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Une nouvelle approche pour les analyses de risques associant sûreté et sécurité des systèmes de contrôle

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Résumé :

The introduction of connected systems and digital technology in process industries creates new cyber-security vulnerabilities that can be exploited by sophisticated threats and lead to undesirable safety accidents. Thus, identifying these vulnerabilities during risk analysis becomes an important part for effective industrial risk evaluation. However, nowadays, safety and security are analyzed separately when they should not be. This is because a security threat can lead to the same dangerous phenomenon as a safety incident. For this reason, this study proposes a new method that considers safety and security together during industrial risk analysis is proposed. This approach combines bowtie analysis, commonly used for safety analysis, with a new extended version of attack tree analysis, introduced for security analysis of industrial control systems. The combined use of bowtie and attack tree provides an exhaustive representation of risk scenarios in terms of safety and security. We then propose an approach for evaluating the risk level based on two-term likelihood parts, one for safety and one for security. The application of this approach is demonstrated using the case study of a risk scenario in a chemical facility.