A Method of Designing Plant Alarm System Based on First Alarm Alternative Signals for Each Assumed Plant Malfunction

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Abstract
When a chemical plant is abnormal state, an alarm system must provide useful information to operators as the second layer of independent protection layer. Therefore, a method of designing plant alarm system is important for plant safety. Because the plant is modified in the plant lifecycle, the alarm system for the plant should be properly managed through the plant lifecycle. To manage the changes, the design rationales of alarm system should be explained explicitly. This paper investigates logical and systematic alarm system design method that explicitly explain design rationales from know-why information for proper management of change through the plant lifecycle. In the method, the modules proposed by Hamaguchi et al. (2011) to assign fault origin to be distinguished are extended. Using modules to investigate the sets of alarm sensors and the alarm threshold setting, an alarm system design method is proposed. Using the two types of modules and the set of fault origins to be distinguished by alarm system, we try to explicitly explain the design rationales of the alarm system.

Keywords: First Alarm; Plant Alarm System Design; Cause-Effect Model; Alarm Management; Plant Alarm Malfunction.

References
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