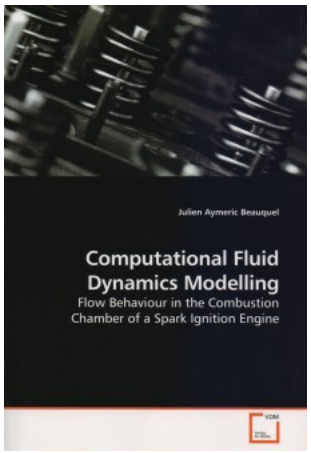

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Sinopsis

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A lot of attention has been paid to car engines in order to improve their power, torque and efficiency. Also, the fuel economy and emissions have to be reduced to match the environmental regulation targets. To achieve these objectives, many experimental investigations and validations of flows inside internal combustion (IC) engines have been conducted in the last two decades. However, research in this field remains limited. Previous studies conducted on IC engines imposed a number of assumptions for Computational Fluid Dynamics (CFD) simulations to simplify either the geometries or flow conditions, or both. This work seeks to reduce the number of assumptions made in previous engine studies by using an engine laser scan. The geometric data is incorporated into the CFD modelling for grid generation. The first part of this book involves the use of Pitot tubes to collect experimental data inside a model engine for steady flow conditions. CFD simulations are set to match the experimental configurations. After a validation of the CFD modelling for steady flow is achieved, the use of CFD modelling for transient flow inside the engine is explored in the second part of the book