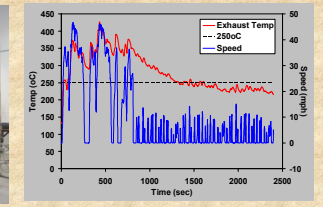


Combining Biodiesel and EGR for Low-Temperature NOx and PM Reductions

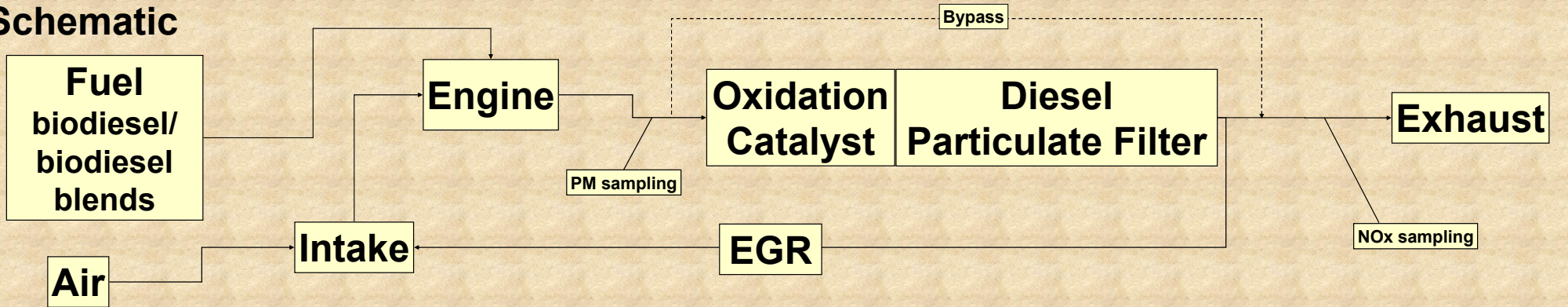
Rachel L. Muncrief, Miguel D. Cruz, Michael P. Harold, Charles W. Rooks
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www.chee.uh.edu/dieselfacility

FOCUS

- Reality: Technologies that decrease NOx during combustion tend to increase PM.
- Vehicles with low temperature drive cycles require special solutions to achieve combined NOx and PM reduction.

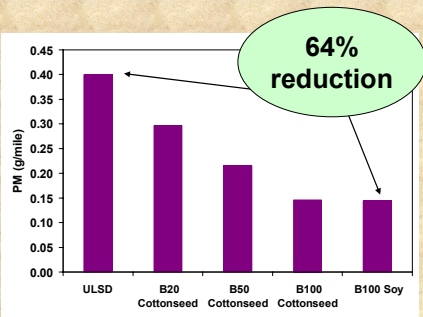


Schematic



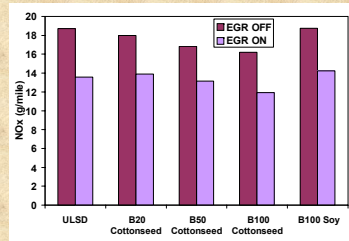
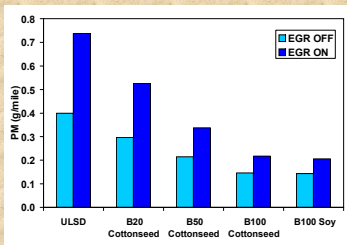
Biodiesel

- Biodiesel is an oxygenated hydrocarbon which when combusted has a significant decrease in PM when compared with standard ULSD.



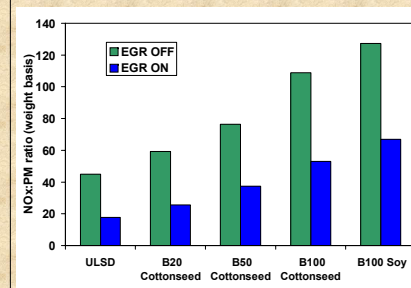
Exhaust Gas Recirculation

- EGR involves recirculating a portion of the engine's exhaust gas to the combustion chambers in order to reduce NOx emissions by decreasing the peak temperature of the diesel combustion flame.



Regenerating Trap

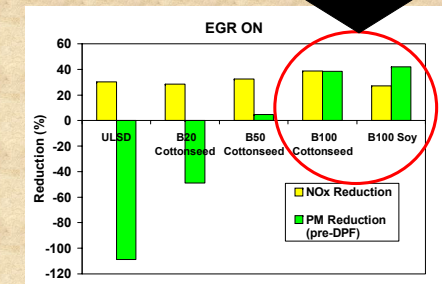
- The diesel particulate filter (DPF) is used to trap particulate matter in the exhaust. It is periodically regenerated by burning off (oxidizing) the PM with NO₂.



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Combined System

- Taking advantage of the reduced PM produced by biodiesel and the NOx reduction gained by EGR this combined system is effective for heavy duty diesel vehicles with low temperature duty cycles.



Baseline = EGR off, DPF bypassed, ULSD fuel