OSHA regulation 1910.119, "Process Safety Management of Hazardous Chemicals", states that written operating procedures must be produced for normal and abnormal operations. There must also be a management of change process in place to ensure that any changes to the process are reflected in these procedures.

Of course, the alarm system is an integral part of any plant's safe operation, and the above regulation applies to this system. The thousands of alarms on a DCS, coupled with the ease with which they can be changed, present a difficult managerial challenge. Disabled alarms, modified alarm trip points, irrelevant or obsolete alarms, and undocumented alarms may result in a system that does not meet the requirements of the OSHA regulation.

You can find out more about this regulation at www.osha-slc.gov/ OshStd_data/ 1190_0119.html. For information on tools to assist you in meeting this regulation, see the "Alarm Analysis and Management" article in this newsletter.

àFree Softwareà
Controller Performance Assessment for the TDC3000

Control Arts is pleased to announce that the Controller Performance Assessment software package for the TDC3000 is available for free. This package allows you to obtain unbiased and in-depth analysis of the performance of your single loop and (with mild assumptions) multivariable controllers. You can use this package for the following objectives:

- Discover advanced control opportunities.
- Determine the benefits of control upgrades.
- Ensure controllers are being maintained.
- Quickly apply metrics to the performance of existing controllers.

The Control Arts Controller Performance Assessment package employs the Harris Performance Index (along with 4 other tests) to determine performance. The advantage of this measure is that it is *independent* of setpoint changes and disturbances that occurred during the data sampling time. In contrast, the metrics that use the normal (PV-SP) variance reflect the size of setpoint changes or disturbances rather than the ability of the controller.

This software package runs entirely on the TDC3000 using only standard AM utilities. Once installed, all you have to do is call up the display, enter a tag-name and time range, and then let the program determine the performance of your controller (see Figure 1). Best of all, no plant tests are required (nor do you have to transfer data over the web and wait for a report).

Authorized plant personnel (see website for terms and conditions) can download this no-obligation package from the Control Arts website at www. ControlArtsInc.com. Complete installation and operation instructions are included. A low cost flexible package with enhanced features for the PC is also available; more details of this version are included with the download files.
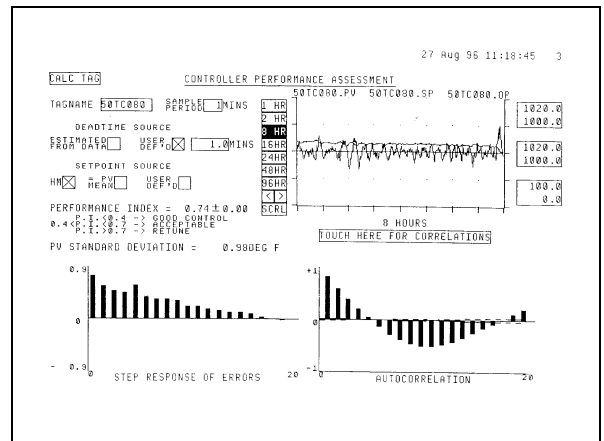

Figure 1: TDC3000 Controller Performance Assessment display showing typical results.

Alarm Analysis and Management

Most plants have a long-term objective to "do something" about their alarm system. Often the problem is that while each alarm has a rationale (or had one at some point in time), there has been a lack of system-wide management and maintenance on the alarm system as a whole. With thousands of alarms to consider, it's not surprising that the alarm management task is often orphaned by the technical and operations groups in the company.

And yet, the alarm system is of critical importance to the smooth and safe operation of a plant. While advanced control may save the company thousands of dollars, poor upset response will result in hundreds of thousands of dollars of product being sent up the flare stack, not to mention the safety hazards, environmental impact, and equipment losses of an upset.

One hurdle to alarm management has been a lack of tools – until now. Control Arts has developed a software suite that addresses all aspects of alarm management, from data capturing to analysis to real-time operations assistance.

Alarm Analysis and Management (cont'd)

Foremost of these tools is the Alarm Analysis Tool – a data-mining product that quickly uncovers alarm deficiencies using historical data. This tool has been discussed in previous newsletters; three new Control Arts products have been recently developed to aid in the management of alarms. These new tools are:

Alarm Manager

An Alarm Objectives Analysis is often performed at some point in the life cycle of a plant to determine alarm values. Not just the alarm setting, but descriptions of the alarm causes, operator responses, etc. are discussed and specified. These studies are labor intensive – approximately 15 minutes of analysis by several skilled people is required for each alarm.

The Alarm Manager assists in this study by providing a database front end for the storing and displaying the study results. Engineers and operators can quickly add or modify the settings and procedures for any alarm, and then store the results on the company network so that it's available to the entire plant.

That's not all – you can also plot a history of the actual alarm settings, alarm events, and enable status. That way you can determine if your design matches reality. And the program automatically builds a database of all alarm points directly from the TDC3000 EB configuration files, ensuring that no alarms get missed in the analysis.

Alarm Assistant

The most important users of the Alarm Objectives Analysis are the operators – they are the ones who need to know what an alarm means and how to respond to it. What they also need is *fast* access to this information, as they hardly have the time to search through computer or printed files for information during an upset.

Give operations fast access to this database with the Alarm Assistant. This tool duplicates the TDC3000 alarm annunciator on a PC, with the important difference that clicking on an alarm instantly brings up a window showing the Alarm Objectives for the that alarm.

Engineer Alert

Ever need to instantly notify non-operations personnel when an event occurs? Perhaps you'd like to notify a system engineer when a board fails, or a rotating equipment engineer when a turbine trips, or someone in the environmental department when a monitoring alarm goes off. You could rely on operating personnel to phone these peo-
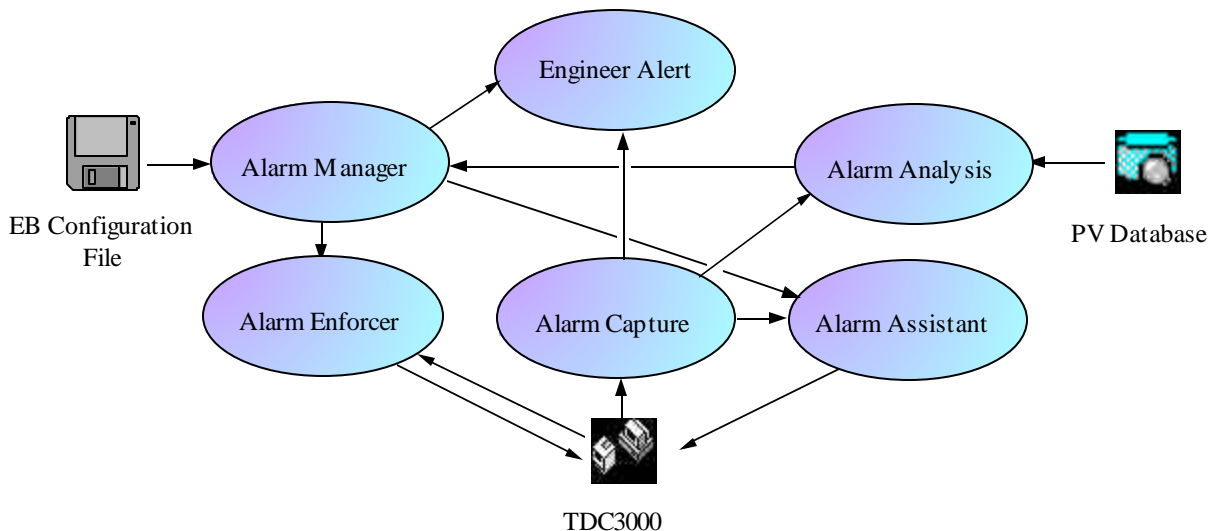

Figure 2: The components of the Process Alarm Toolkit and how they interact. Call for a brochure describing the complete Control Arts

New Web Page Features

For a complete description of all Control Arts tools, check out our website at www.ControlArtsInc.com. In addition to the software descriptions, you can also download:
- Past copies of the Control Arts Newsletter
- A copy of the paper "Limitations of MPC Controllers", to be published soon in Hydrocarbon Processing.

Also, if you want to be on the Control Arts E-mail list, enter your e-mail address on our site.

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