JCB:

Software-driven Acoustic Emission Test System

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In the mid-1990s PTP's predecessor organisation was part of a group that developed a software-driven, PC-based testing solution using custom hardware to capture and process the noise captured by the microphones. The processed data was then manually loaded into the Excel spreadsheets that JCB use to produce the emissions test reports.

JCB is a world-leading manufacturer of earth moving, loading, and utility vehicles. With an increasing understanding of the effects of noise in the environment, the amount of noise that these vehicles can produce is regulated by international directives.

JCB are consequently required to test their product to ensure that they meet the requirement. The method of testing acoustic emissions is prescribed by international standard (ISO 6395, ISO 3744) and for some time JCB have maintained a facility that can test acoustic emissions to this standard. This facility at JCB headquarters comprises an outdoor test pad at a quiet location surrounded by a hemispherical array of 6 microphones that are used for both stationary and 'drive by' tests.

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More recently, with the existing equipment and DOS-based software becoming obsolete, JCB approached PTP to develop an updated emission testing system that was based on a PC/Windows platform with modern, maintainable hardware and which would provide a much greater degree of automation in the collection of data and generation of reports.

In order to provide this, PTP designed a robust 6-channel data acquisition hardware system that, including microphones, was certified and calibrated to IEC 61672 Class 1 – *the international standard for sound level meters*. Custom PC software was also developed that would capture, process and display the noise levels captured by the microphones during testing. In order to provide the automation that JCB required, the Excel spreadsheet report was rewritten and integrated with the custom software so that tests could be scheduled from, and data written automatically into, the report spreadsheet.

Designed as a plug-in replacement, installation of the new system was straightforward and it has proved to be very reliable. JCB are now able to issue certified noise emissions test reports just as soon as testing is complete with much reduced effort.

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