New engine rules...impossible challenges?

The recent bauma exhibition provided the first chance to see the new "Stage IIIA" engines designed to meet the new emission regulations that will come into force in January 2006. But are conflicting noise regulations presenting crane manufacturers with a seemingly impossible task? *C&A* reports.

IN EUROPE, Mercedes and Cummins supply most crane engines. Liebherr produces its own, while the aerial lift is largely the domain of Perkins, Kubota, Deutz and Hatz. The Stage IIIA (Tier three in the US) engine requirements enforce lower levels of carbon monoxide, carbon dioxide, sulphurous and nitrous oxide and particulate emissions. Most, if not all engine manufacturers, have now announced their Stage IIIA engines and will be ready well in advance of the January 2006 deadline.

Crane manufacturers, on the other hand, are facing what appears to be an impossible challenge. Not only will they need to design new engine installations and obtain approvals from engine producers for all crane models during the six to twelve months, following the release of the new engines, which is a tough enough challenge on its own, but they will also have to meet the noise directive 2000/14/EC, which will apply to cranes from January 2006.

This has lead to the conflict of directives. The noise directive requires a three-decibel reduction from current limits, which is already a huge challenge. It gets worse. In order to meet the new emissions requirements, engine manufacturers have been forced to resort to changes such as higher compression ratios, increased air intake levels, larger cooling systems, fans and exhausts, along with common rail injection and electronic engine management systems. Many of these changes add considerable noise, so it is almost certain that the new engines will be noisier than current models.

With very little room left to work with on modern cranes, manufacturers are expecting to enter long periods of testing with acoustical treatments and new air intakes, etc, to meet the noise requirements and temperature limits, while also overcoming the space restrictions of modern crane chassis designs.

Mercedes, the major crane engine supplier, is unlikely to have even preliminary Stage IIIA engines ready for delivery until at least 2005, with final engines not likely to be available before October that year.

This time frame clearly prevents crane manufacturers from meeting the noise regulations. As a result, they are asking for extended transition periods, ranging from an extra year for smaller units, to two years for all terrain cranes with engines over 130 kilowatts and three years for rough terrain (RT) and crawler cranes. As these latter units only tend to work off road and usually well away from homes, it may be logical to leave these units, of which there are far fewer in the European crane fleet.

If some form or transition cannot be agreed, it is hard to see what crane manufacturers can do. If the authorities insist that producers have to meet the deadlines, or even give them only a short extension, it could have a major impact on new crane development as engineering resource is dedicated to engine installations. C&a

A knock on effect of these rules could be to see low volume RT cranes taken off the market in a similar way as happened with Japanese road cranes. On a positive note, however, once the new rules settle down and are applied in other parts of the world, we might once again see Japanese built truck and city cranes come back onto the market here.

After much lobbying by industry bodies, cranes were classified in 1998 as special purpose vehicles not designed or equipped for the carrying of goods. The precise classifications vary, depending on weight and dimensions, but cranes are generally seen as having a different impact than goods vehicles.

They were also given a derogation on the drive-by noise regulations that apply to trucks The noise emitted from the special off road tyres used on All Terrain cranes exceeded the noise limits on their own before allowing for engine or fan noises.

Due to the logarithmic effect of decibel ratings, the seemingly small 3dba drop that 2000/14/EC requires actually equates to half the current permitted noise levels.