

Pressure Systems

Introduction

Pressure systems handling (containing/transferring) liquids, gases, air and in common use, can include boilers, compressors reservoirs/accumulators' vessels, associated pipe-work and controls pressurised over 0.5bar above atmospheric pressure. They can be pressure systems solely for producing energy (compressed air) for paint spraying or powering air tools, for transporting gases/liquids, etc., for transference of energy as in hydraulic systems or can be a component to be activated by electro/mechanical actions in more complex processes.

Although most pressure systems owned or in use at Shropshire Council premises and sites are presently specified, ordered, installed, maintained and inspected through arrangements made by the Property Services Group (PSG), devolution of departmental budgeting and health and safety procedures may mean that in future such arrangements could be organised by individual schools and outstations.

Notwithstanding the above Shropshire Council will so far as reasonably practicable, ensure that all pressure systems used by Shropshire Council or owned by Shropshire Council are safe. Duty-holders will therefore need to make sure that design, construction, repair and modification of pressure systems are appropriate and will be managed to prevent danger. Relevant information as required in law will be recorded and made readily available when necessary.

Modern pressure systems will be designed to British or European standards but in order to ensure their integrity and reliability, they need to be operated and maintained correctly and regularly examined by a qualified and experienced competent person.

The most important points are to:

- maintain and operate all pressure systems to the manufacturer's instruction;
- ensure that examinations are carried out at the specified intervals;
- recruit professional engineering expertise for advice and practical support if this not available in-house;
- keep good records and review procedures regularly.

Property Services Group (PSG) is part of Facilities Management and are currently based at the Shirehall.

Arrangements for securing the health and safety of employees and others

Directorates will ensure directly or by way of PSG that:

the safe operating limits of all pressure systems are established, recorded and visibly marked:

- each system is periodically examined under a written scheme of examination (WSE) by a competent person;
- the competent person is nominated in writing;
- such operating and maintenance duties as are required in law are implemented and that relevant instruction is given to operators;
- historical records relevant to the management of each pressure system are kept by a nominated responsible person - both centrally and locally;
- relevant managers will ensure written implementation of this policy arrangement within their areas of responsibility.

Procedures for dealing with health and safety issues

Any problems or defects observed in pressure systems are to be reported immediately to a responsible person, then investigated with any corrective measures needed being implemented and advice given to relevant employees of actions taken.

Information and training

Directorates will give sufficient information, instruction and where necessary training to all those involved in the operation, maintenance, examination, etc. of pressure systems, which includes temporary staff and contractors as well as those in direct employment.

Safe system of work

To ensure the safety of all those working with pressure systems, directorates should adopt the following measures:

1. A nominated person should be made responsible for the management of pressure systems directly or by way of Property Services Group and should undertake the duties required by this policy, management including:

- direct liaison with the competent person's engineer (usually an insurance engineer appointed by Property Services Group/Risk Management);
- management of such quantified risk assessments as may be required to establish

an acceptable level of risk for personnel.

2. Ensure that pressure systems are depressurised, drained, vented and made safe and that all preparatory work is completed, prior to examination (usually arranged through PSG).

3. Adhere to advice given by the competent person as to a suitable frequency of examination. In some cases, with life expired plant or when signs of corrosion, erosion or fatigue are apparent in any parts of the system, a risk analysis will be required to show if the plant is safe to continue operating. The competent person may then recommend having repairs made to their satisfaction before examination and testing.

4. All work should be controlled by a responsible person and carried out under a safe system of work, with access to the area and any confined spaces strictly controlled.

5. Non-destructive testing using ionising radiation should be managed in accordance with National Radiological Protection Board procedures and appropriate persons duly authorised.

6. Problems or defects should always be reported to a responsible person immediately and before attempting operation of (or other work on) the pressure system.

Imminent danger

The competent person must make a written report to the user/owner of the pressure system if the system and/or its components is likely to give rise to imminent danger unless certain repairs/changes are carried out. The competent person must also send the same details to the enforcing authority within 14 days. On receipt of the report the owner/user must ensure the system is not operated until the remedial work has been completed.

Operation and Maintenance

The user of the system has to provide suitable instructions for its safe operation and for emergency action and must ensure that the system is operated according to those instructions. The system must be properly maintained, and specified documents must be kept. Where modification or repair to a pressure system or gas container takes place, steps must be taken to ensure that no aspect of the work gives rise to danger. Design information is to be provided, and the system properly installed and marked so that it will not give rise to danger. The user must establish the safe operating limits of the system are maintained within the design limits recommended by the manufacturer.

Competent person

The competent person must have certain attributes according to the complexity of the system to be assessed. Therefore, a competent person should be chosen who has the necessary breadth of practical and theoretical knowledge and actual experience of the relevant systems to enable defects or weaknesses to be identified and an assessment made of their significance in terms of the integrity and safety of the equipment.

In general terms, the role and responsibilities of the competent person can be summarised as follows:

- carry out examinations in accordance with the written scheme of examination (WSE) including:
 - review WSE and confirm it is suitable
 - produce a written report for each examination
 - notify user/owner of repairs required
 - identify action in case of imminent danger
 - agree postponements of examination, where appropriate
- draw up or certify written schemes of examination.

Where the competent person is a direct employee of the council, there should be a suitable degree of independence from the operating functions of the council/directorate/team. In particular, where the staff are provided from an in-house inspection department and carry out functions in addition to their competent person duties, they should be separately accountable under their job descriptions for their activities as competent persons. They should act in an objective and professional manner with no conflict of interests and should give an impartial assessment of the nature and condition of the system.

The competent persons can have three different functions where they advise users on the scope of the written scheme of examination (WSE) draw up or certify the written scheme or carry out the examinations under it.

It is the directorates' responsibility to select a competent person (usually in consultation with the Property Services Group or via Risk Management (through the insurance company)).

Record keeping

Directorates using/owning pressure systems must keep, or afford easy access to central records (held by Property Services Group) such WSE reports and (current) certificate of examination as are necessary to ensure the system is safe to operate and to confirm that modifications and repairs have been carried out safely (these may be held electronically, or in any other format providing that the records contain the required information). Documents concerning the design, construction, operation and maintenance of the system and any relevant agreements concerning the examination must also be kept.

With regard to installed pressure systems, documents must be kept at the same site as the system, and for mobile pressure systems, at a centralised office which is in charge of their deployment. Where a system or part of a system changes ownership, the previous user/owner must provide the new user/owner with all relevant documentation.

Records should be kept of any training given in compliance with statutory duties. (See Work Equipment - Provision and Use).

Summary of statutory duties

Employers have a general duty under s.2 of the Health and Safety at Work etc. Act 1974 to provide a safe place of work and safe systems of work, which will include pressure systems. Designers, manufacturers, importers, suppliers, users and owners of pressure systems must ensure that they comply with the Pressure Equipment Regulations 1999 and the Pressure Systems Safety Regulations 2000. These Regulations govern the way all pressure systems over 0.5 bar (and all pressure systems containing steam) must be managed.

A pressure system is defined as a system containing a relevant fluid and at least one pressure vessel (of at least 250 bar litre product in cases other than for steam) with attached pipe-work and protective devices. This also includes pipelines at over 2.7 bar, gas containers to which pipe-work and protective devices are or may be attached and mobile pressure systems. Manufacturers, suppliers, importers of gas containers are required to comply with design and examination standards, and owners to control the safe management of them.

Approved Code of Practice (ACoP) Safety of Pressure Systems L122, available from HSE Books and other guidance place the onus for compliance firmly on the user or owner of a system, who has a duty to demonstrate that all reasonably practicable steps

have been taken to ensure avoidance of the risk of serious injury from stored energy in the event of failure of a pressure system. Designers and installers have a duty to provide a safe system and to provide all the design information and necessary data to enable the user or owner to operate and maintain it safely.

Examination

No pressure systems to be used at work can be operated unless there is a written scheme for the periodic examination (WSE) of the following system parts: protective devices and pressure vessels, pipe-work parts and pipelines in which a defect may give rise to danger. The written scheme must state the nature and frequency of the examinations, specify any extra measures necessary to prepare the system for safe examination and, where appropriate, must provide for the examination to be carried out before the system is first used.

The examination will normally be undertaken by an engineering insurance company which will be employed to provide the competent person. They have a duty to draw up, or certify as suitable, the written scheme of examination and to ensure that those parts of the pressure system included in the scheme of examination are examined by a competent person within the intervals specified in the scheme and, where the scheme so provides, before the system is used for the first time. The competent person must send the written report of the examination to the user/owner of the system as soon as is practicable (or as otherwise specified) after completing the examination and in any event to arrive within 28 days.

The report must state which parts of the system have been examined, their condition and the examination results. It must also specify any repairs/changes necessary to prevent danger, the time limit for carrying out the repairs, and the date after which the system cannot be operated without a further examination.

The user/owner must ensure that repairs are carried out within the specified period of time and that those systems needing further examination are not used until satisfactory examinations have been carried out. Where a date for further examination is specified, this may be postponed in certain situations. The owner must clearly mark on mobile pressure systems the date for further examination.