

Pressure Testing

Pressure testing of components and systems is an essential part of the activities of the industrial gases industry to demonstrate the integrity of equipment. This includes gas cylinders, customer station equipment and process plants. Pressure testing involves applying stored energy to an assembly of parts, in order to verify its strength, its integrity and/or its functionality.

EIGA member companies have identified the importance of a number of factors that should be considered. These include, but are not limited to:

- A risk assessment should be carried out. This will need to consider the fluid used for the test, that is gas or hydraulic. The assessment should take into account the gas service the system is going in, for example, use oil free air or nitrogen for oxygen systems. Do not use flammable or toxic gases for pressure testing;
- Having a written procedure in place;
- Assess the risk of sudden loss of containment due to equipment failure;
- Whilst a hydraulic pressure test has less stored energy, a loss of containment can still lead to as serious injuries as would the loss of containment using a gas;
- Personnel who are involved in the strength pressure testing shall be at a safe distance from the equipment while it is being pressurized. During pneumatic strength pressure testing, personnel should be located out of direct line of sight from the equipment under test;
- Protection of the component or system against over pressurisation. Strength pressure tests shall never be left unattended when equipment is being pressurized.
- Before pressurizing circuits, the whole system to be tested shall be inspected to ensure that it is ready and safe to test and it shall be verified that all valves are in the correct position for the test, and the location of vent valves are known in the event that a rapid venting of the system is necessary;
- Where the system to be tested ties into any system of a lower design pressure, the lower test pressure system shall be either opened to the atmosphere or have appropriate overpressure relief protection to avoid accidental over-pressurization caused by leakage or component failure;
- Pressure in the equipment shall be increased gradually. It is recommended that the pressure be raised in stages;
- Personnel involved in organising, setting up and conducting pressure testing shall be trained in the appropriate pressure testing procedures;
- Being aware that high pressure air can have oxidising properties similar to oxygen due to the partial pressure of oxygen, and this can cause any contaminants in systems undergoing a pneumatic test using air to ignite;
- Depressurisation when using gas as the test fluid needs to consider a number of factors such as noise, jet particles and possible rises in temperature if venting against a dead end; and
- The results of the pressure test inspection findings and details of any repairs made shall be recorded

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