

FUEL ECONOMY IMPROVEMENTS FOR OFF-ROAD HEAVY-DUTY APPLICATIONS WITH ELECTRIC AUXILIARIES AND TURBOCOMPOUNDING

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Electric auxiliary drives have the potential to significantly change engine architecture and improve fuel economy on heavy-duty off-road vehicles. Many heavy-duty machines operate at high load factors without the natural air flow available to highway vehicles. This results in higher cooling system losses. Electric auxiliaries and fans offer improved control and significantly higher average efficiency.

An exhaust turbine powered generator can provide the needed electrical power for auxiliaries and fans. An integrated flywheel starter motor can convert excess electrical power into shaft work. Total system fuel economy improvements of up to 20 percent are predicted.

The presentation will focus on development plans regarding integrated electric auxiliary drives and will review Deere experience with integrated flywheel starter alternator systems in vehicles. Exhaust turbo generator development goals will also be discussed.