

INFLUENCE OF EGR ON COMPONENT RELIABILITY

Hind Abi-Akar

Caterpillar Inc.

Exhaust Gas Recirculation (EGR) is a strategy considered for emissions reduction of on-highway diesel engines per EPA recent regulations. EGR however has the potential for altering the composition of the exhaust gas in the EGR and engine components, introducing changes in the temperature, increasing the particulates, and producing corrosive exhaust condensates. Hot gas corrosion, cold corrosion (condensate), fouling, and erosive wear are some of the consequences that threaten the function-

ality and health of EGR and engine components. Midlife and long term durability are of primary concern. Materials testing, selection, and validation for EGR components as well as for some engine components affected most by the EGR environment is a challenge. This presentation reviews the EGR concerns as well as the methodology followed to characterize the new EGR environment and select the right long-life materials.