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Titolo	Characterisation of Turbulent Duct Flows : Experiments and Direct Numerical Simulations // by Bayode Owolabi
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Soggetti	Fluids Fluid mechanics Engineering—Materials Physics Fluid- and Aerodynamics Engineering Fluid Dynamics Materials Engineering Numerical and Computational Physics, Simulation
Lingua di pubblicazione	Inglese
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Note generali	Originally presented as the author's doctoral thesis at the University of Liverpool.
Nota di contenuto	Introduction -- Literature Review and background theory -- Experimental Methods -- Numerical Methods -- Turbulent Pressure-Driven Flow in a Square Duct at Low Reynolds Numbers -- Turbulent Wall-Driven Flows -- Turbulent Duct Flows with Polymer Additives -- Conclusions and Recommendations.
Sommario/riassunto	This book presents several new findings in the field of turbulent duct flows, which are important for a range of industrial applications. It presents both high-quality experiments and cutting-edge numerical simulations, providing a level of insight and rigour rarely found in PhD theses. The scientific advancements concern the effect of the Earth's rotation on large duct flows, the experimental confirmation of marginal turbulence in a pressure-driven square duct flow (previously only

predicted in simulations), the identification of similar marginal turbulence in wall-driven flows using simulations (for the first time by any means) and, on a separate but related topic, a comprehensive experimental study on the phenomenon of drag reduction via polymer additives in turbulent duct flows. In turn, the work on drag reduction resulted in a correlation that provides a quantitative prediction of drag reduction based on a single, measurable material property of the polymer solution, regardless of the flow geometry or concentration. The first correlation of its kind, it represents an important advancement from both a scientific and practical perspective.
