



**Noise Measurement & Control**

**IOSH – South Downs Branch**

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**Who are you listening to?**

- Business Owner of Noise & Vibration Solutions.
- Consultant & Director at the Industrial Noise & Vibration Centre. c5yrs Years
- Previous UK Sales Manager Cirrus Research Plc c8yrs


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Our ears do not perceive 3dBA to be 'TWICE AS LOUD'




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## Measurement: Common Errors


- Not knowing how to use your equipment
- Not knowing what data you need
- Not taking readings in the correct location
- Not calculating the exposure properly
- Stopping there...
- Jumping to Conclusions
- Not identifying the correct noise sources & Ranking them
- Using the wrong noise control techniques

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# Practical Session: Measurement



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# The Control of Noise at Work Regulations 2005



## Incomplete noise Risk Assessments

- 1 **Air Chiller Fans**  
 Typical current noise level below:
- |               |                          |
|---------------|--------------------------|
| Despatch area | : 83 - 85 dB(A) $L_{eq}$ |
| Admin area    | : 84 - 85 dB(A) $L_{eq}$ |
| Admin area    | : 85 dB(A) $L_{eq}$      |
- Estimated practical target for this source : < 75 dB(A)  $L_{eq}$



Figure 5 showing silencer in intake area

*Diagnosis and comments*  
 The noise from these fans is being radiated into the surrounding area. Forklift drivers are the only employees in these areas and the fan noise levels in the Admin area do make the computer/admin area directly below the fans, a compulsory hearing protection zone. All other chiller fans around the site should also be silenced.

*Noise control options*  
 Fit cylindrical silencers (minimum length should be 1 x diameter) as shown in the Figure 5 above. The silencers already present on the fans in the Admin area may require servicing as they could be clogged or damaged as the noise level in the area was < 75 dB(A) in the previous 2007 assessment and no other machines have been introduced since.


The noise may be radiating from the panels surrounding the silencer if they have been knocked or damaged so should also be checked.

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## Controlling the Noise

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**Incorrect diagnosis of source**

Remember the 3dB(A) Rule  
-You must rank the noise sources and start with the highest source first.

E.G 2 noise sources are 93dBA (90+90)  
If you control noise by switching one off, reduction of 3, maximum level reduced to 90dBA

If you have 2 noise sources where 1 is less than the loudest noise source SAY 90dBA + 88dBA and you tackle this one 1<sup>st</sup> you are going to get less than 3 dBA reduction


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**Controlling the Noise at Source**


- Maintenance
- Engineering the Noise at source
- Damping
- Isolation
- Absorption & Insulation
- Silencers
- Enclosures (absorption & insulation)

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**Controlling the Noise  
Practical Session:**  
Take a look at the images label them  
as to what you think they are.

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**Controlling the Noise  
Practical Session:**  
Place in order of use and where they  
would be used, for the following  
scenario


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## Hydraulic Power Pack with Motor and Pump




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## Enclosure on weigher platform



94dB(A) with enclosure - 82dB(A) with engineering noise control and no enclosure; PPE unnecessary; improved productivity, cleaning, access and maintenance ...



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**Problem**

- typically 87- 98dB(A) - high hygiene

**Conventionally: Enclosure**


- Enclosures - c5dB(A) reduction
  - usually *increases* operator noise level by 2 - 3dB(A) under platform!
- c£8000+ capital + access / hygiene / maintenance problems

**BPM - engineering control**

- engineering source modifications
- sophisticated high hygiene damping
- 10 - 12dB(A) reduction at <<50% of the cost
- x4 performance + no effect on access or hygiene ref untreated machine
- maintenance and cleaning simplified

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Incorrect noise control recommendation:



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### In Summary



- Look at what needs to be achieved by the assessment & select correct measurement parameters and locations for that job – No measurements for measurements sake.
- Present report that provides not just the noise levels but recommendations for Action. Most companies know they have a problem and while a report confirms this, the job should not stop there.

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