

Abstract

Today, thermal management has become a more and more important issue in vehicle

development. To minimize the expenditure and to support an efficient development, it is necessary to use efficient simulation tools. With the presented method, precise and detailed thermal analysis of the engine, the gearbox, exhaust after treatment as well as the vehicle climate control under stationary and transient driving conditions are possible.

It is necessary to use different simulation tools with different modelling depth. In this paper a simulation method in combination with test bench measurements is presented

for detailed thermal analyses of the engine, the gearbox as well as the vehicle climate control under stationary and transient driving conditions.

With this approach it is possible to cover the entire vehicle thermal management in a scalable manner from 0D to 1D and 3D. However, with the application of different simulation tools the communication between the different software packages (simulation

models) must be ensured. This communication is guaranteed by efficient interfaces, also described in this paper.