

Effect of Premixed Charge Compression Ignition on Vehicle Fuel Economy and Emissions Reduction over Transient Driving Cycles



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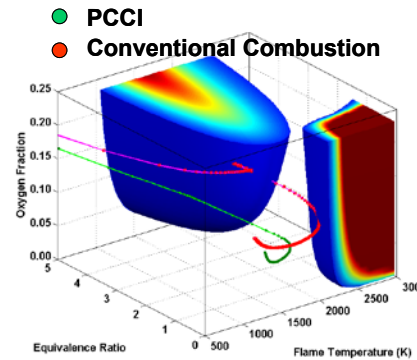
**Sponsor : Lee Slezak
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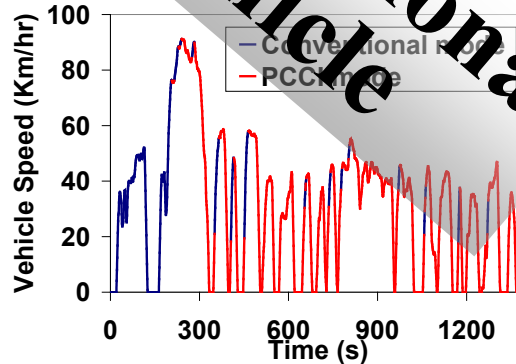
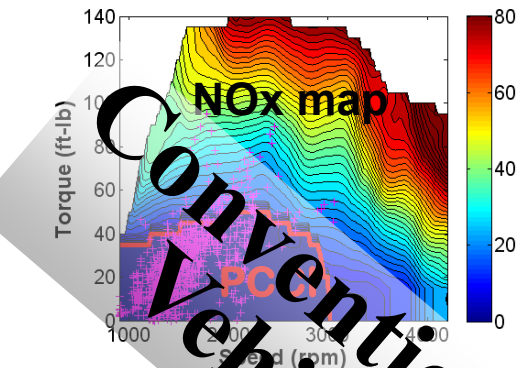
Our simulated vehicles include diesel-powered conventional and hybrid vehicles equipped with DOC/LNT/CDPF

- PCCI improves fuel economy and NO_x emissions in our simulated conventional vehicle by decreasing LNT and DPF regeneration frequency
- HC and CO tailpipe emissions can be also reduced by PCCI when less frequent LNT regeneration is required

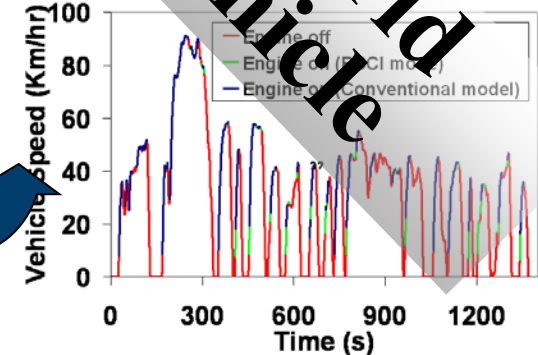
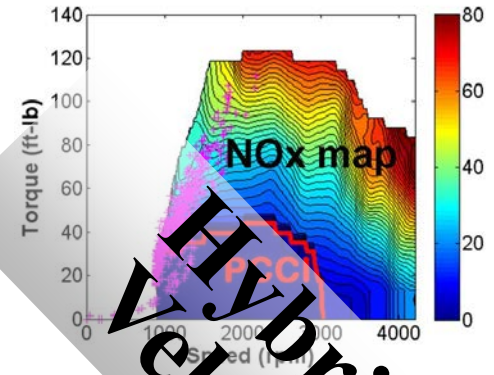
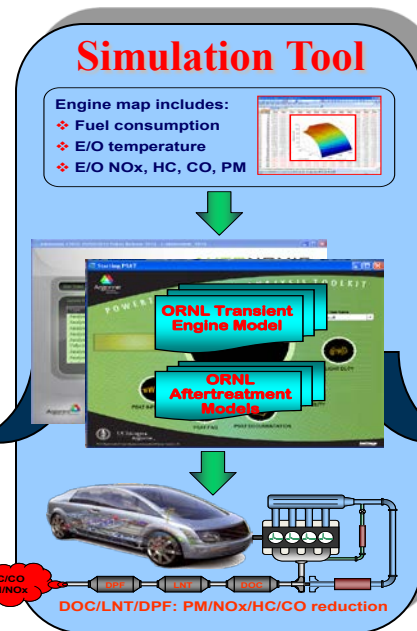


PCCI is distinguished from conventional combustion by avoiding high NO_x and PM zones

- PCCI provides less benefit in our simulated HEV because the PCCI mode is used only in a much smaller part of the drive cycle
- HEV starts engine only at high vehicle load conditions



PCCI operating time in the conventional vehicle covers 79% time of a cold-start UDDS cycle



PCCI operating time in the HEV covers less than 10% time of a cold-start UDDS cycle

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