

ECHO BARRIER[®]

Environmentally Sound



Keeping the Peace

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Technical Director

As an engineer with 30 years of experience in acoustics, Peter has an unusually pragmatic approach to the specialist fields of noise and vibration. In addition to acquiring a considerable international reputation for developing innovative noise and vibration control techniques across a wide range of industries, Peter has also developed the IOSH competency training courses in both noise and vibration.

ECHO BARRIERS

“The ECHO BARRIER product line represents a very innovative and elegant solution to a range of common site and event noise problems. The technical innovations included in the design of the ECHO H1 not only provide a high level of acoustic performance, but they also eliminate the practical problems and hassles associated with the use of conventional temporary acoustic barriers. In practice, this means very rapid fitting and removal (one man jobs), much easier transport and storage, and an acoustic performance that is second to none. As a result, the ECHO H1 is a key part of current best practice for site and event noise management.”

INTRODUCTION

Excessive noise or, put another way, noise pollution, is becoming an increasingly important social and commercial issue. With over 30 years experience in the noise attenuation industry, we at ECHO BARRIER are perfectly placed to address this problem.

ECHO BARRIER products offer high tech and market leading solutions for controlling excessive noise. ECHO BARRIER systems make noise management simple, fast and convenient, with typical applications including road, rail, construction and demolition. They are also equally applicable to all types of public/private occasions where noise control is important, including music and sporting events.

The current ECHO BARRIER product line is based on a high tech acoustic screen, which typically fits around Heras fencing or scaffolding units. Our innovative design features not only provide exceptional and market leading acoustic performance, but also make fitting and removal fast and convenient.

The commercial benefits of noise reduction are enormous, including extending site operating hours (thus reducing costs), minimising the likelihood of noise complaints, and creating a productive working environment.

Key Features of ECHO BARRIER Products



Performance

Market leading acoustic performance that can easily be increased on site to solve any unexpected local noise problems.



Transport

Hard wearing, lightweight, compact and unique self locking mechanism, for ease of storage and handling.



Safety

Unique night time safety features, fire and weather resistant.



Cost

IP protected design features dramatically reduce the costs of meeting noise control requirements, particularly for temporary or short-term projects. Our hire rates also represent unbeatable value for money.



Installation

Innovative design typically reduces installation time by 70% or more compared to conventional screening.



Advertising

Opportunity for client advertising to be placed on ECHO BARRIER products.



Best Practice

Play a key role in meeting best practice targets for noise management.



Technical Support

Unlike anyone else in the market, we are able to offer unparalleled technical support through our market leading consultancy practice, Iris Noise and Vibration Services.

Applications



Railways

(e.g. track maintenance, station refurbishment and bridges)



Roads

(e.g. trenches, breakers and road-saws)



Construction and Scaffolding



Demolition and Piling



Loading and Unloading Areas



Staff Welfare Facilities

PRODUCTS



ECHO BARRIER products are born of innovative designs that provide the optimum balance between acoustic performance and practical considerations, such as ease of installation, transportation and storage.

The construction of the Heras fencing mounted system, for example, has been designed to provide the maximum attenuation for the minimum weight to facilitate rapid installation and removal for temporary or short-term applications. Where higher attenuation is required (for example, close to an unexpectedly noisy generator), the ECHO BARRIER is designed so that you can simply clip on additional panels in seconds.

Our first ECHO BARRIER product for public release is the ECHO H1. This can fit on all types of vertical fencing or scaffolding, with a particular focus on Heras temporary fencing - hence the name ECHO H1. The ECHO H1 has the following qualities:

Acoustic Performance

10 to 20dB typical noise reduction - up to 30dB is possible

The precise performance is dependent on the frequency content of the noise sources and the local barrier geometry. Note that we can advise on the optimum performance configuration for any particular application.

Enhanced noise attenuation - re-configured on site as required

The ECHO BARRIER system is designed so that you can adjust the acoustic performance on site by increasing the degree of overlap. This allows you to install additional attenuation just where you need it, at noise 'hot-spots', without spending more than necessary elsewhere. This is particularly useful, as often happens, where you suddenly encounter unexpectedly loud noise sources on site.

Soaking up sound

ECHO BARRIERS include high performance acoustic absorbent to soak up sound rather than just reflecting the noise. This significantly increases the overall 'real world' sound attenuation.

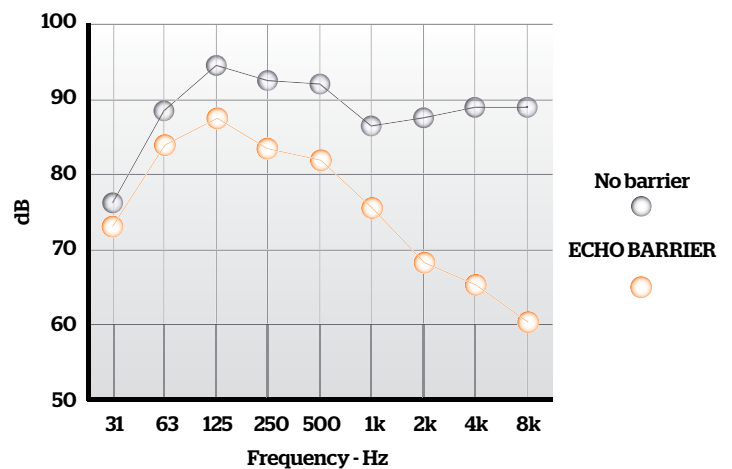
Installation and Handling

- Unique mounting system reduces installation time by 70%.
- Unique roll up lock for storage and easy transportation.
- Hard wearing.
- Lightweight (c. 4kg) to aid mechanical handling.

Acoustic Design

The acoustic elements of the ECHO BARRIER comprise a mass layer and a carefully designed acoustic absorbent layer. These not only attenuate the direct transmission of sound, but also absorb it, thereby reducing the sound reflected back towards the source and overall performance.

Typical octave band noise levels with and without the barrier are shown in the following figure:



Aesthetic Design

ECHO H1

In addition to its acoustic qualities, the ECHO H1 has been designed to look good in prominent and highly visible locations. Furthermore, clients can take the opportunity to advertise their brand name or services on the ECHO H1 barrier itself.



Safety

- Reflective strips designed to pick up both truck and car headlights.
- Weatherproof.
- Fire resistant.
- No fibreglass or rockwool.

BESPOKE PERFORMANCE



At ECHO BARRIER we offer a bespoke service aimed at servicing the precise needs of each individual client and maximising performance. We achieve this in various different ways:

Cutting Edge Acoustic Design

The acoustic elements of the ECHO BARRIER comprise a mass layer and a carefully designed acoustic absorbent layer. These not only attenuate the direct transmission of sound, but also reduce the sound reflected back towards the source to improve the overall performance.

Developing New Applications

As a market leader we are always developing new applications and noise control solutions. This means that, within reason, whatever your noise problem is, you can be sure that we will find a way to mitigate it.

Support and Consultancy

Our support and consultancy services are provided by our sister company, Iris Noise and Vibration Services (Iris NVS). Iris NVS is a specialist noise attenuation consultancy, with over 30 years experience in the field of noise control.

The fundamental techniques involved in using ECHO BARRIERS are very simple in most circumstances. However, if you have unusual noise signatures or geometries or you need to be able to guarantee specific noise levels, we can provide you with a full range of additional technical support services. Such services include:

Acoustic Barrier Selection and Configuration

- Recommending the best ECHO BARRIER specification for the application.
- Analysing the optimum geometry.
- Noise level predictions.

Noise Measurements and Assessments

- Environmental noise measurements (e.g. BS4142, BS5228 etc.)
- Occupational noise assessments.

Training

- Noise measurement.
- Environmental noise specifications and targets.
- Best Practicable Means (BPM) in noise management.

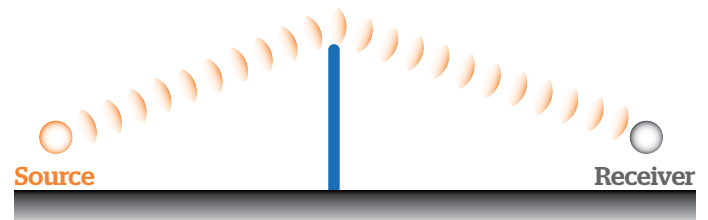
Noise Control at Source

- Engineering techniques to reduce noise from plant at source or to ensure that plant meets noise specifications for particular applications.

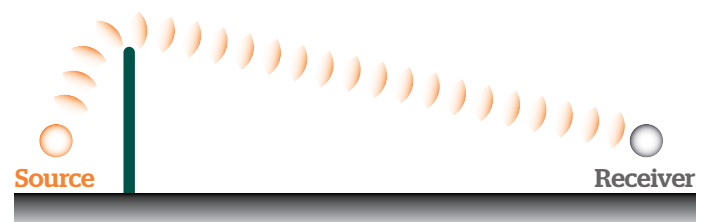
Correct Configuration

The configuration or layout of acoustic barriers with respect to the relevant noise source(s) is a key factor in achieving the required noise reduction. There are two simple principles involved. The first involves maximising the sound 'shadow' cast by the barrier by positioning the barrier correctly. This concept is illustrated below.

Poor barrier position

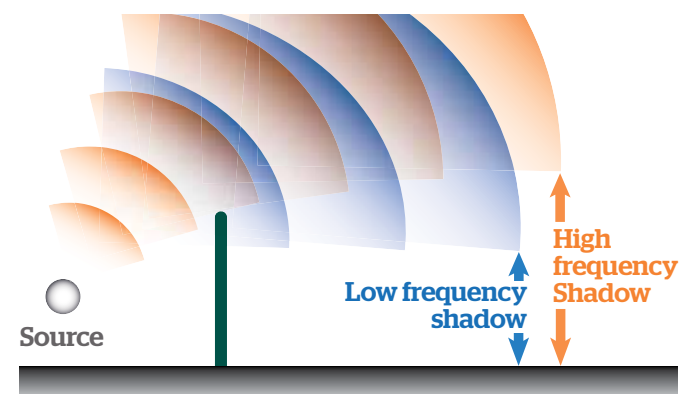


Good barrier position



The second key principle is that the performance of any barrier, whether a convenient temporary construction or a brick wall, is always significantly less at lower frequencies. This effect is created by a combination of the barrier geometry and the laws of physics. Technically, lower frequency sound has a longer wavelength which reduces the effective height of the barrier, creating a smaller acoustic 'shadow' as shown in the figure.

Barrier frequency



Please contact us for detailed technical advice on optimum barrier installations for specific applications.

REGULATORY CONTROLS



Environmental Noise

General Legislation

Whilst the Environmental Protection Act 1990 gives local authorities the power to control general noise pollution, the Control of Pollution Act 1974 (CPA) gives powers to local authorities to control noise and vibration from construction sites. The CPA emphasises that best practical means (BPM) should be used to control noise pollution.

Operation of Control of Pollution Act 1974

Section 60 of the CPA gives local authorities the power to serve a notice on the person responsible for a construction site, with such notice requiring specific actions to be taken to minimise noise.

Section 61 of the CPA allows a contractor to approach a local authority in order to agree a noise management protocol prior to work commencing on site. Such an agreement, once executed, protects the contractor from local authority action under Section 60.

We are perfectly placed to assist with the negotiation and fulfilment of Section 61 Agreements, by supplying ECHO BARRIERS and by providing acoustic consultancy support through Iris NVS.

Codes of Practice

BS 5228 and BS 4142 codes of practice (for construction and industry respectively) specify that best practice should be used to manage construction site and industrial/commercial noise.

ECHO BARRIERS are rapidly becoming part of accepted best practice in the noise attenuation industry.

Occupational Noise

Noise at Work

There are an estimated 170,000 people in the UK that suffer from deafness or related ear conditions due to excessive noise at work. Unsurprisingly, employers therefore have a legal duty to protect the hearing of their employees - currently such legal duty is governed by the Control of Noise at Work Regulations 2005 (the Regulations).

What has changed from the previous Noise at Work Regulations 1989?

Under the new Regulations, specific action is required at certain 'action values'. The level at which employers must

provide hearing protection and hearing protection zones is now 85 decibels (daily or weekly average exposure) and the level at which employers must assess the risk to workers' health and provide them with information and training is now 80 decibels. There is also an exposure limit value of 87 decibels, above which workers must not be exposed. This limit already takes into account any reduction there may be in exposure by providing hearing protection. Essentially, the permitted exposure level to noise has been lowered.

What noise levels do we associate with typical site activities?

Illustrated below are typical site activities and the noise they generate, as defined by the Health and Safety Executive (HSE), which has the responsibility for enforcing the Regulations:

dB(A)		
Concrete Grinding 85+	Dumper Truck 85+	Excavator 85+
Guniting 85+	Pouring Concrete	Shoveling Hardcore 94
Sandblasting 85+		

What can be done to ensure high noise levels are contained within the limits of the Regulations?

A risk assessment should be carried out to determine the level, type and duration of exposure to noise. The HSE website (www.hse.gov.uk) features a method of calculating daily exposure. The assessment will be partly based on standard information from work equipment manufacturers. The risk assessment must be carried out by a competent person. A series of hierarchical steps can also be taken to deal with noise. Compliance should take place in the following order:

- Avoid or reduce noise directly, e.g. by using less noisy equipment.
- Adopt working methods that avoid or reduce exposure to noise. Our in house noise consultants at Iris NVS can assist in this area.
- Use physical means, such as ECHO BARRIERS, to reduce the effects of noise.
- Adapt or reduce working periods to limit noise exposure.
- Provide training in the use of noisy equipment to reduce exposure.
- Make ear protection/PPE available or issued to those affected.

Key features of

ECHO BARRIER®
Environmentally Sound

- Market leading acoustic performance (absorption not reflection).
- 15dB plus noise reduction.
- Fully protected IP design features.
- Easy handling and storage, with innovative roll up mechanism.
- Fire and weather resistant.
- No hazardous materials (no fibreglass used).
- Unique night time safety features.
- Space for client branding/advertising.
- Simple installation, with the ability to double and triple layer where required.
- Local authority/best practice approved.

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