

Compressors and the Pressure Systems **Safety Regulations**

“Our CDT department has a compressor. I’ve heard that the science department has to have its pressure systems tested every year. Is it the same with compressors?” This enquiry was recently emailed to SSERC following our article on the Pressure Systems Safety Regulations (PSSR) that we published in Bulletin 259. We reckoned that the sender would not be alone in wanting to know the answer.

Model steam engines, pressure cookers and autoclaves may be used in a science department and all require annual tests according to PSSR. Some compressors do and others don’t. Why the differences? Firstly, all the pressure vessels mentioned in the science context generate steam. This means that the regulations requiring a formal inspection apply. Whether or not a compressor needs an inspection depends on the energy the system is capable of storing. Physicists will tell you that the energy in a pressure system can be calculated from pressure times volume. These same physicists will doubtless be horrified that HSE guidance eschews SI units in favour of bar for pressure and litres for volume.

To work out whether a compressor requires a regular formal inspection, do this:

- Find out the volume of the receiver tank in litres;
- Find the maximum operating pressure in bar;
- Multiply them together.

If the answer is not more than 250 bar litres, no formal inspection is necessary. If it is greater than 250 bar litres, the system must undergo a formal inspection that follows a written scheme of examination. Note that some compressors do not have a receiver tank. They do not require to be inspected. Volume and pressure can be found from manufacturers’ data.

For example, a compressor with a 50 litre receiver tank with a maximum pressure of 10 bar would need inspecting because $50 \times 10 = 500$, well above 250.

However, SSERC’s compressor (Figure 1), with its 15 litre tank and a maximum pressure of 8 bar, wouldn’t because $15 \times 8 = 120$, comfortably less than 250.

This article refers solely to inspections required under PSSR. Other inspections will be necessary, for example a PAT test. Equipment should be in good condition and inspected visually before use and, of course, a risk assessment should be carried out for any activity using a compressor. <<



Figure 1 - SSERC's compressor.