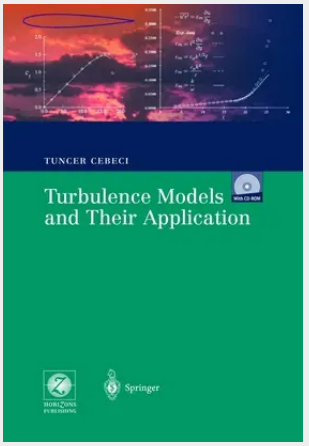
Cebeci

Turbulence Models and Their Application

Efficient Numerical Methods with Computer Programs

In this book, after a brief review of the more popular turbulence models, we present and discuss accurate and efficient numerical methods for solving the boundary-layer equations with turbulence models based on algebraic formulas (mixing length, eddy viscosity) or partial-differential transport equations. A computer program employing the Cebeci-Smith model and the k-e model for obtaining the solution of two-dimensional incompressible turbulent flows without separation is discussed in detail and is presented in the accompanying CD. The numerical solution of the boundary-layer equations with flow separation is also discussed and an interactive boundary-layer method developed by the author is described in detail. A computer program for obtaining solutions on airfoils and wakes for a wide range of angles of attack, including stall, is discussed and presented in the accompanying CD. In many respects, this book can be seen as complimentary and supplementary to the author's Analysis of Turbulent Flows

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