Preface

This special edition presents a comprehensive overview of current research and technological advances in mechanical systems design, machine and equipment fault diagnostics, power engineering, and intelligent automation and robotics.

Chapter 1: Modelling of Machines and Machine Parts focuses on analytical, numerical, and computational approaches for describing the behaviour of machines and their components. Contributions emphasise simulation techniques, performance prediction, and design optimisation for reliable and efficient mechanical systems.

Chapter 2: Fault Detection presents methods and technologies for monitoring, diagnosing, and predicting faults in engineering systems and equipment. Topics include signal processing, condition monitoring, data-driven approaches, and reliability assessment, all of which aim to enhance safety and operational efficiency.

Chapter 3: Power Engineering explores technologies and systems related to energy generation, transmission, and utilisation. The chapter highlights advances in power systems, microgrids, energy efficiency, and integration of modern power technologies and renewable energy sources.

Chapter 4: Robotics and Automation addresses the design and implementation of automated and robotic systems. Investigations focus on control strategies, sensing technologies, intelligent algorithms, and industrial applications that enhance productivity, precision, and flexibility.

This edition is intended for researchers, engineers, and students seeking to advance mechanical engineering, electrical and power engineering, and automation technologies.