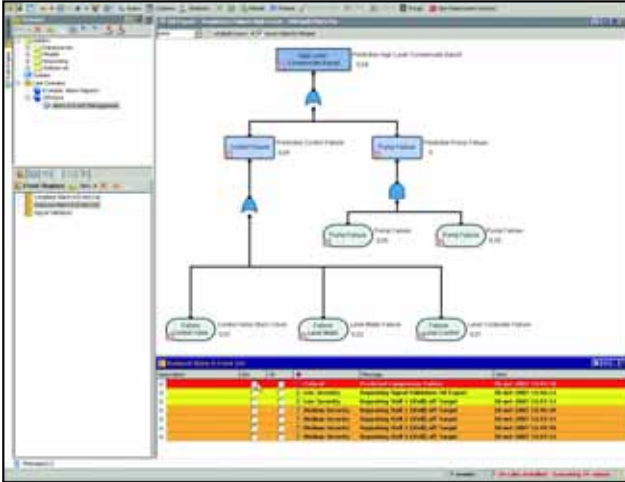
OASYS-AM can be deployed on top of and across different DCS, PLC, SCADA and other systems on a single unit or on multiple units in a plant. Its output can be displayed in the standard operating environment, and also on additional screens providing explanation, auditing, KPI and reporting facilities.



Top level overview (top), reduced alarm list with explanation and remediation events (middle) and topological model (bottom)

Ongoing Improvement

The OASYS-AM solution can easily be extended in engineering mode (OASYS-AM Engineering). With this licence you can extend, modify and tune the reasoning behind the reduction. Historical situations can be replayed and validated. This allows you to incorporate best practice to assist the operator in abnormal situations.

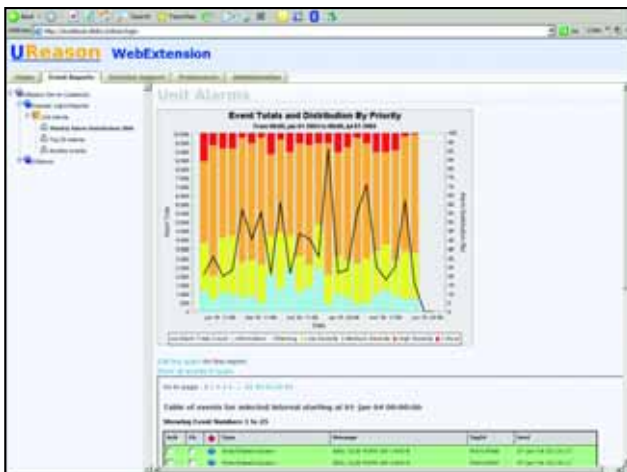


Real-time cause-effect tree (top) and resulting prediction (bottom)

Management Reporting

To get the most out of archived alarm data, for example to detect redundant alarms, bad alarm limits or inaccurate sensors or actuators, the OASYS-AM solution can be extended with reporting and auditing capabilities for use by operational management. OASYS-AM provides out-of-the-box reports that follow EEMUA guidelines.

Other reports and KPI's can easily be configured without the need for programming, and can be viewed anywhere at any time using a standard Web Browser. OASYS-AM off-line runs on a separate server to ensure the reporting overhead does not adversely affect any mission-critical alarm reduction.



Weekly alarm distribution graph (top) with event details (bottom)

Benefits

The direct value of using OASYS-AM lies in:

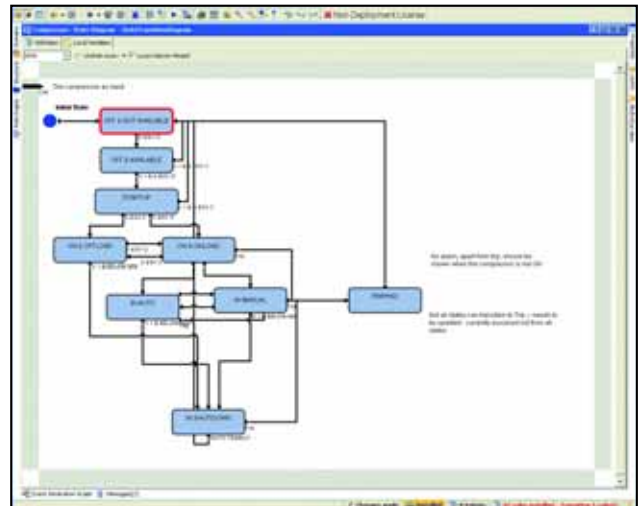
- Lowering the frequency of the operation of shutdownsystems, i.e. improving alarm management/control and increasing the mean time between failures (MTBF)
- Reducing the mean time to repair (MTTR)
- Reducing the time needed to diagnose plant upsets/incidents
- Minimising the impact of a disturbance on adjacent processes or units
- Reducing operator workload
- Reducing the internal or external effort needed to manage alarms and events
- Reducing the internal or external effort needed to review incidents and upsets
- Providing an insight into the internal reasoning behind the alarm reduction
- Avoiding incidents and associated or consequent equipment damage
- Compliance with guidelines and directives and
- Avoiding the imposition of fines and penalties (e.g. environmental fines).

Technical Benefits

OASYS-AM provides an easy-to-use graphical user interface for

- The engineer, for creating, debugging, analysing and maintaining specific OASYS-AM solutions
- The shift- or teamleader, for improving and tuning operator decision-support and on-line procedures to guide the operator in solving a problem
- The operator, when monitoring, analysing, tracking and interacting with live or logged events and alarms received, detected or generated by OASYS-AM and
- Plant management, when evaluating operating procedures, production upsets, alarm response times, alarm effectiveness et cetera.

OASYS-AM can interface with most DCS, PLC, SCADA and information systems using OPC.



State diagram related to the fault tree on previous page

UReason

Achieving Operational Excellence

UReason Holding BV, Pompoenweg 9, 2321 DK Leiden, the Netherlands
telephone +31 71 518 27 00, info@UReason.com, www.UReason.com

UReason® is a registered trademark of UReason Holding BV.
OASYS-AM™ and USE™ are trademarks of UReason.