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ANALYSIS OF THE METHODS FOR HUMAN-INDUCED EVENTS RISK EVALUATION FOR CRITICAL INFRASTRUCTURES LIKE ENERGY PRODUCTION PLANTS BASED ON NUCLEAR REACTIONS

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As the world seeks sustainable and low-carbon energy sources, nuclear fusion has emerged as a promising solution with its potential to generate vast amounts of clean energy as well as nuclear fission is considered by many countries that closed the nuclear fission programs many years ago like Italy. This study analyses the methods for risk evaluation of fusion and fission plants (approached like critical infrastructures for energy production) to deliberate sabotage, cyberattacks, insider threats, and other forms of malicious interference and the principal methods to evaluate the related probabilities that certain events can happen. Drawing insights from existing literature, expert opinions, and case studies from related critical infrastructures, this work aims to raise awareness about the importance of integrating robust security measures into the design, operation, and regulation of those plants. By identifying the methodologies for risk evaluation and proposing proactive strategies to mitigate risks, this research contributes to the development of a resilient and secure energy infrastructure for the future.

Primary authors: Dr CARBONELLI, Marco (Department of Industrial Engineering, University of Rome Tor Vergata); GAUDIO, Pasquale (University of Rome Tor Vergata); Dr IANNOTTI, Alba (Department of Industrial Engineering, University of Rome Tor Vergata); QUARANTA, Riccardo (Department of Industrial Engineering, University of Rome Tor Vergata); DI GIOVANNI, Daniele (University of Rome Tor Vergata); ROMANO, Luca (Department of Industrial Engineering, University of Rome Tor Vergata); Dr CHERICI, Andrea (Department of Civil and Industrial Engineering, University of Pisa); MALIZIA, Andrea (Dipartimento di Ingegneria Industriale, Università degli Studi di Roma "Tor Vergata")

Presenter: MALIZIA, Andrea (Dipartimento di Ingegneria Industriale, Università degli Studi di Roma "Tor Vergata")

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