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Preface

Special Issue Part 1: Process Control Nexus Bridging, Technology, Sustainability and Industry

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The practice of engineering especially related to process control is undergoing various major changes in dealing with the needs and requirements of advancing the IR 4.0 concepts. These changes require a collaborate and multidisciplinary approach, which will definitely influence highly the direction of teaching and research in the academic institutions in the future in this region and globally at large. For this reason, the Malaysian Process Control Society (MyPCS) hosted the Process Control Virtual Symposium (PCVS 2023) on 2nd December 2023 with the theme "Process Control Nexus: Bridging, Technology, Sustainability and Industry". The program included a Keynote Speech by an Industrial Expert, various technical presentations and finally a forum related to the theme involving well-known academics in this region. Out of the many technical paper presented, 6 papers were chosen to be included in this Part I of the special issue of the journal with the other paper being the regular submitted paper. These papers chosen covered a wide spectrum of topics in the field of Process Systems Engineering. Some of the papers were directly related to the I.R 4.0 concepts while others incorporate parts of the concepts or were fundamental studies revolving around this concept.

The first paper is on "Using Apps for Teaching Process Control Classes" by A.W. Hermansson which demonstrates that app-based simulators can be an alternative to traditional experiments for process control teaching in academic institutions. The second paper is on "Modeling and Control of Steam Methane Reforming Process Using Model Predictive Control" by Tan Li Ting et. al. This paper focus on the modelling and control of the steam methane reforming process using the model predictive technique to optimize its hydrogen production while comparing with the traditional PID method. The third paper "Model Predictive Control for Efficient Process Control: A Case Study for Absorber-Stripper System With MEA in Hydrogen Plant" by Renanto et. al. also relates to the advantages of the MPC over the traditional PID method in regulating the CO_2 recovery for the Absorber-Stripper System involves the MEA solution.

The fourth paper is "Bayesian-ANN Controller for pH Control" by A.W. Hermansson which demonstrate the superiority of the proposed Bayesian weighted ANN-MPC method to the ANN and

MPC method respectively in regulating pH. The fifth paper is "Dynamic Simulation and Optimization of Chemical Looping Hydrogen Production in Inter-Connected Moving Bed Reactors" by Priyam Kataria et. al. This paper involves investigating the complex dynamics and optimization of the chemical looping hydrogen process (CLHP) involving the interconnected moving-bed reactors circulating a solid oxygen carrier.

The last paper is the normal journal paper entitled "Optimization of Coagulation Tank Processes Through Interval Fuzzy Type 2 Logic System: A Study of Turbidity Reduction" by Lorna Ahlaami et. al. which describes the use of genetic algorithm with fuzzy logic to enhance the performance of turbidity reduction in a waste water treatment system.

Finally, on behalf of the organizing committee we would like to thank all the participants, authors, reviewers and the editorial office bearers for their support and contributions in making this special issue possible.