



Import of Machinery to regions with lower emission standards

Since engine emission regulations become stronger and stronger in the USA, Canada and in Europe a new topic becomes very serious. Tier 4 engines, Interim or Final, require ultra-low sulfur diesel. This kind of fuel is not available in many parts of the world. That complicates the sale of used Tier 4 machines into countries that do not sell ULSD. In the next 2-3 years many machines with these engine will return to dealers from leasing, rental or sales.

For used equipment traders it means, they must provide solutions for such kind of machinery. Otherwise the market for these used iron becomes very small. It is not expected to have ULSD available in most African or Asian countries for the next couple of years. (ULSD is diesel fuel with 15 parts per million or lower sulfur content.) It means a downgrading for engines is essentially.

What will the engine or machine producers do to offer a solution? I guess most of them will try to keep control. It is a good chance to keep influence to the used market and to sell downgrading kits. Caterpillar will for sure try to keep that business in the workshops of the own dealers. Liebherr and Volvo are supposed to do the same.

Cummins announced already in December 2013 they would release a sulfur tolerance kit. But since we did not hear any news about it. Engine will need some new hardware and of course the software of the ECM's has to be modified.

Caterpillar will use two main strategies in its approach to supporting Tier 4 Cat machines sold in lower regulated counties, says Mary Roethler, Caterpillar's Tier 4 Dealer Readiness manager. For machines in the 75-175 horsepower range, Cat is training and tooling their dealers in lower regulated countries to take off the emissions after treatment.

Caterpillar's Tier 4 Interim engines above 175 hp won't have to be modified for sale in lower regulated countries as the machine's regeneration system uses a combination of chemicals and heat to take care of the higher levels of sulfur in the fuel, and thus, no modification is needed

The John Deere Construction & Forestry Division is bringing to market a retrofit kit that will enable **John Deere** Interim Tier 4 (IT4) machines to be sold in countries where ultra-low sulfur diesel fuel is not available. The John Deere retrofit kit will maintain engine reliability by disabling or removing sulfur sensitive components and systems. It maintains engine performance utilizing software recalibration in addition to hardware updates.

Also **Volvo** is providing now downgrading kits. The first kits became available end of 2014 for the A25-A40 articulated haulers (D11, D13 & D16 engines) and the L150-L250 wheel loaders (D13 engine). Soon there should be kits available for EC340-EC480 excavators (D13 engine).

The conversion kit is supposed to adjust the engine system so it can handle high-sulphur fuels up to 10,000 PPM. The Volvo conversion kit consists two parts: hardware exchange and software update. Also Volvo wants customers to contact the local dealer for downgrading to keep that business within the dealer network.

We could not get any info about any downgrading kits for **Komatsu** engines,

Important detail: Once an engine is downgraded a return to TIER 4 standards is more or less impossible.