# Optimization of exhaust system by numerical simulation: Rapid proto-typing of exhaust system

Collaboration with Bosch, since 2005

1st Step: Optimization of flow field
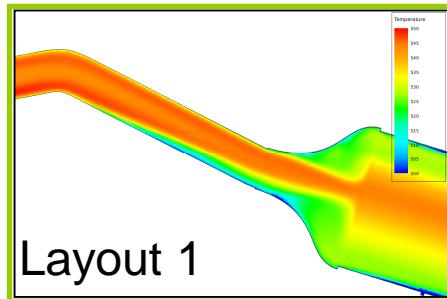
Layout 1 — poor uniformity $\Delta T = 35\ K$

Layout 2 — better uniformity $\Delta T = 25\ K$
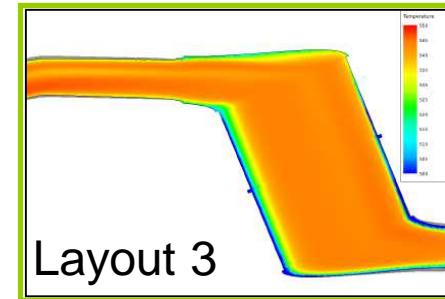
Layout 3 — good uniformity ✓ $\Delta T = 10\ K$

pressure drop -16%

2nd Step: Optimization of injector position for Layout 3

Spray: Droplet diameter

max

min
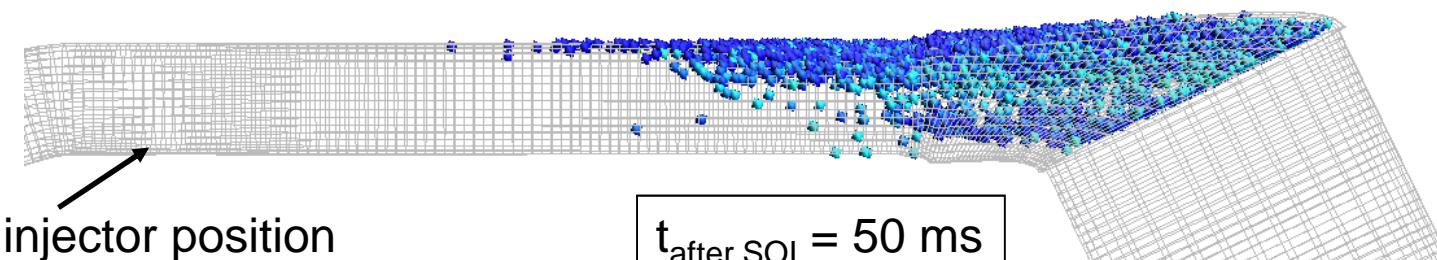
injector position

$t_{after\ SOI} = 50\ ms$
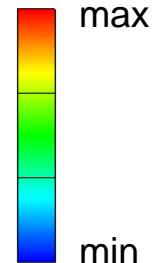
F. Birkhold, U. Meingast, P. Wassermann, O. Deutschmann. SAE Technical paper 2006-01-0643 (2006)

www.abgaszentrum-karlsruhe.de

In collaboration with Bosch

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