Trends in Turbulence Modeling of Industrial Flows

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The state of industrial turbulence modeling will be reviewed. On the RANS side, a new concept will be presented, which allows to match classical models to specific applications without losing the basic calibration of the model. Such methods offer an opportunity to achieve the next level of accuracy without the cost of moving to Scale-Resolving Simulation (SRS) techniques. Challenges of laminar-turbulent transition modeling using RANS-based equations will be addressed and the opportunities and limitations of such models will be discussed. Finally, the status of Scale-Resolving Simulation (SRS) methods in today's industrial CFD simulations will be briefly reviewed and optimal formulations will be presented.