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Nota di contenuto	Frontmatter -- Table of Contents -- Towards Sustainability: Evaluation the Mechanical Properties of Hybrid Composite Materials Reinforced with Fibers and Nanoparticles -- Towards Sustainable Thermal Systems: Investigating the Role of Nanofluids in Improving Heat Exchanger Efficiency: A Simulation Study -- Harnessing the Power of Artificial Intelligence for Sustainable Energy Solutions: An Innovative Backpropagation Neural Network Technique for Precise Prediction of Photovoltaic Output Power -- Review of sustainable 3D printing criteria using FDM technology and their settings impact on mechanical properties of additively manufactured elements -- Fortifying Sustainability: Enhancing the Impact Strength of Polylactic Acid (PLA) Plastic Products -- Simulation and Analysis of Multiphase Flow in Pipelines Utilising ANSYS Fluent -- A Proposed Network Monitoring System for Software Defined Networking -- Homogeneous and Stratified Combustion Characteristics Affected by Injection and Spark Timings Trade-off in Dual Ethanol SI Engine -- Multifunctional Silicone Nanocomposites for Sustainable Electrical and Medical Applications: Adjusting Thermal Conductivity, Electrical Resistivity, and Antimicrobial features -- Protective Vital Information: A Multi-layered Cryptographic Framework for Digital Image Security -- Design, Analysis and Optimization of High-Efficiency Wind Turbines for Sustainable Power Generation Using Tubercles Wind Turbine Design -- Green Fabrication of NiO Nanoparticles Utilizing Extract of Lemon Peel: Characterization

and Antibacterial Activity Evaluation -- Numerical Simulation of Two-Phase (Gas-Oil) Flow in Gas-Liquid Cylindrical Cyclone Separator -- Estimation of crop water requirement for wheat and barley crops in Al-Musayab District, Iraq -- A Numerical study of the Hydrodynamic Behavior of Extruded Air Through Heavy Fuel Oil Residue Bubble Column Reactor Using Multiple Nozzles -- Hydrochemical characterization and suitability of groundwater for irrigation in a part of Mahmoudiyah district, Baghdad Governorate, Iraq -- Design and Operation of a Novel Process for Regeneration of Consumed Vanadium Pentoxide Based on Water Electrolysis Cell -- Theoretical Analysis of Photovoltaic Panel Power Enhancement Using Evaporative Cooling and Underground Water -- Catalytic studies of new transition metal modified poly (vinyl chloride) Schiff's base complexes -- Revolutionizing Remote Healthcare: A Secure, Lightweight Blockchain and Fog-Enabled Patient Monitoring System Review

Sommario/riassunto

It is my great pleasure to welcome all participants, experts, and academics to the 5th International Conference on Sustainable Engineering Techniques (ICSET 2024). As the Chairman of this prestigious event, I am deeply honored to be part of a global initiative aimed at fostering meaningful discussions on the latest advancements in engineering, innovation, and sustainability. This year's conference brings together a diverse group of authors and speakers from academic institutions, government organizations, and industry leaders. Under the esteemed patronage of the Minister of Higher Education and Scientific Research, Dr. Naeem Yasir Alaboody, ICSET 2024 will be held on December 11–12, 2024, at Middle Technical University in Baghdad, Iraq. The event offers not only an exceptional academic experience but also an opportunity to immerse yourself in the renowned hospitality, cultural heritage, and rich history of Mesopotamia. ICSET 2024 aims to unite researchers from various disciplines to present their recent work, explore future trends, and address challenges in engineering and technology. We have curated an inspiring and informative program in the vibrant city of Baghdad, fostering opportunities for international collaborations and meaningful exchanges of ideas. We hope the conference will be both enlightening and enjoyable, providing avenues to renew old connections, build new relationships, and exchange innovative ideas. Most importantly, we hope you have a wonderful time during your stay in Baghdad. I eagerly look forward to meeting you all at ICSET 2024 and sharing this memorable experience. Chairman: Prof. Dr. Wadhah Amer Hatem Theme: Technical and Scientific Solutions for a Sustainable Future Conference Scope: The conference will focus on the following key areas: Renewable Energy and Power Systems Sustainability Environmental Engineering Chemical Engineering Civil and Structural Engineering Mechanical Engineering Electrical and Electronics Engineering Materials Engineering Computer Science and Engineering Applied Sciences The 5th International Conference on Sustainable Engineering Techniques (ICSET) will bring together researchers, practitioners, and policymakers from diverse disciplines to address the critical challenges of sustainable development. This conference provides a platform for sharing cutting-edge research, innovative solutions, and best practices across various fields, including renewable energy, sustainability, environmental engineering, and emerging technologies. By assembling experts from around the globe, ICSET 2024 will deliver valuable perspectives on sustainable engineering challenges and practical solutions that can be implemented in real-world scenarios. Further details about the specific disciplines are available in the attached document. Target Audience: ICSET 2024 is designed for: Researchers and practitioners in sustainable engineering

and related fields. Students and academic professionals in engineering, environmental science, and related disciplines. Policymakers and government officials involved in environmental policies and regulations. Industry professionals and businesses committed to sustainability and renewable energy. Conference date, place 11–12 December, 2024, Baghdad, Iraq Conference Organizer Middle Techn
