DIESEL ENGINE WASTE HEAT RECOVERY UTILIZING ELECTRIC TURBOCOMPOUND TECHNOLOGY

Ulrich Hopmann

Caterpillar, Inc.

ABSTRACT

Electric turbocompounding (ETC) is a way to recover exhaust heat energy and return it to the driveline. ETC integrates well into a MorElectric™ Initiative vehicle and allows previously unattainable level of con-trol of the engine air system. The primary goal is a 5-percent reduction in fuel con-sumption and/or emissions.

This presentation will report progress to date on a technology demonstration pro-gram. Component design and analysis as well as control system development will be reviewed. The ETC system requires a completely new control strategy and control system. Two electrical motor/generators, one on the turbo shaft and one on the crankshaft, are part of the ETC system; their design and test results on the dynamometer will be shown. Furthermore, design and per-formance test results of a newly developed turbocharger will be presented.