



DISTRIBUTED CONTROL SYSTEMS

APPLICATION NOTES

**Alarming on the Emerson
Delta V Distributed Control System (DCS)
Revision 1.0
5 Feb 2003**

The following notes are intended to provide clarification as to possible implementations on alarms within the Delta V based on experience of Mason-Grey personnel. In any implementation, customer requirements must be carefully balanced with capabilities of support personnel and capabilities or limitations of the Delta V DCS.

Alarms are generated at the control module level and the alarms can be initiated by any parameter within that module. This may be as simple as a DI value or a trip point on an AI, or it can be something as complex as a result of a calculation or complex logic. Several alarms can be configured for each module. Recent experience has been up to 11 per module, although this is not a firm limitation. This flexibility also has to be used with caution. For instance, a high level alarm can be generated at the AI function block in the module, or at the PID function block. Mason-Grey suggests that alarms are implemented in the AI rather than the PID. In a Fieldbus Application, the AI is always in the transmitter, whereas the PID should under normal circumstances be in the valve. This ensures that the alarms continue to work even if the valve fails. This, however, is not the way standard templates on the Delta V are configured.

Each alarm has a priority with 15 priority levels available. This is set by FF.

Each Module can be assigned to a unit, but it does not have to be configured this way. The unit is a module which can have its own alarms and summary alarms of the modules assigned to that unit (ISA - S88). The unit is a module which runs in the controller. Each module has to be assigned to an area. The area, by itself, has no functionality other than as an attribute of the module.

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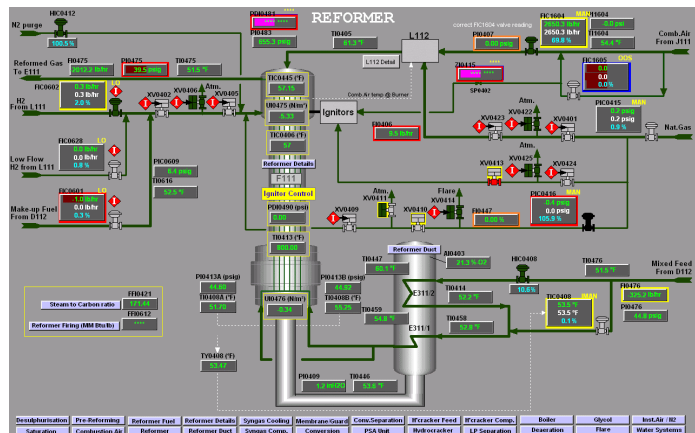


Figure 1: Process Overview Graphics of Petrochemical Process operated by Delta V.

The Delta V operator interface is a customized version of Intellution IFIX, with OPC communication to the controllers. Delta V is configured as standard with 4 basic levels of priority. At the time this application note was written, it was anticipated that this would change in Release 6.3. The primary display for alarms is on the banner at the bottom of the screen with the most recent, highest priority unacknowledged alarm being on the left most end. There are 5 alarms on each screen. Each operator station can only display alarms for modules in areas assigned to that operator station. For clarification, areas have to be assigned but with no limits on how many. There is also an alarm summary display which displays all alarms (25 per page) in the same order.

Alarms are also displayed on the faceplates for modules and on process graphics. There is an endless variety of custom alarm displays and representations which can be produced. Alarms can be suppressed (i.e. made to not alarm) in which case there is a separate "suppressed alarm" list, and this can be done by operator if permitted, or by logic. Alarm priority can also be temporarily lowered by operator or by logic.

To the extent possible, every effort should be made to leverage the elegance and capability of standard templates on the Delta V. This is to minimize the cost of configuration as well as long term support. If it is necessary to develop a custom approach, then a custom template should be configured and adopted as standard for the implementation, again, to minimize cost of configuration as well as long term support.

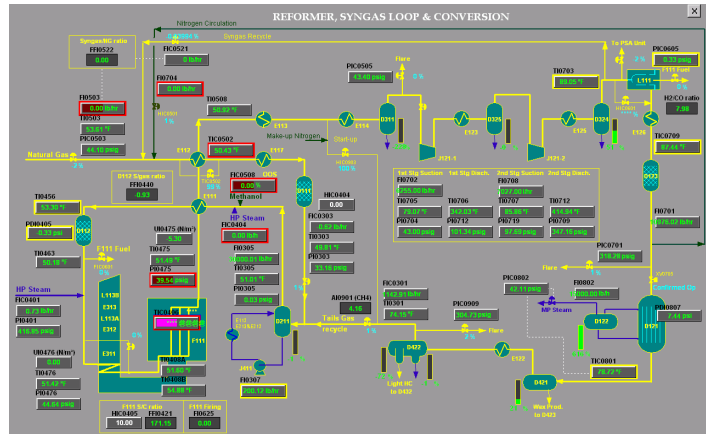


Figure 2: Process Overview Graphic

As part of the system planning, Delta V users should determine the areas and units to provide sensible filtering capability. Limits on the implementation of alarming should be considered (i.e. it is not necessary to have a low flow alarm on a pump discharge if the pump is not running). With proper preparation, it should be possible to handle most of the alarm requirements with standard alarm features of the Delta V.

Additional flexibility can be implemented by creation of graphics for an alarm annunciator boxes. This enables a duplication of alarms on a local panel. The Delta V will also support logic to re-initialize or un-acknowledge an acknowledged alarm after a certain time (or other requirement). Additionally, the Delta V can dedicate an area on each display so the status of certain alarms will always be visible.

With every option, requirement and consideration, users of the Delta V should consider the cost of implementation as well as the cost of long term support of non-standard features. This careful balance of cost versus functionality will help ensure delivery of a system that best meets the needs of the client.

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