

PROBABILITY THEORY IN ANALYSE OF THE RISK

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The principle concepts and issues related to the safety of modern industrial activities are considered. The classical techniques for reliability analysis and risk assessment in the current practice would be investigated. The main attention is directed toward analysis methods used in practice for the identification of hazards associated to industrial plants and processes, basic probability theory applied to reliability analysis and risk assessment.

The main topics are: Basics of probability theory for applications to reliability and risk analysis. Definitions. Boolean logic operations. Logic of uncertainty: identification of probability (Axiomatic definition; Empirical frequentist definition; Classical definition; Probability space), Probability laws (Union of non-mutually exclusive events; Conditional probability; Theorem of total probability; Bayes theorem), Availability and Reliability.

Reference:

1. Enrico Zio, An Introduction to the Bases of Reliability and Risk Analysis, Milano, World Scientific Publishing Co., 2007.