

Guidance for the Evaluation of Method Statements for working on Pressure Systems

What is a Pressure System?

The Pressure Systems Safety Regulations 200 defines a pressure system as -

“A system comprising one or more pressure vessels of rigid construction, any associated pipework and protective devices, with steam at any pressure, gases which exert a pressure in excess of 0.5 bar above atmospheric pressure and fluids which may be mixtures of liquids, gases and vapours where the gas or vapour phase may exert a pressure in excess of 0.5 bar above atmospheric pressure.”

A pressure vessel may be regarded as a vessel used, or intended to be used, to contain a relevant fluid.

The aim of this guidance is to prevent serious injury from the hazard of stored energy as a result of the failure of a pressure system or one of its component parts.

Hazards in Pressure Systems

Failure of pipework and connections – pipework and its associated connections can fail as a result of poor maintenance, corrosion or incorrect installation. Failure of such components will result in an accidental release of the stored liquid or gas.

Fire or explosion from release of flammable gasses or liquids - as such pressure systems may be used to store and distribute flammable liquids and gasses, accidental release of such substances can generate an explosive atmosphere and a resulting fire or explosion can result.

Accidental release of gas or liquid under pressure – Accidental release of gasses and liquids can cause injury for example from steam or hot water being released in the vicinity of personnel working on pressure systems.

Failure of protective devices – protective devices such as release valves and bursting discs are installed on to pressure systems to prevent the pressure exceeding the safe operating limit for each system. If these devices fail to release excessive pressure then the system will become over pressurised and will be at risk of critical failure.

Over pressurisation of a pressure system – if a pressure system is pressurised beyond its safe operating limit the system will breach at its weakest design point causing a catastrophic failure of the vessel and/or associated pipework. Critical failures of systems can cause severe injury from the blast and debris can be projected over great distances causing impact injuries.

Precautions for working on Pressure Systems

As a **minimum** the following precaution should be applied to all work on pressure systems;

1. All work on pressure systems above pressures identified above must be subject to the University's Permit to Work System; no other local arrangements or contractors systems should be accepted. There permit must not be issued until a suitable and sufficient risk assessment and safe system of work has been supplied by the company or individuals undertaking the work.
2. The whole activity should be supervised by an individual who has the responsibility to ensure that all of the necessary precautions are implemented and must have received training in safe working precautions during work on pressure systems.
3. Prior to the commencement of works on pressure systems the Schedule of Inspection should be reviewed to aid the planning of the scheduled works. A copy of the Schedule of Inspection is available from the Estates department.
4. Before working on pressure systems the system should be isolated and where necessary depressurised to prevent accidental release of the relevant medium, isolations on pressure systems must be undertaken with the Estates Department to minimise the impact on other systems. All isolations should be secured to prevent an accidental re-energisation by a physical lock off and signage to indicate work in being undertaken on the system.
5. Emergency procedures should be established to deal with an unexpected release of the relevant medium, including evacuation and rescue plans where the work is being undertaken in a restricted space or the relevant medium has hazardous properties.
6. Where substantial modifications or repairs (including extensions or additions) are to be carried out which might increase the risk of system failure, the contractor should consult the competent person in the Estates Department to advise before work begins.
7. All pressure systems have a regular inspection according to the schedule of inspection drawn up for each system. On completion of work on pressure systems reference should be made to the schedule to identify if a re-inspection is required before the system can be re-commissioned and put back into service.
8. When re-commissioning the pressure system it should not be pressurised beyond its safe operating limit which will be identified on the system and the schedule of inspection. Working pressures in the system should be verified by the use of appropriate gauges or measuring equipment prior to handover of the equipment.
9. Records should be made of all work undertaken on pressure systems, including design drawings and this should be made available to the Estates Department upon completion of the work.
10. Staff should receive training in hygiene practices and wear protective clothing where known contaminants and infectious material may be present in the system. The organisation undertaking the work may also need to provide welfare facilities such as showers and decontamination units.
11. The wearing of Personal Protective Equipment (PPE) such as overalls, safety footwear, gloves, safety helmets and dust masks. Consideration should be given to the specification of PPE to be flame resistant during work activity.

Further Guidance

Further Guidance on safe working on pressure systems is available from the Safety and Risk Management Team and pressure system permit authorisers in the Estates Department.

Additional guidance is available from the HSE's approved code of practice L122 – Safety of Pressure Systems. Which can be downloaded from the HSE web site <http://www.hse.gov.uk/pubns/priced/l122.pdf>.