

Haar Consulting Services, LLC

NEWSLETTER - 01

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Introduction:

39 Years Experience Serving Caterpillar Dealers

Haar Consulting Services, LLC provides reporting services and analysis of engineered and operating technology of Caterpillar equipment. Specializing in upgrade and retrofit technology and improved emission performance without the use of after treatment systems.

The next newsletter will include upgrades for Caterpillar machines as well.

Engine Upgrades

- 3600 EUI Upgrade with balanced cylinder pressure, improved fuel consumption, reduced vibration & noise, and improved maintenance. This can be done on most all 3600 industry applications as long as the ratings are compatible with the C280 engines.
- G3512 & G3516 Engines can be upgraded at Petroleum Gas Compression sites. This allows the engine exhaust NOx content to be controlled throughout the compressor speed range not to exceed 1.5 g/bHp-hr.
- G3508 Engines in the Petroleum Gas Compression sites can be upgraded. This upgrade provides the same not to exceed 1.5 g/bHp-hr and increases the power of the engine from 630 Hp to 670 Hp. Any existing G3508 gas compression engine with existing ADEM III and twin turbo's can still be upgraded to single turbo and 670 Hp.
- G3300B offers many technical improvements that can be applied to earlier G3300 gas compression engines. These include digital ignition, ADEM IV control technology, Air/fuel ratio control (AFRC) and NOx sensor control with an optional Three-way Catalyst for critical non-attainment operating regions. The current front housing removes the magneto drive and adapts a new speed timing gear for the "Hall Effect Sensor" mounting for speed timing signal, without changing to the new front housing of the 3300B engine.

The Electric Power Group has decided to eliminate the use of the EIS controls on G3500 Gensets in favor of the ADEM III controls. The ECM Software development is still underway. More news on this development will be communicated in the future.

Regulations:

Please refer to LEXM7151 Product News (March 2007) for the two subjects to follow

There is a U.S. Coast Guard (USCG) proposal that the current government administration release a regulation adopting IMO 73/78 Annex VI for vessels with keel laid after 01 January 2000 and engine power over 5000 kW. This is related to NOx control since it is Tier 1. This regulation will require each engine with a current EPA Certification to also have an IMO Technical file and a EIAPP Certificate indicating the Tier 1 exhaust performance. For engine installations after 01 January 2007, the IMO Technical File and EIAPP Certificate must indicate Tier 2 exhaust performance. Any engine upgraded from Tier 1 to Tier 2 will be required a get new IMO Technical Files and EIAPP Certificate indicating the new exhaust performance.

After the above regulation is in place, there will be a new IMO MARPOL 73/78 Annex VI revision that will require vessels with keels laid 01 January 1990 to 31 December 1999 and 5000 kW of power to operate under Tier 1 exhaust NOx performance by the US EPA. Many of these Caterpillar engines will need to be upgraded from a mechanical fuel system to an electronic fuel system and a Caterpillar ADEM control. All engines upgraded before this regulation goes into effect can still benefit from the IMO Technical File and EIAPP Certificate. Vessels in many of the fishing, workboat and tug operations change location or pull into foreign ports for fuel that will require these IMO Technical Files and EIAPP Certificates. This will be in effect by January, 2012, at the latest

The Engine Emission Certification provided from the time the engine was new and shipped from the Caterpillar factory can never change even if the engine is modified. There is a process to ensure an upgrade engine can receive a confirmation of compliance to the emission level. This process is described in the Product News – LEXM7151. This will allow a new Technical Manual and a new EIAPP Certificate based on the upgraded configuration.

Any time an engine configuration is changed, the NOx Critical Components must be updated in the Technical Files. Even though the original Certification of the engine will not change, the new Technical File and EIAPP Certificate will provide confirmation of compliance with the new NOx Critical Components.

The US Environmental Protection Agency (EPA) has a “Verification” Group and a “Marine” Group that Caterpillar is currently working with to address the March 2008 regulation for Remanufactured (overhauled) engine and a “Certified” overhaul arrangement that the Customer must use if available. Caterpillar is currently working with the EPA for the 3500 and 3600 Engines. Tentative schedule for availability is 4th Qtr, 2009 for 3500 and 1st Qtr, 2010 for the 3600. The overhaul arrangement must achieve 25% reduction in Particulate Matter (PM) with no increase in Nitrous Oxides (NOx).

Summary:

Please protect this newsletter as intellectual property and do not quote the information exactly as written. This newsletter is a courtesy to provide information to keep each of you informed.

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