

Advanced Operator Graphics Services

- Improve situational awareness
- Recognize upset before alarms occur
- Make better, faster decisions
- Capture experienced Operator knowledge
- Implement industry best practices



The Value of Advanced Operator Graphics

The Operator interface to your control system is an important part of the Operator's ability to control the plant process. A well-designed graphic that encourages situational awareness allows for a more accurate and timely Operator response.

By using leading indicators, deviating process values can be easily identified and corrected before they alarm or trip. Alarms and other abnormal events should clearly stand out on the graphics by using specific colors and shapes allowing for easy identification of a process change. Large Screen Overview displays provide an at-a-glance view of the Operator's entire span of control using strategically identified variables. Task-oriented displays provide all necessary information for control during common operating scenarios on a single display. Permissive and shutdown graphics clearly illustrate what is preventing start-up or what caused a shutdown.

Benefits of Advanced Operator Graphics

Advanced Operator Graphics maximize situational awareness, resulting in significantly less time the process is off target.

Improved situational awareness – With an overview display of the Operator's entire span of control, he or she is never blind to parts of the process.

Recognize upset before alarms occur – Improved feedback illustrations draw in the Operator's attention to quickly recognize conditions that may lead to upset, well before the alarm comes in.

Make better, faster decisions – The organization of key content enables the Operator to instantly know the health of his or her process at a glance.

Capture experienced Operator knowledge – When incorporated within the displays, identification of the Operator tasks and overall knowledge will improve the speed and quality of onboarding new Operators.

Implement industry best practices – Advanced Operator Graphics makes use of ISA 101.01, COP and human-factors engineering concepts. Industry best practices can be incorporated in your internal standards.

Levels of Graphics

1. **Large Screen Overview** – A non-interactive display that provides an at-a-glance view of the overall health of the Operator's entire span of control.
2. **Controls Overview** – Provides the necessary handles for common tasks and diagnostics. This graphic level would be utilized 90% of the time. These can be unit overviews or specific task-related displays, such as shutdown or start-up displays, where the necessary controls are accessed from a

single display. Slight changes in the process should be easily recognized from the variable illustrations on this graphic level.

- 3. **Detailed Process** – This layer includes detailed process graphics, where the graphics are similar in detail to the P&ID. All necessary control handles should be present on this layer including complex control loops and alternate line ups.
- 4. **Other** – The remainder of the system information should be present in this layer. Information may include interlocks and permissives, maps, tuning parameters, pop-ups and face plates.

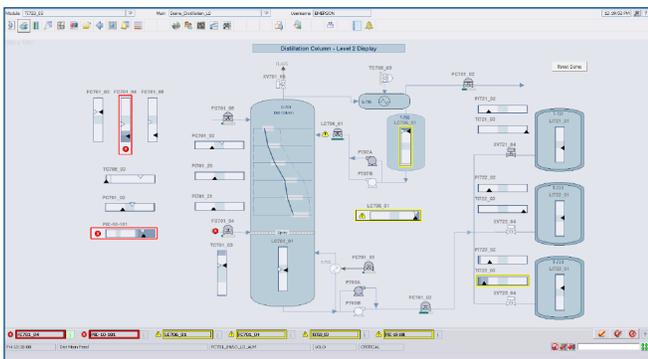


Figure 1: Example of a Level 2 Controls Display.

Display Design Services

Emerson can facilitate the development of your own internal HMI philosophy, conduct a Display Workshop, provide a Gap Analysis of your current graphics or philosophy, facilitate the data gathering and dynamo selection process, build and install your graphics and train your Operators and Engineers on the new graphics. You may decide that you would like to perform some of these steps internally. Emerson can also help guide you in determining how much or how little you would like Emerson to be involved with each of these steps.

- **Philosophy Development** – align to industry standards and best practices.
- **Display Workshop** – an introduction of Advanced Operator Graphics to company decision makers, Engineers, and/or Operators; an HMI philosophy review may also be included.
- **Display Review** – identify gaps between current displays against industry best practices.

- **Display Design Consultation** – strategic variable and dynamo selection and arrangement in a hierarchy of graphics.
- **Display Drafting, Installation and Training** – create displays from design, upload graphics onto customer’s system, and conduct Operator and Process Control Engineer training.

Philosophy Development

Emerson will develop a comprehensive, site-specific HMI Philosophy document which incorporates ASM® recommendations and industry best practices. The content of the document will be consistent with that recommended in the High-Performance HMI Handbook and ISA SP101.01 HMI Standard.

The HMI Philosophy document contains human factors principles. It is not specific to any DCS; however, it is centered on human capabilities and limitations. This document defines the methodology for each principle and should be reviewed and understood before the graphic design process starts. This document will keep the HMI designers grounded during the design stage forcing consistency, situational awareness, and standardization.

Display Workshop

- Introduction of Advanced Operator Graphics to company decision makers, Engineers, and/or Operators.
- Review or develop the display philosophy.

Display Review

In the Display Review Service, current displays are assessed to identify the gaps between the current displays and industry best practices. In the Display Review, the customer provides a set of displays. These displays are reviewed against best practices and guidelines (ISA, ASM, COP, customer and Emerson standards). Emerson will provide a written report describing alternatives to organizing and formatting of information. The report is centered on clearly illustrating the process flow, reducing visual clutter with appropriate color use, and putting the visual emphasis on process information into context.

Display Design Consultation

Display Design Consultation features onsite collaboration with operations and engineering to identify Operator tasks and the strategic information required to complete those tasks.

The emphasis is on Operator monitoring, control and situational awareness.

Operations Display Consultation examines how the Operator uses the information on their displays. The consultation will involve scope definition using Operator displays, control strategy, event data, block flow diagrams and P&IDs and PFDs. One or more consultants will travel to site for observation and interaction with Operators to understand the daily tasks and identify the required information. Emerson will provide a report containing an information hierarchy and wireframe drawings from the Operator's situational awareness overview (Level 1), and daily monitor/operation (Level 2) displays.

Display Drafting, Installation and Training

Displays will be built from the hierarchy and wireframe drawing generated in the Display Design Consultation. They will be uploaded onto the customer's system and tested. Training will be provided for the Operators and Process Control Engineers.

Certification and Training

- Advanced Operator Displays 7625
- DeltaV Graphics Advanced 7025
- Using DeltaV Operate 7009
- Using DeltaV Live Operator Interface 7409

Related Products

Related products are available in addition to the services and solutions documented here.

- DeltaV Operate
- DeltaV Live
- Interface Dynamics

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