

Preface

Modern engineering is based on the integration of materials, technological processes, and intelligent systems that enable innovations, efficiency and precision of production. This special edition brings together research from various fields of engineering, including welding processes, drilling fluid development, machine design practices, and sensing technologies.

Chapter 1: Welding and Welded Structures examines the science and technology of welding as a key method for assembling and reinforcing modern structures. It explores welding techniques, thermal effects, and structural integrity, emphasising how process parameters and material behaviour determine the performance and reliability of welded joints.

Chapter 2: Drilling Fluids is focused on the analysis of the composition, properties, and synthesis of fluids used in drilling operations. The studies emphasise the importance of rheological control, environmental considerations, and technologies in enhancing efficiency in energy resource extraction.

Chapter 3: Design and Research of Machines and Technologies presents approaches to the design, modelling, and optimisation of machinery and production systems. It illustrates how innovative design principles, computational analysis, and experimental validation contribute to the development of advanced industrial technologies.

Chapter 4: Sensors presents the development and application of some sensing technologies for monitoring, automation, and control. The chapter covers sensor structures, signal processing techniques, and integration into various systems.

This special collection aims to provide practical information for researchers and engineers seeking to advance industrial innovation.