

# Sound advice on Noise Pollution

**Worldwide, increasingly stringent regulations are coming into force limiting the exposure of workers to industrial noise. Over 1 million employees in Great Britain are exposed to levels of noise which puts their hearing at risk and 170,000 suffer from deafness, tinnitus – ring, whistling, buzzing or humming in the ears – or other ear conditions as a result of exposure to excessive noise at work.**

Today's employers must be aware of the stringent new rules introduced under the Control of Noise at Work Regulations which came into force in April 2006. The directive is designed to ensure that all workers are protected from the effects of exposure to noise and the risk of damage to

hearing. The regulations are based on European Union Directives which require similar basic laws throughout the Union on protecting workers from the health risks caused by noise.

By law employers must assess and identify measures to eliminate or reduce risks from exposure to noise, so that they can protect the hearing of their employees. Where the risks are low, the actions taken may be simple and inexpensive, but where the risks are high, they should be managed with a prioritised noise-control action plan.

Employers have to ensure that where required hearing protection is provided and used, any other controls are correctly applied and information, training and health surveillance is provided.

Factors that contribute to hearing damage are:

- noise levels (given in decibel units dB(A))
- how long people are exposed to the noise, daily and over a number of years

The focus of the new legislation is on:

- A reduction of 5dB(A) in the exposure levels at which action has to be taken: from 90 and 85dB(A) in the previous directive to 85 and 80dB(A) in the new directive.
- Implementing good practice noise control and risk management procedures, such as reducing noise exposure and providing employees with hearing protection, information and training.
- Controlling noise at source by technical or organisational means, such as introducing quieter processes and equipment and a low-noise purchasing policy.

The new legislation moves away from an over reliance on assessment, quantification of exposure levels and consequent hearing protection, towards an agenda of proactive and active control and management of noise issues.



Indoor installation of acoustic enclosure around centrifuge

In Municipal waste water treatment plants, decanter centrifuges are used for dewatering sludges generated by the treatment process. In the dewatering process centrifuges separate solids from liquid by utilizing the 'g' force generated by the machine running at speeds of around 3000 rpm and as such untreated noise levels can typically exceed 80 dB(A).

In order to avoid the risk of exceeding noise at work and environmental noise legislation levels, Alfa Laval, one of the world's leading manufacturers of decanter centrifuges called in Wakefield Acoustics, the industrial noise control specialists, to help reduce emitted noise levels for a leading UK water utility. The water utility which supplies 420 million gallons (1.9 billion litres) of the highest quality drinking water and treats 600 million gallons (2.7 billion litres) of dirty water every day

and is one of the UK's largest water utilities.

Waste water treatment is a key element of the work of many water utilities, which has to meet today's incredibly high standards for drinking and waste water. Waste water in the form of sewage is the dirty waste product generated from water after it has been used. Besides human waste, it also contains food, detergents, oils, metal residues, sand and sometimes, harmful chemicals.



Outdoor installation of weatherproofed acoustic enclosure on centrifuge platform

All these substances have to be treated and the water cleaned before it can be safely returned to rivers or streams. At the same time, many water utilities sewerage systems also have to collect surface water (rainwater) and return it to the watercourses.

One of the processes used to treat waste water involves the use of decanter centrifuges to speed up the separation of solids from liquids. The decanter centrifuges are supplied by a number of companies, Alfa Laval being one of the market leaders. Alfa Laval is a company with more than 60 years experience of separating solids from liquids in manufacturing processes using decanter centrifuge technology.

Particles, sediment and solids fall to the bottom of the settling tank due to gravity. The centrifuge is then rotated rapidly, replacing gravity with controllable centrifugal forces which can be up to 3,000 times greater than gravity.

In order to comply with both industrial and environmental noise legislation, a leading UK water utility was looking for a solution that involved a degree of noise attenuation. On this particular application the specification was to reduce emitted noise levels so that the external noise level, at a distance of one metre, was no more than 74dB(A).

Alfa Laval called in noise control specialists Wakefield Acoustics Ltd. Wakefield Acoustics has provided noise and acoustic control products and solutions for industrial, commercial and environmental applications worldwide since 1980 and is now recognised as a market leader in the field.

Alfa Laval chose to use Wakefield Acoustics' services because the company has a wide experience of providing noise control solutions. It provides a range of applications within the waste water sector throughout the UK, working closely with Original Equipment Manufacturers (OEM), contractors and directly with water authorities, providing noise control solutions for applications such as sludge dewatering, aeration, filtration and odour control.

Wakefield Acoustics' solution was to supply bespoke designed and purpose built acoustic enclosures for several decanter centrifuges in the dewatering plant of the water utility's waste treatment works.

The effective ongoing operation of the decanter centrifuges required a detailed maintenance programme and construction of the enclosures had to be designed both to achieve the required noise reduction and also to provide suitable access for initial installation and ongoing regular maintenance.

A one-piece 'lift off' roof and side panels were provided to allow for easy installation and removal of the centrifuge components. Quick release catches were also included in the design, along with suitable fan assisted ventilation.

All Wakefield Acoustics' enclosures are application engineered to customer requirements and are suitable for heavy duty applications. They are designed to incorporate acoustic doors, windows and access panels. Enclosures range from modular panel to panel bolted constructions, panel in bolted framework constructions and one piece drop over units.

Following installation of the acoustic enclosures, the water utility commissioned a full independent noise report, which recorded noise levels at 72dB(A), lower than the original specification of 74dB(A) and well below the action limits set under the 2005 Control of Noise at Work Regulations. All the key parties involved: the water utility, Alfa Laval and Wakefield Acoustics reported that they were highly satisfied with the solution provided.

"Thanks to Wakefield Acoustics' engineering expertise we have reduced the noise levels," says Steve Winn, segment manager environmental and industrial waste at Alfa Laval. "This was an area with a particular noise problem. Wakefield Acoustics have provided a cost

effective solution and have worked with the project team, to reduce the noise issues, to comply with environmental and legal requirements."

Wakefield Acoustics specialises in providing practical and cost effective bespoke engineered industrial noise control solutions. Its sophisticated acoustic design software, coupled with over 27 years experience in this field allows the company to accurately diagnose noise problems and to provide effective acoustic products which optimise noise control requirements, airflow, cooling, access and maintenance issues, as well as overall cost.

Wakefield Acoustics' Noise At Risk Assessment service starts with a free consultation, in which particular work processes are discussed and any unique noise factors, specific to a particular application are taken into account. This could include a site visit.

For further information on the design, manufacture and supply of acoustic products and solutions for industrial, commercial and environmental applications from Wakefield Acoustics, telephone 01274 872277 or email [noise@wakefieldacoustics.co.uk](mailto:noise@wakefieldacoustics.co.uk)

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