

M3-EN.7 NOISE

M3-EN.7.1 Noise in Metal Processing Workshops

M3-EN.7.2 Noise limitation

M3-EN.7.3 Examples of Noise reduction

M3-EN.7.4 Intervention to already operating machinery

Chapter Description

In this chapter, the presence of noise in Metal Processing Workshops, together with the problems is explained. Finally, the noise reduction measures are presented.

This chapter aims at the familiarization of those who are engaged in Occupational Health and Safety to noise in a workplace and especially in Metal Processing workshops, resulting in health and safety of the employees.

M3-EN.7.1 Noise in Metal Processing Workshops

In a metal processing workshop it is easy to find noise. Work positions like cropper, where noise is instantaneous and acute, lathe and drill, where noise is continuous. Hand tools and more specific the electrical ones generate great levels of noise. Grinding wheels and lathe may generate noise near 100 dB(A). The bump of two metal leaves, metal forging and metal cutting are noisy too. For example, flame-cutting processing has measured to generate noise at a level about 93 dB(A).

M3-EN.7.2 Noise reduction

Installation of machinery design:

- The study of noise protection can be a part of a general study and design (air-conditioning, heating)
- The source of noise should be installed separately, so the noise could not pervade around the workplace
- Offices and control rooms should be separated with insulating materials, so employee could easy concentrate without any disturbances. There should be places where employees can rest themselves without noisy disturbances. The whole plan of the workplace should help that noise echo is avoided

Choice and machinery installation:

- Noiseless engines should be installed when employer gets machinery.
- Hydraulic equipment should be chosen, oil tanks must be installed away of workplaces with employee's presence and the flow must be in slow velocities with a maximum of 5 m/sec
- All the information needed for noise level of machinery should be provided by the supplier

M3-EN.7.3 Examples of Noise reduction

At a ventilation system one can intervene to the ventilators changing them with others noiseless. Someone can achieve this when he keeps away the control panels from the ventilators. Another way is to normalize the edges of the ventilator.

The employer can minimize vibration so the noise generated from it to be minimized. For instance, a steely surface can generate vibration with two leaves and between them can be intervened an absorptive material (M3.07.01 and M3.07.02), achieving a reduction in noise level.

Nutation of solid materials can be reduced if some metallic parts of equipment are replaced with plastic ones.

M3-EN.7.4 Intervention to a machinery already in operation

It is the most difficult and costly way to reduce noise levels, because these interventions could stop the whole production line and in some cases they are not feasible at all.

For example, changing the way machinery (generator, punch press) is installed on the floor is almost impossible due to technical and economical reasons during this change, whereas it was far easier during the initial installation (M3.07.03).

Case studies

When a workplace includes large surfaces made of hard materials (on the ceilings, on the floor, on the walls), noise echoes are generated. In this case it is proposed to sheathed surfaces with absorptive materials.

Machinery case:

- Externally, thicker materials can be used, like a metal sheet or floating screed
- Internally of the above structure an absorptive material can be used and have a noise reduction about 15-20 Db

Occasionally when an electric engine should be insulated, sheets of absorptive material can be installed at the opens of cold air.

Ventilation pipes should be designed with absorptive materials to trap noise (M3.07.04, M3.07.05, M3.07.06 and M3.07.07). In control rooms there should be heavy-duty absorptive materials (M3.07.08), so the operators can avoid noise causing accidents.