

The Psy-lencer - Acoustic Camouflage

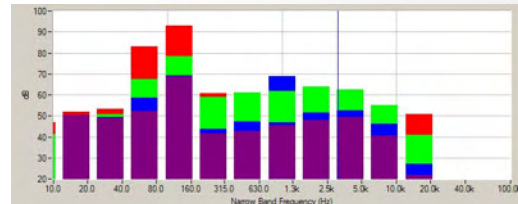
Eliminate noise complaints with "psychological silencing"



Road - rail - industrial - construction - demolition
Utilities - power stations - pumping stations...

This is an innovative, low cost solution to a range of difficult environmental noise problems where sound with "character" could cause or has caused complaints. It can either be used in conjunction with noise control measures or where noise control would be too expensive or impractical.

Based on research into the subjective response of people to noise characteristics, the Psychological Silencing system generates bespoke sound with a sculpted signature that "camouflages" the nuisance features in the noise from the perception of potential complainants. Once initial set-up and calibration testing has been carried out, the sound signature is designed and an array of loud-speakers used to generate a diffuse sound field with the right characteristics and amplitude for the particular environment.



Noise signature set-up and calibration

It is a strange experience, encountering sound that you don't consciously hear making those that you found annoying simply disappear...

Applications

- noise with characteristic features that cause or could cause complaints
- where conventional noise control would be insufficient or prohibitively expensive
- situations where a rapid solution is required
- resolving temporary or short-term noise problems

Benefits

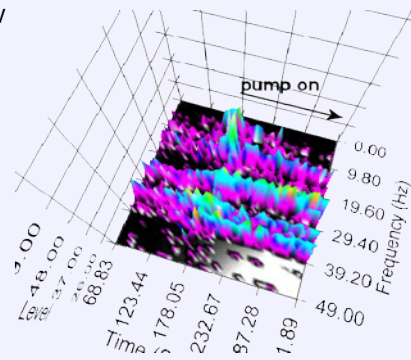
- virtually "instant" solution compared with conventional control measures
- a very low cost option for intractable / temporary problems e.g. construction / demolition, road or rail maintenance

Case Study - Pumping Station - c£250,000 cost savings ...

Residents next to a water pumping station had been complaining about low frequency noise that had resisted all attempts at identification. Detailed diagnostic noise and vibration measurements in both the pumping station and in the complainant's bedroom revealed low level tones at 33-36Hz that matched the vibration from one of the pumps. Analysis of over-night complainant actuated recordings showed bedroom noise levels of only 19.5dB(A) but with low level tones. Detailed discussions with the complainants indicated that, although the tones were well below the typical threshold of hearing, they were the source of the problem.



The only way to reduce the noise would pump replacement at a cost of c £250000, so an alternative was required.... Nighttime recordings were used as the basis for the design of the bespoke **Psy-lencer** sound signature. Hardware (including a speaker) and software was then installed in the pumping station. Running the calibrated system stopped the complainants hearing the low frequency sound and the complaints stopped.



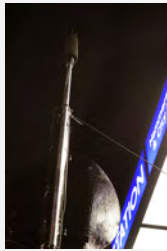
Pump signature identification

See over for more cases studies and information on the selection and installation process

Edgware Road Station - nighttime track maintenance

From regular complaints - to less than zero complaints...

As the station is overlooked by numerous apartments and flats, nighttime noise from track maintenance activities had previously been a sensitive issue that had given rise to regular complaints. Balfour Beatty, the contractor involved, decided to take a proactive step by embracing new techniques and technology. The key noise issues identified were delivery and pick-up of equipment through the station entrance and the staff welfare facilities.



Our solution involved relocating welfare facilities to take advantage of existing site screening features coupled with temporary acoustic barriers - not just for the facilities, but also for the vehicles and workforce at the station entrance. Intelligent Noise Monitoring was also installed to record audio samples of potential nuisance events, as were a pair of Psychological Silencing systems (station entrance and welfare). Despite being inaudible the other side of the street, these systems were very successful at camouflaging the site noise. The combined effect: not just zero complaints, but also an email from a previous complainant complimenting the company on the effectiveness of their noise management.

Case Study - Office Block Demolition - *no complaints..*

This high rise office block was located close to other prestige offices. Demolition involved extensive breaking on the central core, which was predicted to become an increasingly likely potential noise problem as the height of the block was reduced. Any complaints from the inhabitants of adjacent offices would probably result in limits being placed on the hours of work, introducing delays with a corresponding serious knock-on effect on demolition costs.



A **Psy-lencer** system was installed in one of the lower floors early in the demolition process. This made use of a custom designed noise signature to camouflage the more irritating features of the breaking noise in the expectation that this would delay the onset of complaints for as long as possible. In the event, there were no delays as there were no noise complaints during the project.

The Psy-lencer System

Assessing the suitability of the application for the **Psy-lencer** (compared with alternatives) and implementing the system involves the following process:-

- determine what constitutes Best Practicable Means or BAT in noise control based on the best available technology
- acquire detailed diagnostic noise data and recordings both on and off site
- evaluate the current - or likely - noise characteristics and where practical, discuss with any complainants
- design the required sculpted sound signature
- install and calibrate the **Psy-lencer** digital noise camouflage system - a secure on-site location with mains power is required
- elicit feedback from any previous complainants

In some instances, current best practice will simply involve using a **Psy-lencer** system alone. However, in many applications it will be used in conjunction with noise control at source, the latest generation of acoustic barriers and noise management systems - potentially including Intelligent Noise Monitoring that provides real-time feedback on problem events and source identification.

Contact us for further information or to discuss particular potential applications in detail.

Visit our web site for updates on current best practice in noise and vibration management.
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