

The Caterpillar logo, featuring the word "CATERPILLAR" in a bold, black, sans-serif font with a registered trademark symbol. A stylized yellow triangle is positioned below the letter "A".

New Engine Technology to Meet Emissions & Improve Performance

Gas Electric Partnership Conference

Feb. 9-10, 2011

Jim Cue

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Emissions Drive Technology Change

- Regulations

- EPA New Source Performance Standards (NSPS)
- NESHAP
- TCEQ DFW Non-attainment
- Wyoming
- Colorado
- Pennsylvania

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G3300B & CG137 New Technology

- 95 bhp through 600 bhp
- Integrated emissions and control system (ADEM A4)
 - Air/fuel ratio control (AFRC)
 - Three way catalyst (TWC)
 - Engine development & controls
- Integrated system = 1 stop shopping and product support



CG137-12 TA

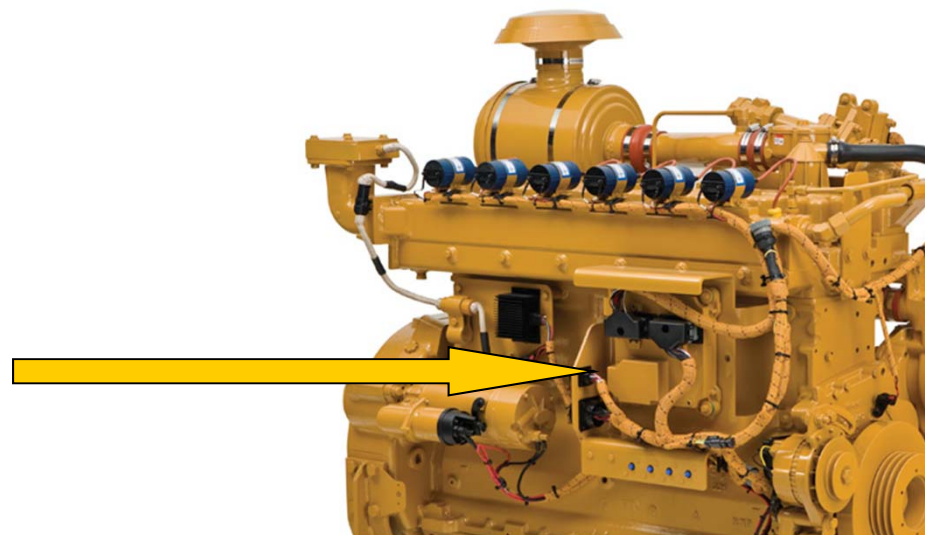
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Air/Fuel Ratio Control (AFRC)

- Closed loop dual O₂ sensor
- Dithering (rich/lean)
- Tuned to work with the Caterpillar TWC
- Ensures that emissions are met over the quarterly adjustment interval

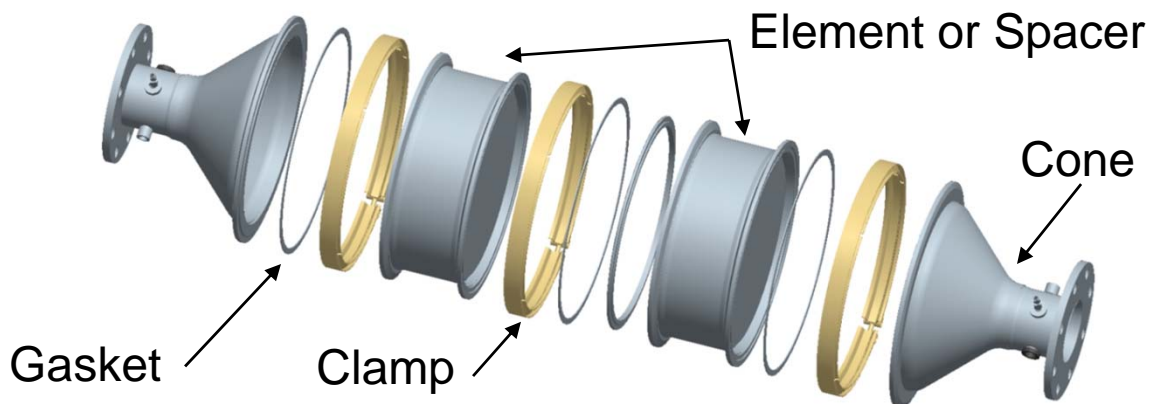
ADEM A4
Controls





Three Way Catalyst (TWC)

- 1g & 0.5g NO_x options
- Sized to meet emissions during maintenance intervals
- Can be installed during the engine break-in period w/o fouling the TWC
- TWC formulation reduces/eliminates sulfur smell
- Modular design



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Engine Development & Controls

- ADEM A4 controls
 - AFRC
 - electronic ignition
 - electronic speed control/governing
- Control panel
 - set up & run engine
 - easy troubleshooting w/full fault code text



Engine Development & Controls

- CG137: new combustion recipe
- Increased speed and bhp for rich burn engines

Current Catalyst Ratings	Future Catalyst Ratings
G3408 TA 332 bhp @ 1500 rpm	CG137-8 TA 400 bhp @ 1800 rpm
G3412 TA 500 bhp @ 1500 rpm	CG137-12 TA 600 bhp @ 1800 rpm

- Improved altitude and speed turndown

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Field Experience

- G3306B TA
 - Quinton, OK
 - Longview, TX
 - Farmington, NM
- G3306B NA
 - Cleburne, TX
 - Everman, TX
- G3304B NA
 - Longview, TX
- CG137-12 TA
 - Gillette, WY

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Questions?