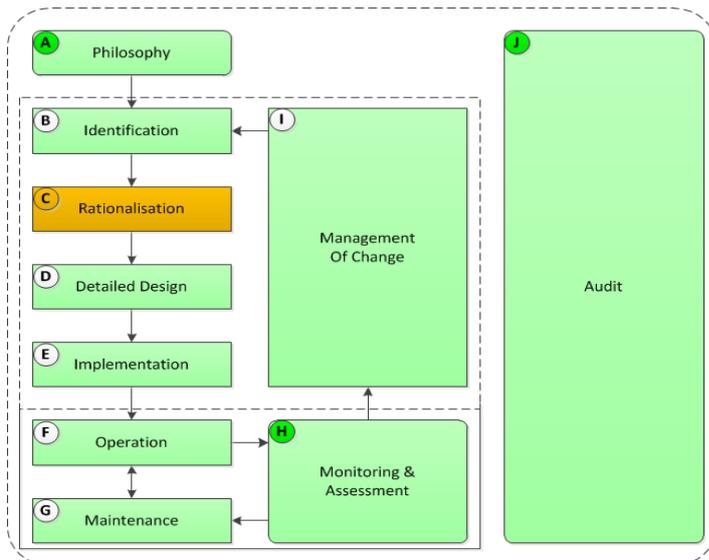# Alarm rationalisation solution

Rationalisation offers efficient route to a usable alarm system where:

1. Alarms are presented at the rate at which the operation can cope
2. The operation understands what action to take on each alarm
3. The operation is presented only with relevant alarms

The continued timeline of major process incidents attest to the difficulties many operators still face in combining the flexibility and adaptability of the plant operator with the power of 21st century DCS technology. Nowhere is this more evident than in the proliferation of alarm systems which are not 'fit for purpose' where the operator is burdened with floods of unnecessary, meaningless and avoidable alarms.

Unrationalised alarm systems degrade what should be a valued decision making and support tool to a distraction which could potentially contribute to a major environmental or safety incident. An individual operator can be confronted with multiple configured alarms within their designated area of the plant. During upsets, many of these alarms can occur in a very short period. When there are too many alarms during an upset, they distract the operator and conceal the actual nature of secondary problems, instead of alerting the operator to real problems - remember Milford Haven!!!

IEC 62682 standard specifies principles and processes for the management of alarm systems, it covers alarms from all systems presented to the operator, which can include basic process control systems, annunciator panels, safety instrumented systems, fire and gas systems, and emergency response systems.

The standard addresses all lifecycle phases (development, design, installation, and operation) for alarm management in the process industries. The standard defines the terminology and work processes recommended to effectively maintain an alarm system throughout the lifecycle this includes alarm rationalisation. Alarm rationalisation is the practice of reviewing and validating alarms to ensure that they meet the criteria for being an alarm as outlined in a sites alarm philosophy document.

The process determines the reason for the alarm, the defined operator response and the consequences of ignoring the alarm. Using a matrix approach the alarm can be prioritsed accordingly utilising the knowledge and experience of the site team.

What we offer
Part of the ABB AlarmInsight suite, the Alarm Rationalisation Tool (ART) was developed to address this challenge and enable process operators achieve the 'holy grail' of effective and efficient alarm rationalisation. The ART tool encompasses a full Master Alarm Database (MAD) solution for lifecycle maintenance and continuous improvement of any alarm system. ART comprises a SQL server based software product which can be loaded into any MS Windows environment (standalone PC or network server).
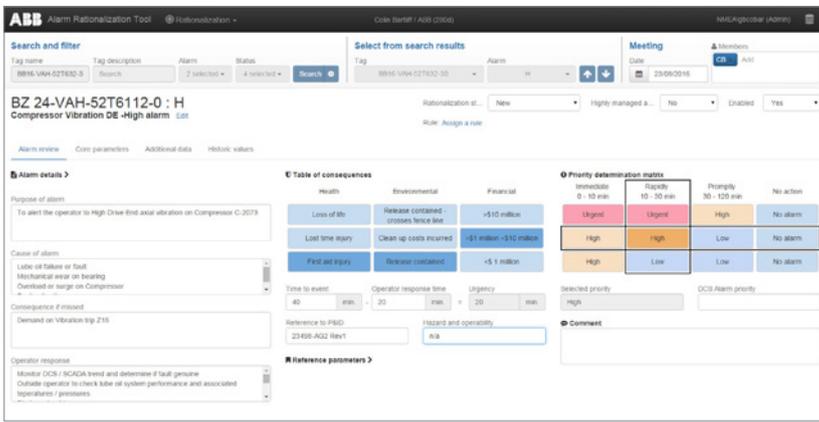
—
Above: The ART
tool dashboard.

The software and documentation are delivered electronically i.e. downloadable or sent via email. ART is a fully scalable solution and is platform agnostic. It can therefore be used to rationalise and improve the alarms from any control system or project. The ART tool is the fully productised version of ABB Consulting group's in-house database solution for alarm rationalisation. It was initially developed as an MS access / SQL database for use by experienced alarm management consultants in delivering improvement projects for a range of UK North Sea operators to meet rising UK regulatory expectations.

- This specialist solution for alarm rationalisation has now been transformed into a comprehensive Master Alarm Database (MAD) tool, fully compatible with the requirements and recommendations of industry standards and current good practice for alarm management (e.g. IEC 62682, EEMUA 191)

The ART represents the distillation of many owner and operator development. As a new product (released in late 2015) ART combines the benefits of latest technology with the advantages of an evolved solution which has been proven in use over many years and incorporates the learning of a diverse and extensive list of global operators.

Benefits
A number of case studies attest to the benefits delivered from ABB's alarm rationalisation toolset. Significant benefits have been achieved in:

- Improved safety, health and environmental performance
- Reduced costs due to using the ART tool
- Operational human factors improvements / reduced operator stress

- Improved profitability through fewer shutdowns and production loss as well as increased overall equipment effectiveness
- Change control and audit capabilities
- 30-40% reduction in rationalisation exercises and projects
- Output from ART is a MAD
- Improved plant reliability and efficiency
- Operations team can proactively operate plant effectively

While many alarm improvement projects lay claim to achievement of the above benefits, the differentiator with ART is that it enables operators to successfully complete alarm improvement projects which they would otherwise not be able to do.

Why ABB?
ART addresses challenges / issues such as:

- Rationalisation perceived as complex task, requiring specialist expertise
- Lack of availability of key resources to support alarm reviews
- Inadequate funding
- Duration of project estimated as many man months

Not only does the ART provide a cost effective and scalable solution, but it supports efficiency savings which mean that alarm rationalisation projects can be delivered in less than half the time than would otherwise be the case. For many facilities / project this represents the difference between a successful alarm rationalisation, and one which was not completed, or in some cases, not even attempted.

The alarm management experience and learning on which the ART tool is structured focuses on capture of operations knowhow in the form of alarm rules and alarm templates which allow best practice from one shift / plant to be applied across all facilities.

For many operators, the faster review times delivered by ART are extremely valuable, given severe constraints on availability of scarce resources to support alarm review meetings.

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.