Unfired Pressure Vessels

Santa Clara University (SCU)
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Unfired Pressure Vessel Program

1. References

- 8 CCR 450 et seq. Unfired Pressure Vessels

2. Purpose

The purpose of this program is to ensure that Santa Clara University (SCU) is in compliance with Cal/OSHA requirements for unfired pressure vessels such as air receivers and portable air tanks.

3. Applicability

This program covers the minimum unfired pressure vessel practices for SCU Staff, Faculty, and Student Employees. It is not the purpose of this program to specify all the details contained in the Cal/OSHA regulations.

4. Definitions

Air Tank: A pressure vessel used for the storage or accumulation of air under pressure. This definition is not intended to include utilization equipment, including such devices as grease tanks, fire extinguishers, paint sprayers, etc., where the tank is partly filled with a product and the air pressure is used only for a cushion or to eject the product from the tank, or such devices as strainers, scrubbers, separators, etc., that are a part of the piping system.

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Unfired Pressure Vessel: A tank that holds a gas or material with more than 15 psi of pressure. Vessels having an inside diameter not exceeding 6 inches with no limitation on pressure are exempt from this procedure, so long as they are equipped with either an appropriately sized relief device and are designed in accordance with an appropriate engineering code.

5. Procedure and Program Requirements

Design Requirements

All air tanks (both portable and fixed) and other unfired pressure vessels for new installations must be constructed, inspected and stamped in compliance with the ASME Code and, except for "UM" stamped vessels (ASME code Section VIII, Division 1, Code Paragraph U-1) registered with the National Board of Boiler and Pressure Vessel Inspectors. The stamping on all new air tanks (tanks put into service since 1988) or on nameplates attached thereto must show the head and shell thickness in addition to the stamping required by the ASME Code (Note: Breathing air tanks are exempt from this requirement.

Each air tank must be protected by one or more safety valves, rupture disks and other indicating and controlling devices that will insure safe operation of the tank. No valve of any description may be placed between the required safety valve or

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rupture disc and the air tank.

Each air tank shall be equipped with a suitable pressure-indicating gage with the dial graduated to approximately double the operating pressure, but in no case less than 1.2 times the pressure at which the safety-relieving device is set to function

Any Facilities, Faculty and/or Staff member purchasing a pressure vessel for service at SCU shall contact the EHS Department to have the tank inspected and, if appropriate, permitted prior to placing the vessel in service.

Permit to Operate

A Cal/OSHA permit to operate an unfired pressure vessel which this requirement applies can be arranged through a university insurance broker or third party vendor. Two types of air tanks do not require permits:

- Air tanks having a volume of 1.5 cubic feet or less which have safety valves set to open at not more than 150 psi[3]; and
- Air tanks used for self-contained breathing apparatus and having a volumetric capacity of 1 cubic foot or less and constructed, inspected, and maintained in accordance with DOT regulations.

All other tanks require permits to operate.

Air tanks subject to a maximum allowable working pressure not exceeding 150 psi, as shown by the required code marking, and having a volume of 25 cubic feet or less shall be inspected when placed into service. An indefinite permit shall be issued provided that the tank has been constructed, inspected and stamped in compliance with the ASME Code, or the design, material, and construction of the tank is accepted by the Division as equivalent to the ASME Code and the tank is in compliance with the applicable provisions of these orders. A new inspection and permit for operation shall be required whenever there is a change in permanent location of the tank or there is an alteration or change in the tank which affects the tank's safety.

The current permit for each pressure vessel will be kept in the Facilities files. A current copy of the permit must be posted on or near each fixed pressure vessel. For portable tanks, current copies of the permits will be maintained in Facilities files.

Inspections

All air tanks requiring a permit to operate other than the tanks having an indefinite permit must be inspected internally and externally at least once every 3 years for portable tanks and once every 5 years for all other tanks by a qualified inspector. The Facilities Director is responsible for ensuring such inspections take place and maintaining records of the inspections, either arranging such inspections with a registered inspector or arranging for such inspections through the University insurance program. Note that if an insurance carrier is used to conduct the inspection, SCU must ensure that a copy of the report is forwarded to Cal/OSHA within 21 days of the inspection (normally this is done by the insurance carrier).

Maintenance & Repairs

Safety relief valves must be tested “frequently and at regular intervals.” For most SCU tanks, this requires that spring loaded valves be lifted and reseated at least

once per year. The Facilities Director is responsible for ensuring that such testing occurs and is recorded on maintenance records.

Repairs to pressure vessels often require special expertise and recertification of the vessel. Before conducting any repair to a vessel, Facilities shall consult with the EHS Department to determine whether such repair can be conducted internally within SCU or requires outside expertise.

6. Reporting

The EHS Department will review the pressure vessel program every three years or as needed for compliance and refer any issues to the Facilities Director. If the program is found to be non-compliant, the Facilities Director will take appropriate actions, including root cause analysis, to ensure that the issues are corrected going forward.

7. Document Retention

The following documents are retained at these locations for three years, unless otherwise indicated:

Document	Location	Responsible Party
Pressure Vessel Permits	Facilities Files, Fixed Vessels	Facilities Director, Vessel Owner
List of Fixed Pressure Vessels	Facilities/Aim Database	Facilities Director
List of Portable Pressure Vessels	Facilities/Aim Database	Facilities Director
Inspection Records	Facilities/Aim Database	Facilities Director

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8. Roles and Responsibilities

Group	Responsibilities
EHS	▪ Conduct program review for the effectiveness of the program every three years or as needed. ▪ Review unfired pressure vessel technical data sheets prior to purchase. ▪ Review unfired pressure vessel permits and inspections records on an annual basis.
Facilities/Utilities	▪ Conduct maintenance and inspections on all pressure vessels as required. ▪ Ensure all unfired pressure vessels that required to be permitted have permits ▪ Notify Business Applications Technology when any unfired pressure vessel is purchased or removed from use to ensure the inventory within the AiM Database is current. ▪ Notify EHS Departments prior to purchase of any unfired pressure vessel.
Faculty/Staff	▪ Notify EHS Departments prior to purchase of any unfired pressure vessel.

9. Program Review Record

Name	Title	Department
Dave Mathe	Manager	EHS
Jeff Charles	Director	Facilities
Martin Bermudez	EORM	EHS

10.0 Program Approval

Signature on file in the EHS Office	*01/05/2016*
Signature	**Date**
Sean P. Collins Director – Environment, Health and Safety	

11.0 Revision History

No.:	Date	Responsible Person	Comments
1	01/05/2016	Dave Mathe	1. Updated pressure vessel matrix 2. Updated revision frequency 3. Reviewed regulatory references 4. Reformatted program
New	01/13/2011	Sean P. Collins	New

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