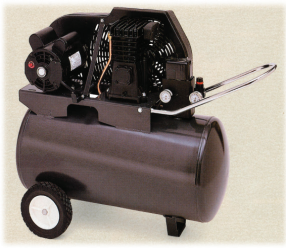
Pressure systems



Equipment and systems containing certain fluids or gases under pressure (for example, boilers, steam-heating systems, air compressors, autoclaves and pressure cookers) can cause serious damage to property, and death and injury to people, if the contents are released unintentionally.

The main causes of incidents are due to poor design, installation and maintenance, but also mistakes due to poor training and supervision of operators.

The simple steps below can help you to reduce the risks when working with pressure systems and you may find them useful as a safety checklist.

Step 1 If installing new equipment, make sure that it is designed to be suitable for its intended purpose, that it is correctly installed, and can be accessed and used safely.

Step 2 Make sure that a suitable and accurate schematic (technical) drawing is available, and that it is clearly marked to identify all parts which should be maintained or examined (for a simple system this may be covered by the instruction manual).

Step 3 Following a major repair or modification, you may need to have the whole system examined again before allowing anyone to use it.

Step 4 Know what gas or fluid is being contained, stored or processed, and the safe limits of the system (pressure, temperature, fluid levels and so on). Make sure you also know what equipment is directly linked to or affected by it.

Step 5 Make sure that there is a set of instructions for using all equipment and for controlling the whole pressure system, including what to do if there is an emergency. Make these available to the appropriate employees.

Step 6 Make sure that protective devices (for example, pressure-relief valves or safety valves or any electronic devices) are fitted to the vessels or pipework and have been adjusted to the correct setting, and that they are kept in good working order at all times.

Step 7 Carry out a programme of suitable maintenance using competent employees. The maintenance programme should take into account the whole system, the age of the equipment, what it is used for and the environment in which it is used. Make sure there is a safe system of work, so that maintenance work is carried out properly and under suitable supervision.

Step 8 A written scheme of examination must be drawn up by someone who is competent and has the knowledge, independence and experience to be able to do this. It is a written document containing information about selected items of equipment which form a pressure system. A competent person must examine the pressure system in line with the written scheme. Make sure that the actions set out in all reports are put into practice.

Step 9 Provide suitable training to all employees who use, install, maintain, repair, inspect and test pressure equipment and closely supervise new staff. You should make sure that anyone you employ to install, maintain or work on your system is competent to do the work.

Step 10 Monitor and record all incidences where a protective device is triggered or where there is an unexpected reading of a gauge or control instrument. Take action to put things right as necessary.

Case Study

Two engineering companies were fined when a technician carrying out a pressure test had his head blown off by an exploding valve. His employers had failed to check that the valve was able to withstand the pressure needed to carry out the test. The exploding valve was estimated to have been travelling at 160 miles an hour at the time of the accident.