SmartProcess™
Oil & Gas Applications

Cause & Effect Manager

EMERSON™
Process Management

Simplified controls to meet facility operational requirements

Cause & Effect is an innovative application that provides a menu-driven approach to control logic configuration, delivering flexibility, and offering custom control capabilities for those users without programming experience. It is a licensed User C program for the ROC800-Series and FloBoss™ 107 devices that provides logical operations without having to write FSTs or IEC 61131 code.

Cause & Effect diagrams are often utilized to functionally define the logic requirements for the control of a process or site. The criteria for causes are defined and then linked to the required effects using pre-configured templates. Upon completion of the Cause and Effect diagram, the control logic can be configured by the facilities engineer or automation technician reducing the need for traditional programming services. Cause & Effect has the capability to perform control logic changes and enable the changes without having to recompile and download the program that allows changes to be made online.

Cause & Effect is available for two matrix sizes:

- 128 Cause x 64 Effect size (ROC800 only)
- 64 Cause x 32 Effect size (ROC800 and FloBoss)

Cause & Effect allows the user to define causes and effects with mouse clicks of selections and dropdown menus supporting both mathematics and logic functions. The "what you see is what you get" configuration screen is easy to understand and can easily be set up from a standard cause-and-effect logic diagram and requires no programming language background. The application is self-documenting within the configuration file of the ROC800 and FloBoss 107.

Cause & Effect gives the user the ability to make online changes to program configurations and have those changes applied immediately without the need to download the change. There is no need to disable existing control logic or shutdown during this process which ensures that the program and operations never skips a beat.
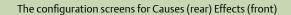
Cause would monitor a selected point that would be logically evaluated against a user defined set-point. Any tripped Cause linked to an Effect will force the action defined in that Effect. An example of this would be a gas application monitoring multiple gas quality limits defined as Causes (BTU, H_2S, Nitrogen, CO_2, etc.) which are linked to a block valve which is the Effect. The layout of the configuration screens can configure logic by inputting entries from a cause and effect matrix. In many cases, one can input the effects and causes line by line throughout the entire matrix.

Features:

- Cause precondition evaluation must be satisfied before a trip is possible
- Cause compound primary and secondary conditions that will trip the cause based on "and/or" evaluation
- Cause operators allow selectable evaluations or operations (logical, on-change, mathematical, watchdog, and data movement).
- Cause condition and precondition timer delays
- Cause condition deadbands
- Cause definitions for up to16 effect link assignments
- Cause trips that clear automatically when the condition clears or trips that are reset controlled
- Cause alarming to the device alarm log for trips and/or clears

- Effect active/inactive values or states that are definable
- Effect selectable option to assert those values continuously or not
- Effect usage that defines its behavior as a normal effect or a reset point (i.e., reset push button)
- Effect delay timer
- Effect last four tattletales that show the order of multiple causes tripped

The configuration screens for Causes (rear) Effects (front)

Multiple Causes shown in the ROCLINK™ 800 Configuration Tree

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