Editorial

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The idea of the present Special Issue in Human Factors in Safety Science arose at the end of the "Innovation through Human Factors in Risk Analysis and Management (InnHF -FP7-PEOPLE-2011-ITN)" European Project. The main objective of the INNHF project was to formalise an approach and make it possible to integrate the current and developing risk assessment methods that are recommended, or required, in recognised industrial standards and methodologies, with a human factor and system health management approach, since the proposers believed that an integrated approach could more effectively support decision making to the benefit of the health and safety of operators, the environment and the integrity of assets.

During the project, several applications were developed to support this view, but the participants believed that the field of application of the generated ideas was even wider and an attempted to explore them has therefore been made in this issue.

In fact, in this Special Issue, the reader will find 17 relevant scientific contributions, ranging from the more traditional, human factor analysis application fields to emerging fields and applications.

Li P. et al. (2019a) have proposed a methodology for nuclear power plants to assess the operator's situation awareness reliability as a contributor to human errors in complex control rooms. The same authors have also proposed a validation study of the method through sensitivity analysis and simulator experiments (Li P. et al., 2019b). Another contribution in this application area is that of Li Y. & Mosleh A. (2019) who have described the enhancements that have been made in the modelling and simulation capabilities of Accident Dynamic Simulator paired with Information, Decision and Action in a Crew context (ADS-IDAC), a platform used to conduct dynamic probabilistic risk assessments (DPRA) in nuclear power plants, whereby the modelling of operator knowledge-based behaviour in accident conditions is improved by means of an increased realism of the IDAC model through a simulation approach to Human Reliability Analysis (HRA). The contribution of Giardina et al. (2019) also refers to the nuclear field, but it has instead applied a multiple Human Reliability Analysis to achieve an early-design improvement of human reliability in an experimental facility: a second-generation Isotope Separation On-Line (ISOL) facility for advanced nuclear physics applications, which was under construction at the time the paper was written, has been proposed.

However, the advances in the analysis and modelling of human and organisational factors are also spreading to many other fields of application, thereby generating new knowledge and improving both safety management and integrity of the assets.

In the upstream sector, Hu et al. (2019) have discussed the importance of human errors and have proposed a methodology to assess the risks related to human errors in shale gas fracturing processes.

In the transportation field, Corrigan et al (2019) have presented a paper in which the critical role of human factors on safety in ports and docks is recognised and assessed through surveys and interviews with personnel. This contribution may be integrated with the paper of Yildirim et al. (2019), who have conducted an examination of marine collisions and grounding accidents through a Human Factor Analysis and Classification System (HFACS), which identifies decision errors, resource management deficiencies, violations, skill-based errors and miscommunication as the most important causes. Rogé et al. (2019) have investigated the capability of car drivers to detect cyclists in a virtual environment with the aim of testing visual aids, such as yellow jackets.

In the process industry, Walsh & Leva (2019) have proposed a review of the critical role of human factors in safe food production in Ireland. They have completed their work with data from a survey on food safety violations in a numberof Irish food premises and a study on food safety training in the same country.

In the manufacturing field, which appears to be one of the more promising fields of application, Baldissone et al. (2019) have performed a data collection and proposed an analysis method to link the unsafe actions

and unsafe conditions observed in a manufacturing work environment, that is, the precursors of potential accidents and injuries, to measures that are able to control them. Djapan et al. (2019) have proposed a fuzzy set theory-based methodology as a prognostic risk assessment tool to jointly analyse human, organizational and technical/technological (HOT) factors in order to support risk-based decisions in the manufacturing sector. Giagloglou et al. (2019) have combined the results of an occupational repetitive actions analysis (OCRA) and Electrodermal Activity (EDA) laboratory test to offer suggestions, to work design experts, on how to consider psychophysiological impact metrics derived from low risk repetitive tasks. Vukadinovic et al. (2019) have proposed an Early Human Resources Management (EHRM) model, designed through the integration of Early Management and Human Resources development concepts and the Vertical start-up (VSU) principle, in order to reduce the time needed to reach the full potential and to achieve the desired level of knowledge and competencies of human resources in Lean industrial systems.

In the energy system field, Mentes & Turan (2019) have developed a paper on the management of the maintenance related risks in which the resilience of an offshore wind turbine has been included, whereby they have demonstrated how resilience concepts and the related model could be effective in preventing accidents, injuries and system failures, as well as being useful for learning activities.

Particular mention should be made of the recent developments in the area of neuro-ergonomy, which is represented in this issue in the paper by Masoudian & Razavi (2019), in which the factors that affect the vigilance of operators are analysed in order to classify the work environments on the basis of their vigilance requirements, for the benefit of the operators' health and safety, and of the paper by Mijović et al. (2019), in which innovative wearable sensors (EEG) and motion sensors have been introduced into the work environment as a first step towards the development of cognition-aware computing in industrial environments and the development of a sensitive workplace with the on-line detection of deviations in a user state, with the ultimate aim of preventing operator errors and improving the work experience.

And to close the loop and this Special Issue, mention should be made of the review by Dallat et al. (2019), in which the authors have carried out a review of 342 risk assessment methodologies and have shown how most of them represent accidents as emerging from a linear or chain-of-events process, and thus emergent risks at other levels of the system, including supervisory, managerial, regulatory and government levels, are overlooked. The findings suggest that most of the already existing risk assessment methods may be inadequate to identify hazards and analyse risks in complex sociotechnical systems.

The papers in this Special Issue clearly demonstrate how there is still a great deal of room available for research in risk assessment and management, and how enriching the integration of different disciplines (human & organisational factors – technological risks – management - resilience) and contamination across fields of application can be.

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