Preface

Industrial innovation is grounded in continuously improving materials, optimising technological processes, designing effective production systems and equipment, and ensuring final product quality assurance. This special edition presents a collection of research results contributions across four domains of modern engineering practices: structural metal processing, surface treatment and tribology, industrial engineering and product quality, and engineering design. Each chapter reflects the scientific and practical significance of engineering solutions in today's changing industrial and technological conditions.

Chapter 1: Processing of Structural Metals analyses some of the methods and advancements in casting, turning, and surface modification of structural metals. Emphasis is placed on the relationship between microstructure, material properties, and technological conditions, which is critical for machine building, construction industries, etc.

Chapter 2: Surface Treatment and Tribology addresses modifying surface properties to improve wear resistance, corrosion protection, and friction behaviour. The chapter combines theoretical and practical aspects of applications in protective coatings and surface engineering technologies essential for component longevity and energy efficiency.

Chapter 3: Industrial Engineering and Product Quality explores production systems optimisation and quality management within manufacturing environments. Topics include the Six Sigma method and machine learning for predicting technological parameters.

Final Chapter 4: Engineering Design focuses on the principles and methodologies of effective design processes, considering the mechanical properties of the materials used.

This special edition is intended for researchers and engineers engaged in advancing manufacturing systems and materials processing technologies.