Evaluation of 2010 Urea-SCR Technology for Hybrid Vehicles using PSAT System Simulations

Zhiming Gao[1]
Stuart Daw[1]
Josh Pihl[1]
Maruthi Devarakonda[2]

[1]Oak Ridge National Lab
[2]Pacific Northwest National Lab

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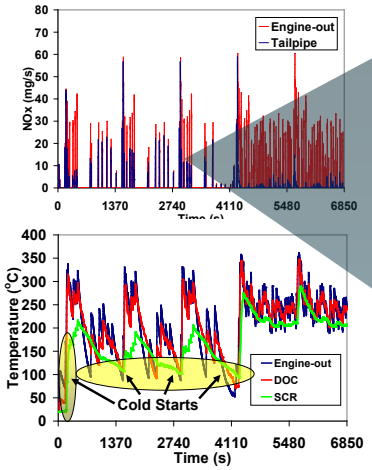
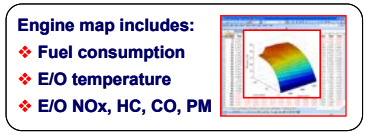
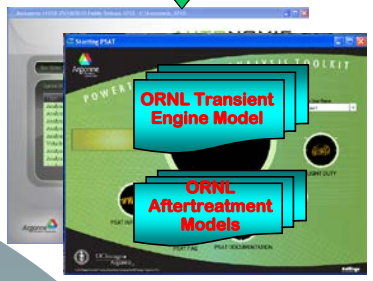
We simulated the performance of a diesel PHEV equipped with DOC/SCR

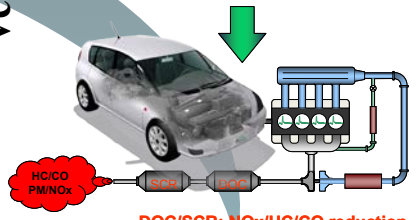
- The SCR catalyst studied here is predicted to achieve 76%-85%NOx reduction for the hypothetical baseline PHEV case
- The DOC reduces CO/HC emissions and improves SCR function by converting NO to NO_2, but slows SCR thermal response
- Thermal insulation can reduce SCR sensitivity to cold-start events and improve NOx and NH_3 slip control



Vehicle Simulations







DOC/SCR: NOx/HC/CO reduction

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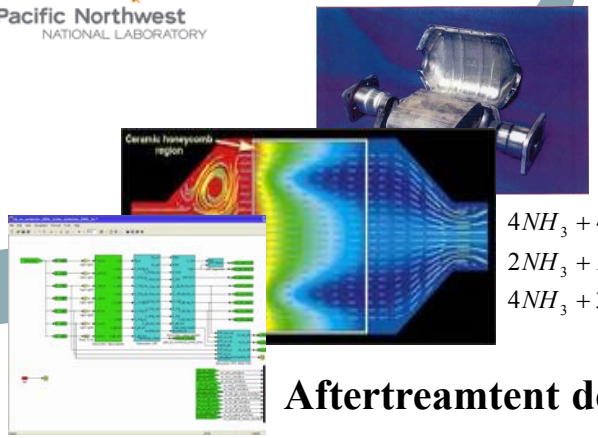
SCR Experimental Protocol



$$4NH_3 + 4NO + O_2 \Rightarrow 4N_2 + 6H_2O$$
$$2NH_3 + NO + NO_2 \Rightarrow 2N_2 + 3H_2O$$
$$4NH_3 + 3NO_2 \Rightarrow 3.5N_2 + 6H_2O$$

Aftertreamtent device modeling

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