

Preface

The International Conference on Management of Ergonomic Design, Industrial Safety and Health Care Systems (MESH 2016) was held during 20–23 December 2016, at the Department of Industrial & Systems Engineering (ISE), Indian Institute of Technology Kharagpur, West Bengal, India. The focus of the conference was on three interrelated domains: (i) Ergonomic Design, (ii) Industrial Safety, and (iii) Healthcare Systems. Of them, the selected articles under ‘Industrial Safety’ have been included in this volume. The articles are categorized under three themes: (i) Safety by Design, (ii) Safety Analytics, and (iii) Safety Management.

‘Safety by Design’ is basically a concept of applying methods to minimize hazards early in the design process, with an emphasis on maximizing employee health and safety throughout the life cycle of products, materials, and processes. This concept can be applied in various areas like improving safety and productivity at the construction site (*See Vigneshkumar and Maheswari, page 1–10*) reducing risk associated with EOT crane’s operations through virtual prototypes (*see Dhalmahapatra et al., page 11–25*), reduction of concentration of coal dust in working environment by using water mist systems (*see Vivek and Manikandan, page 26–36*), and design of antilock braking system as per rough road conditions (*see Vivekanandan and Fulambarkar, page 37–51*).

‘Safety Analytics’ that deals with data-driven decision making can be used in various areas like analysing safety performance and pointing out the specific areas of improvement by mapping safety factors based on safety data and incident reports (*see Verma et al., page 52–62*), predicting occupational incidents (*see Sarkar et al., page 63–78*), evaluating the occupational hazards and their contribution to the occurrences of injuries in hard rock mines (*see Sarkar et al., page 79–93*), modelling of human energy consumption of workers who are repeatedly exposed to vibrations during machining operations (*see Mohod and Mahalle, page 94–104*), and road safety (*see Srinath et al., page 105–115*).

‘Safety Management’ refers to managing business activities and applying principles, framework, processes to help prevent accidents, injuries, and to minimize other risks. ‘Safety Management’ concepts are used to develop a framework for implementing the safety life cycle management (SLCM) approach for a safety

instrumented system (SIS) to manage the plant safety (*see Rohit et al., page 116–130*), and to understand human–computer interaction behaviour for various systems (*see Rahman, page 131–139*).

After reading this volume, readers will be able to understand the concept and issues related to industrial safety, induction of safety at the design stage to improve the safety performance, analysing, predicting, and reducing hazards by the use of analytics and safety management.

As organizers of MESH 2016, we would like to express our sincere thanks to Director, Prof. Partha Pratim Chakrabarti, IIT Kharagpur, for his overall support and encouragement and Dean (CEP), IIT Kharagpur, for the administrative support in conducting the conference. We are extremely thankful to Tata Steel Limited, Viz experts, Tobii Pro Vitasta India, TVS, Linde, and Janatics Pneumatic for sponsoring the conference/ events. We would also like to thank the members of the *National and International Advisory Committee* for their guidance, the members of the *Technical Committee* and reviewers for reviewing the papers, and the members of the *Organizing Committee* for organizing the entire events in conference. We are especially grateful to the proceedings publisher Springer for publishing the proceedings in the prestigious series of “*Industrial Safety Management*”. Moreover, we would like to express our heartfelt appreciation to the plenary speakers, session chairs, and student members. In addition, there still remain an ample number of colleagues, associates, friends, and supporters who helped us in immeasurable ways, and without their support, we would not have achieved a grand success in conducting MESH 2016. Finally, we would like to thank all the speakers, authors, and participants for their contributions that made MESH 2016 successful and all the hard work worthwhile.

We also do believe that the articles within this volume will be useful for the researchers pursuing research in the field of industrial safety, occupational health, and related areas. Practicing technologists would also find this volume to be an enriched source of reference.

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