

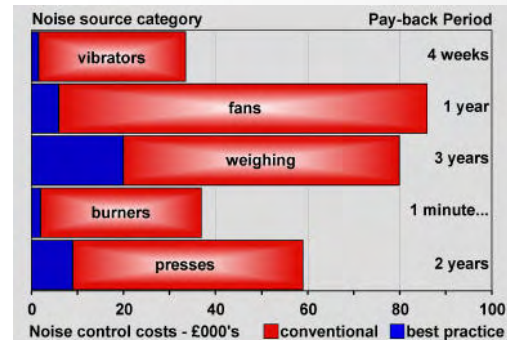
Self-Financing Noise Control



"...identified over £1,000,000 of cost savings and very substantial reductions in operating costs by developing engineering noise control measures for a single site..."

The concept of "self-financing noise control" sounds like an oxymoron - unless you are familiar with some of the innovative new technology and materials that make it possible. The process usually involves discarding conventional palliative noise control measures in favour of elegant engineering source control techniques that reduce operating costs.

This graphic covers a wide range of noise source categories. It illustrates not only the cost savings that are often inherent in engineering control measures compared with enclosures, silencers etc, but also the estimated pay-back period after which the modifications will generate a profit. Summarising:-



- *vibrators: no fatigue, increased product feed rate*
- *fans: eliminated silencer losses and cleaning down-time*
- *weighing: elimination of enclosure, improved access*
- *burners: conventional insufficient to avoid shut-down*
- *presses: enclosures eliminated - reduced down-time*



There will often be an additional cost saving as PPE may no longer be required (£35 - £200/head/annum plus improved working conditions).

A Noise Control Programme is mandatory
 Contact us if you would like to find out whether it is practical to turn this mandatory regulatory requirement into a self-financing - or even a profitable exercise.

The Case Studies - Self Financing Noise Control

£1,000,000 Saving + Improved Productivity

A company had spent £1.6 million on acoustic enclosures on one site. Once installed, they not only caused serious productivity problems (down-time), but noise levels were still too high. Our brief was to prove that enclosures were not best practice (to avoid copying to other sites) and to find a way to remove them without compromising noise levels.

The Noise Control Audit demonstrated engineering source control measures that achieved substantially lower noise levels than enclosure coupled with a dramatic cost saving of over £1,000,000. The maintenance and productivity costs associated with the enclosures were also eliminated, significantly reducing production overheads. This graphically illustrates the benefits of commissioning an audit of the best practice options prior to spending resources on noise control.

Weighing Machine Noise Control

Fitting engineering control modifications to this food industry weighing machine as an extension to maintenance reduced the noise at source by 12dB(A). Consequently, the existing acoustic enclosure could be removed, simplifying cleaning and maintenance. This not only improves productivity by reducing down-time, but PPE would no longer be required (a further cost saving). Moreover, if implemented at purchase, the engineering modifications would have provided x16 the performance of the enclosure and at a fraction of the cost.



94dB(A) - with enclosure
 82dB(A) - enclosure removed

Cadbury - Best Practice in Action
 Cadbury took a very proactive approach to the regulations by commissioning a Noise Control Audit for their UK sites instead of repeating noise surveys. The resultant recommended control programme would allow de-regulation of half the production areas (reducing the number of personnel who must wear PPE) - and without operational or hygiene problems.
It should also pay for itself in seven years.

Tray Washing Lines

Two newly installed automated lines had failed to meet the Christian Salvesen noise specification. The engineering audit predicted both the cost and the precise noise levels that could be achieved using best practice control techniques. Following implementation by the manufacturer, noise levels were reduced from typical levels of 85 - 91dB(A) down to the 82dB(A) target and drying performance was improved. The manufacturer has adopted the more effective, lower cost and more practical INVC technology as standard practice, improving performance and margins.



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The Case Studies - Self Financing Noise Control

Component Drying

A major manufacturing company asked the INVC to review and update their Noise Management Programme to protect their workforce whilst minimising the use of PPE. This involved upgrading to a Digital Noise Assessment (DNA) with a Noise Control Audit. The Audit itself generated the detailed engineering noise control programme implemented as an extension to normal maintenance.

Far from adding to costs, noise control is proving to be a good investment. For example, the 12dB noise reductions achieved on component wash-booths not only eliminate mandatory PPE, but also substantially reduce air consumption - and hence production costs - without compromising drying performance.

Fan Systems

Conventional fan system noise control involves a combination of silencers, enclosures and lagging. Silencers can generate back-pressure, reducing efficiency, and can also require regular down-time for cleaning. Both enclosures and lagging require maintenance and can restrict access (more down-time). INVC **Quiet Fan technology (QFt)** is a unique alternative that reduces tonal noise at source. It lasts the lifetime of the fan without maintenance and without affecting efficiency. **QFt** eliminated conventional silencers, enclosures and lagging on this can extract system and the 22dB noise reduction was achieved at c10% of the capital cost and reduced running costs.



Moulding Vibrator

A prototype concrete roof tile vibratory moulding machine was re-designed to reduce the noise. As part of the process, the mould vibrator characteristics were changed to improve the efficiency of the process, reducing the cycle time by c 30%. Consequently, the noise control project not only reduced the noise level by 15dB (down to 84dB(A)), but also improved productivity by a third for the 12 production machines.

Combustion Noise

Instead of buying a very costly enclosure, the combustion noise from this sandburner was reduced by 10dB quickly and cheaply at source (modified sleeve designed for the combustion head). The modification also improved combustion efficiency and reduced gas consumption by 4%.

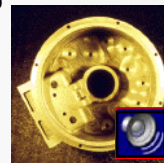


Chocolate Enrober Vibrators

A noise/vibration problem on an enrober vibrators led to the complete re-design of the vibrator. The new model substantially reduced the noise, eliminated fatigue problems and improved quality sufficiently to allow the chocolate coating thickness to be reduced by 10%, saving 6 figure sums through reduced chocolate use.

Machining Castings

Machining of castings generated very high levels of tonal noise. Instead of screening the problem, a low cost custom damper was developed to reduce the component vibration. This not only reduced the noise by 16dB, but also reduced the cycle time by c 40% (larger cuts could be taken). Tool life was also significantly extended and the quality of the cut improved.



... and Briefly

More chocolate vibrators - better quality in a shorter, quieter unit; high hygiene conveyors - 15dB quieter with reduced wear and maintenance; cooling towers - 15dB quieter with better performance and reduced running costs; hydraulic presses - no enclosure, improved access, elimination of shocks and reduced oil leaks....

Engineering Noise Control Audit

This is the most effective way to tackle any noise control project. The Audit generates a list of all the noise control options with costs and benefits for a single machine or across a whole site using the best of current technology.

Contact us for details

Manufacturers and Suppliers

The new regulations put pressure on companies to implement a purchasing policy that includes noise. These means that suppliers who can provide quiet plant will find that they have an increasingly competitive advantage - particularly if the noise control measures are not only low cost, but also have no impact on - or even enhance - productivity.



- *Air-knives: 12dB(A) quieter, lower cost, more efficient*
- *Vibratory graders: quieter (6 - 15dB), throughput doubled*
- *Compressors: reduced package size, lower cost, half the noise*
- *HVAC: 4dB(A) quieter at no additional cost over standard unit*
- *Textile machines: 8dB() quieter than standard with no access restrictions at £250/machine*
- *Vacuum pumps: 15dB(A) quieter, no change in production costs*
- *Generator sets: 4dB(A) quieter, no added cost*

Contact us to discuss purchase/product development

INVC on the Web

Our web site gives you instant access to the latest developments in occupational and environmental Noise, Vibration, HAV, case studies (including sound), training, useful links, new products

www.invc.co.uk

Contact us for more information about noise and vibration control technology, technical support, purchasing and training.