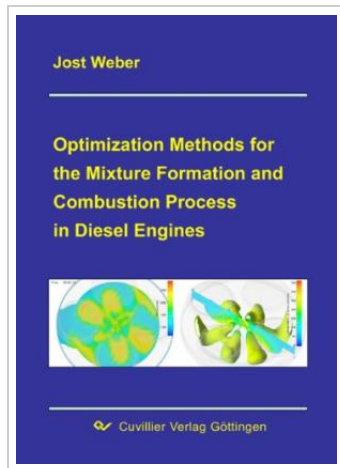



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Optimization Methods for the Mixture Formation and Combustion Process in Diesel Engines

By Jost Weber

Cuvillier Verlag Sep 2008, 2008. Taschenbuch. Condition: Neu. Neuware - The optimization of the combustion and mixture formation process in Diesel engines by CFD simulations requires a reliable model approach as a pre-requisite in order to predict combustion and emissions. A general and commonly used model for the liquid spray is the discrete droplet model. Sub-models for droplet breakup, collision and coalescence, and evaporation are available in the CFD code. With regard to combustion, the flamelet model approach is interactively coupled with the CFD code, known as RIF model. It benefits from a one-dimensional description of the thin reaction zone in the flame. By this approach, a detailed reaction mechanism for the model fuel can be used. Sub-mechanisms for NO_x formation and a soot model are included. The reaction mechanism has been modified in this work to account for a correct ignition delay and heat-release at low-temperature conditions e.g. in the PCCI combustion. The modeling of the mixture formation in a spray contains uncertainties in the model constants and initial conditions. Spray data is required to calibrate the spray model. At least, the spray penetration has to be measured under engine like conditions as performed in a spray chamber. The...



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