

1 Introduction

1.1 Process operating facilities utilize instrumentation to monitor and control processes. The performance of this instrumentation ties directly into product quality and product throughput. In addition, the process may become hazardous to operating facility personnel, the community, and the environment if control is lost.

Some instruments perform essential functions during emergency response activities and a high degree of confidence is required to ensure that instrumentation will function correctly during an emergency.

1.2 This guideline is developed to assist engineering, operations, and maintenance personnel with establishing the classification of their instrumentation, thus facilitating all aspects of designing and maintaining reliable operating facility instrumentation. Global instrumentation manufacturers classify their equipment according to various country classification standards (see clauses 6.3, 6.7, 6.8).

Some process sector facilities utilize criticality classification methods to:

- Facilitate understanding of how these classifications can be used in the design process.
- Reduce design costs by using prescriptive design approach for each classification to ensure consistency, understanding, and cost effective design.
- Relate instrumentation requirements to corporate, local, national, and international standards.
- Facilitate communication to those responsible for instrumentation, electrical, mechanical, chemical, measurement, and operating technologies.
- Allow clear communication with integrators, auditors and other third parties
- Identify training and maintenance needs compatible to the needs of the application.

1.3 This guideline does not mandate what the classification of each instrument should be. It does provide information to assist each operating facility in determining the classification of its process instrumentation. **It is the responsibility of an operating facility's management to determine whether criticality classification is needed.**

1.4 This guidance will deal primarily with instrumentation used in the process industries. The operating facility may have instrumentation associated with the machinery sector, the medical/drug sector, the railway sector, etc. For example, this guidance will address the machinery and combustion sectors only where equipment associated with these sectors is utilized in the process (e.g., product heating, range drives, product conveying). This guideline addresses asset and safety critical issues as well as other issues.

Requirements exist for each of the noted sectors (e.g., process, machinery) and are addressed in the following clauses for their relationship to the process sector and its requirements.

1.5 Note that all applications, regardless of classification, should adhere to good engineering practices.

2 Guidelines for defining instrument classifications

2.1 Many operating facilities have a classification system (generic scheme) that includes categories such as critical and noncritical. Figure 1 illustrates such a classification scheme.