

Preface

Special Issue: Engineering Turbulence Modelling, Simulation and Measurements

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This Special Issue contains substantially extended and revised versions of 13 papers selected from a total of 155 contributions that had been accepted for presentation at the Symposium “Engineering Turbulence Modelling and Measurements-8 (ETMM-8)”, held in Marseille in June 2010 under the auspices of ERCOFTAC. The ETMM series of events was established to give greater prominence and sharper focus to research on application-oriented aspects of turbulence and its computational and experimental characterisation, thus helping to bridge the gap between fundamental approaches to turbulence and the exploitation of models, codes and knowledge in an industrial setting. In this respect, ETMM is thematically closely consonant with the aims and ethos of FTaC.

Within the broad spectrum of topics featuring at ETMM meetings, the majority of papers deal with computational and experimental approaches to complex aero- and hydro-dynamic flows, heat transfer, multi-phase and reacting flows, flow control, flows in power generation and environmental fluid mechanics. The present Special Issue aspires to reflect this mix and to provide an archival record of some of the best papers presented at ETMM-8. To this end, selected papers were subjected to the same rigorous review process as that followed in respect of any other contribution to FTaC, each manuscript being reviewed by three leading experts, with some manuscripts undergoing three revisions before being accepted.

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Of the 13 papers included in this Special Issue, one documents a LES study of the aerodynamics of a complex jet discharged from a serrated nozzle; three papers examine various aspects of transition and turbulence in turbomachine-related flows, two applying LES and one experimental techniques; two papers report studies on different aspect of heat transfer with LES or a statistical model; one paper investigates the effectiveness of drag-reducing polymers in ducts; four papers focus on combustors or a flame, examining with LES aerodynamic issues, scalar transport, heat transfer and reaction, one paper also reporting new experimental data for validation; one paper applies LES to a reacting flow in a diesel engine; and the final paper provides a review of research on atmospheric turbulence in the context of wind energy.

The Editors hope that the readers of this Special Issue will judge it to be a valuable contribution to the literature, and to give credit to efforts by the scientific community to engage in turbulence modelling, simulation and measurements of immediate relevance to the industrial arena.

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