

Title:

“3D CFD simulations for combustion development and exhaust aftertreatment system design of off-road Diesel engines”

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Abstract :

The emission legislation, combined with the particularities and the multiplicity of off-road applications, forces the engine manufacturer to use advanced simulation tools to minimize the development costs and to optimally handle the complex phenomena associated to the “emissions vs. performances” tradeoffs.

The analysis of complex phenomena with 3D-CFD methods offers appropriate solutions to gain knowledge about local and global flow phenomena.

This paper gives an overview about the CFD possibilities for the optimization of:

- the combustion process due to the modification of the piston bowl and the injection nozzle, and
- the HC injection process used for the active generation of a DPF.

Both topics are core themes of modern off-road diesel engine development processes.