

Responsible Refrigeration – No 40

A user of refrigeration and air conditioning has duties and responsibilities to ensure that the pressure equipment is operated and maintained within its design and operating parameters under Regulation 6 of the Pressure Equipment Regulations. A refrigeration system forming part of an air conditioning plant or unit is regarded as Pressure Equipment operating at more than 50kPa.

The Certificate of Conformance in terms of the regulations in particular Regulation 17 (3) relates to a mechanic or installer in this case an “Authorised Refrigeration Gas Practitioner” registered at SAQCC Gas being obliged to sign a CoC.

Some users/owners are under the impression that air conditioning units and systems do not need a CoC for installation, maintenance or repair. Nowhere in the Regulations is it stated that air conditioning in particular Refrigeration associated with air conditioning is excluded from the Pressure Equipment Regulations. In Regulation 2 it clearly states that the regulations apply to “the design, manufacture, operation, repair, modification, maintenance, inspection and testing of pressure equipment with a design pressure equal to or greater than 50 kPa.” This covers refrigeration systems which are under pressure when either running or when idle.

The term ‘manufacturer’ refers to an entity who makes equipment and those who work as engineering contractors assembling a system on a site as a form of construction / manufacture. The practitioner/ installer/ contractor is the entity who is in overall control procurement, programing and installation. This term derives from the European Pressure Equipment Directive.

All refrigeration systems are under pressure from the refrigerant gas used. The definition, in the regulations, of a ‘gas’ or a ‘gas system’ also apply to refrigeration systems and describe how refrigerants behave in the refrigeration cycle. Some are confused about the difference between reticulation and recirculation in the definitions. Reticulation refers to compressed, liquid petroleum and natural gas supply to a point of use. A refrigeration system is a closed circuit referred to as a recirculation system as distinct from reticulation.

In the past there have been arguments about compressors meeting the requirements of the regulations. The inclusion of hermetic compressors as pressure vessels is because pressure is a major design consideration in the design of the external shell and is to ensure that the refrigerant is contained within the vessel. Open drive and semi hermetic compressors are excluded from the PER as individual pressure equipment items but when built into a refrigeration system they become part of the compatible system assembly designed to function together and form part of a safety assessment. Open drive and semi hermetic compressors are machines which include moving parts and for which the external envelope is primarily designed for mechanical loads including operating speed, vibration, the thermal load and stresses to limit the possible deformation due to temperature. The design rigidity of the structure is to contain internal and external mechanical loads and the weight of the machine.

Pressure equipment in a refrigeration system is classified as the vessels, piping, accessories and the type of gas. In the case of refrigeration, heat exchangers are classified as pressure vessels. All components in a refrigeration system shall be installed, maintained and operated in accordance with the equipment manuals and the relevant health and safety standard. The user/owner is required to keep a logbook for plants where the input power to the compressor exceeds 20kW (SANS 10147) in which all service and repairs are recorded. Only an authorised person, the registered Refrigeration Gas Practitioner, may sign a CoC and record activities in the logbook This book along with all Certificates of Conformity must be kept in a safe and accessible place and be open for inspection.