CASE STUDY

Germany

Earth-moving Machinery Manufacturer

Ahlmann Baumaschinen GmbH
Earth-moving Machinery and the New EU Directive

PULSE, Value Pack for Sound Power

To comply with the new EU Noise-emission Directive, the German earth-moving machine manufacturer, Ahlmann, had to increase its number of noise tests from a small number to hundreds. To carry out these tests, the company decided to invest in its own test facility based on Brüel & Kjær's PULSE™ and the PULSE Value Pack for Sound Power software. As a result, it experienced a dramatic fall in the time taken for each test – from 2 hours to 15 minutes!

The Company

AHLMANN is situated in Büdelsdorf, northern Germany and employs about 200 people. The Ahlmann name has a strong resonance in German industrial history and Ahlmann Baumaschinen GmbH is continuing a proud tradition – the company is currently celebrating 50 years of earth-moving machinery manufacture.

Ahlmann manufactures a series of innovative, wheeled loaders which can be adapted to a further wide range of uses by attaching items such as buckets, pallet forks, hydraulic breakers and lift hooks. From simpler beginnings in 1952 when there was only one product type, today there are five different product lines and the trend is that more will evolve as today's construction sites tend to be smaller, thus increasing the need for efficient and manoeuvrable machinery such as the types manufactured by Ahlmann.

Milestones in a 50-year history include the development of the swing-shovel loader and power-controlled hydrostatic drives. Such innovations have helped Ahlmann thrive in a very competitive market where it exports primarily to Europe, especially The Netherlands, but has recently broken into the U.S. market.

The Directive

The new EU Noise-emission Directive 2000/14/EC demands that a wide range of equipment for use outdoors can only be sold in the European market if it conforms to certain noise-reducing requirements. The principal requirement is to label each piece of equipment with its guaranteed sound-power level which includes uncertainties arising from production-line production variation.

For some types of equipment, e.g., earth-moving machines, the directive also places limits on sound-power levels and requires the implementation of a conformance-assessment procedure under the supervision of a notified body.

New Directive, Increased Testing

Under the current 2000/14/EC Directive, Ahlmann is required to initially test a number of units from each product line to assess conformance and estimate production uncertainties. Thereafter, testing is required on a quarterly basis to ensure continued conformance; in Ahlmann's case, this means a total test volume of almost 100 machines per year.

How to comply with the new Directive was uncertain. Ahlmann did not have personnel trained in acoustics to make such measurements, nor the necessary test equipment for producing the official documentation required by the new Directive.

Testing – Meeting the Directive Requirements

Two Hours becomes Fifteen Minutes

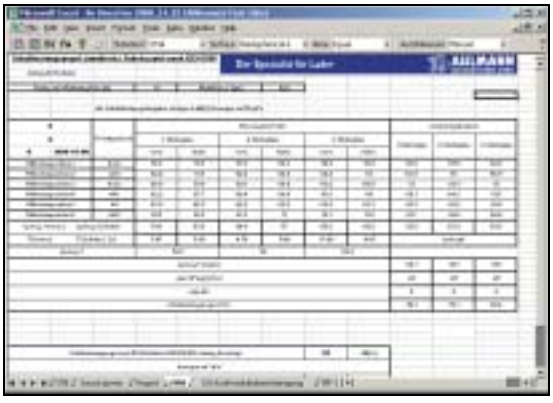

Fig. 1
Test data are automatically processed into customised reports – Ahlmann's logo is also included

Ahlmann has been a Brüel&Kjær customer for many years. Ahlmann's Test Department, headed by Cordt Krampe, needed a solution that would meet the requirements of the new Directive – they chose PULSE and PULSE Value Pack software. Boris Thiel works with noise testing in the test department. He says, "Multichannel measuring with the PULSE system and Value Pack has slashed the time required to test an individual machine from 2 hours to about 15 minutes. The software not

only handles the necessary calculation of raw test data required by the Directive but also, automatically, in seconds, compiles an official report, as required by the notified body". He is especially pleased with this as the creation of a report used to take a whole day! Ahlmann achieves a full noise-testing program with a 6-channel PULSE system, Value Pack software and just two test personnel.

Fig. 2
Olaf Klomfass and the AZ85t loader in action. Notice the Ahlmann-designed 11 m high microphone stand that is easily erected at the test site

Boris makes a demonstration test at the company test facility with the help of Olaf Klomfass, the test driver. Boris picks up the laptop computer and 6-channel PULSE system, and places them in the cab of his loader to transport to the test site, while Olaf drives ahead in another loader with microphones and cables to begin the setup.

Despite potentially noisy elements close to the test site, including a railway line, a regional air-traffic corridor overhead and occasional gusts of wind, this does not pose any significant problem to testing.

Boris explains that another bonus of the reduced test times is that the test time is now shorter and so there is less chance for background noise to disrupt testing.

While Olaf drives the test vehicle, Boris checks the test conditions and monitors the test data. He remarks that, "No swapping around of microphones is required with the PULSE Value Pack system – measuring on multiple channels at one time is easy and reliable". He also mentions that the displays are very clear and informative.

Value for Money

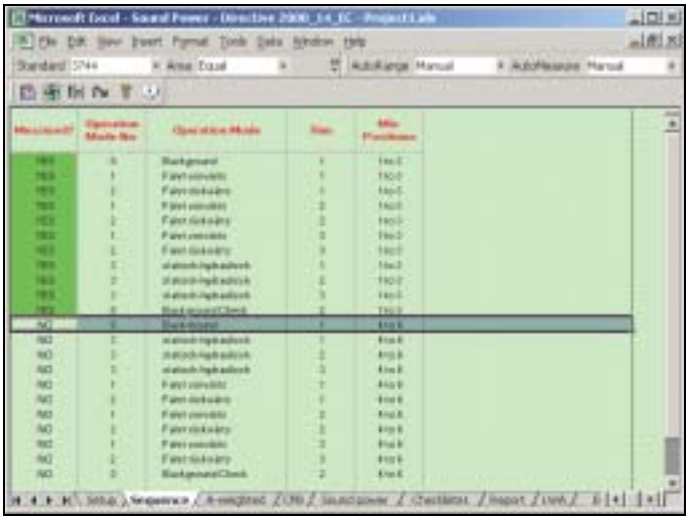

Fig. 3
PULSE Value Pack suits Ahlmann's specific needs for the measurement sequence.
The Value Pack software supports a fully customised measurement sequence that quickly guides the user through the test procedure

Boris Thiel goes on to praise PULSE Value Pack for its usability. He says, "It guides the user through the test procedure quickly, saving a lot of time and resources".

Ahlmann typically performs sound power tests on about 100 machines a year. Using PULSE Value Pack, the test data can be stored with just two button pushes.

The data calculation/reporting facility allows a full testing program to be carried out by just two personnel – a driver and a system operator – who need not necessarily be trained acousticians. Additionally, Boris likes Value Pack's interface with Microsoft® Excel as it allows easy adaptation of the test documentation required by the notified body. He also appreciates the documentation of noise analyses that Ahlmann uses extensively for product development purposes.

Fig. 4
Left to right: Joachim Falk (Brüel & Kjær's local manager), Cordt Krampe, Boris Thiel and Olaf Klomfass – a day's testing has been successfully completed

Key Facts

- To comply with the new EU Noise-emission Directive, the German earth-moving machine manufacturer, Ahlmann, had to greatly increase its noise-testing program and decided to invest in PULSE Value Pack
- Ahlmann employs a total of 200 people in northern Germany
- The history of Ahlmann goes back to 1827
- The company has manufactured earth-moving machinery for 50 years
- Ahlmann Baumaschinen GmbH was established in 1994
- Ahlmann has been a Brüel & Kjær customer for many years
- PULSE Value Pack has helped lower average test time from two hours to about 15 minutes
- Data reporting is now instant – previously, this took a whole day
- Ahlmann achieves a full noise-testing program with a 6-channel PULSE system, PULSE Value Pack and two test personnel who are not trained acousticians

02/09
BO 0503 – 11