

# Haar Consulting Services, LLC

Newsletter - 02

August 13, 2009

Welcome to my 2<sup>nd</sup> Newsletter. If anyone receives this that did not get my first Newsletter, please let me know at [don.haar@gmail.com](mailto:don.haar@gmail.com). All of the upcoming information is not to be shared with the public and should be treated as such. If you know anyone that would benefit from this information, please let me know through my website @ [www.haarconsulting.com](http://www.haarconsulting.com).

## Commercial Engine Upgrades

I would like to emphasize several upgrades that could increase customer value.

D3600 EUI Upgrade – Tier 1 or Tier 2 – Marine, Petroleum and Electric Power applications. Fuel consumption, maintenance reduction, vibration and noise reduction and technology improvement to improve engine emission.

G3600 ADEM III Upgrade – Improved availability – Gas Compression applications

G3600 Engines can have the engines upgraded from VTC style Turbo's to TPS Turbo's for lower life cycle cost that can complement the ADEM III upgrade – Gas Compression applications

G3512 & G3516 ADEM III Upgrade – EIS to ADEM III and Air Fuel Ratio Control with NOx sensor technology advancement – Gas Compression applications

G3508 ADEM III Upgrade - with Dual Turbo to Single Turbo configuration (9TG S/N prefix) – Power increase, efficiency improvement and EIS to ADEM III and Air Fuel Ratio Control with NOx sensor technology advancement – Gas Compression applications – WPN serial number prefix engines with single turbo's can add the timing technology advancement.

Please note in the future, Gas 3500 Electric Power units can be upgraded as well, since the pin-outs on the harnesses are the same for both. I will update you in the next newsletter how the NPI program is progressing.

G3300 ADEM IV Upgrade – digital ignition, Air Fuel Ratio control, NOx sensor, speed timing sensor and magneto eliminated – Gas compression applications. A three-way catalyst is available as an option to achieve operation not to exceed 0.5 g/bkW-hr

#### Update on existing or upcoming marine and oil & gas rules.

The IMO MARPOL 73/78 Annex VI for NOx control has been submitted to the US administration for adoption. This timing for release of this by the EPA as a regulation is unknown at this time, but is imminent. This will require any vessel built with keel laid after 01 January 2000 to have IMO Technical Files and EIAPP Certificates on board for each engine above 130 kW that helps the vessel operate. There is a Caterpillar publication LEXM7151 that describes the procedure to acquire these documents. This is already in effect in many countries and is in effect under the IMO controlled open ocean areas.

The stationary gas compression and generator set engines within the US must conform to the NSPS rules when considering and upgrade to the latest technology and verify site performance. If any information on this subject is desired, please contact me at the above web address. If anyone outside of the US has specific stationary gas engine questions for meeting regulations, feel free to contact me to investigate and report any feature and benefits of the solutions for the US market that can be applied to your specific region.

Note: Texas, Colorado, Wyoming and other areas have special local regulations for stationary gas engines that may require “Ultra Lean Burn” G3500 engines that operate throughout the speed range that will not to exceed 0.5 g/bkW-hr. There is a chance at the time of overhaul to convert a G3516 gas compression engine into a “ULB” configuration currently, with the G3512 gas compression coming next and the G3508 gas compression coming after that. Areas outside of the US emission control rules can also take advantage of these improvements. You can contact me for any further information necessary if you currently do not have knowledge or access to this information.

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I stated in the last newsletter that I would include knowledge of machine upgrades available. This is an attempt to do this, but to-date the recipients of this newsletter are not machine people. If everyone who receives this newsletter would forward this to their machine counterparts, it would be appreciated.

### Mining Truck Upgrades Available

777B & 777C & 777D with D3508 Engines can be upgraded to C32 Tier 2 engine or the 3508B engine could be upgraded to Tier 2 if the Tier 1 is not sufficient. The C32 Engine significantly reduces NOx and doubles the maintenance period as well.

777A have 348 engines that a few trucks have been upgraded with D3508's. It is probably not economical to go all the way to C32 unless transmission is to be completely overhauled as well.

777A through 777 E new safety ingress and egress ladders available 4<sup>th</sup> qtr

785A & 785B & 785C Truck engines can have D3512B Engines upgraded to Tier 2

785A & 785B & 785C Trucks can have new safety ingress and egress ladders available 4<sup>th</sup> Qtr.

789A & 789B & 789C Trucks engines can have the D3516B Engines upgraded to Tier 2

789A & 789B & 789C Trucks can have new safety ingress and egress ladders available 4<sup>th</sup> Qtr.

797 Trucks can be upgraded to a single C175 engine or have the two 3512 engines upgraded to Tier 2. This will result in a significant reduction in NOx emission as well as addressing PM and COx

### Other Machine Upgrades

3306 unregulated engine in various machine applications can be upgraded to Tier 1 with EPA Certification.

3406 unregulated engines in some machine applications can be upgraded to Tier 1 with EPA certification.

D10R can be upgraded to a Tier 2 configuration. This is rating dependent.

If you should need any assistance, guidance or contact information, please let me know at [www.haarconsulting.com](http://www.haarconsulting.com). Unless you are a new customer, a nominal fee will be associated with this service.

Haar Consulting Services,

Donald Haar – General Manager