Industry Standard Update 077

Title: UKLPG CoP 1 Part 1

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This Industry Standard Update (ISU) provides an overview of the key areas of change arising from the amendments made to the UKLPG Code of Practice 1 Part 1: 2017, Bulk LPG Storage at Fixed Installations Design, Installation and Operation of Vessels Located Above Ground.

Introduction

During October 2017, UKLPG published an amendment to UKLPG CoP 1 Part 1 (1). This amended version supersedes the previous version which was published in 2009. The previous version has been superseded and withdrawn.

The amendments to this Standard come into effect immediately.

To allow registered businesses time to carry out internal up-date training to reflect the technical requirements of the amended Standard, Gas Safe Register will inspect to the new requirements of this Standard from **1st March 2018**. However, this should not restrict businesses from applying the specification sooner.

The following is a brief overview of the general requirements of the amended Standard now published as UKLPG CoP 1 Part 1 (1).

General

The Standard provide guidance on the design, installation and operation of bulk LPG storage at fixed locations which are located above ground.

References to Legislation and current Standards have been updated throughout.

Section 1 Introduction and Scope

This CoP deals only above ground installations where LPG is stored under pressure at ambient temperatures in fixed vessels which are larger than 150 litres (nominally 75 kg) LPG capacity.

It applies to all such installations whether or not the material is stored for use on site or transhipment and subsequent use off site, and includes guidance on the design of LPG storage vessels.

The following are not covered by this Code of Practice:

- Refrigerated, or partially refrigerated storage;
- Buried, semi-mounded and mounded vessels, which are covered by guidance in CoP 1 Parts 2[(2)] and 4[(3)].

Section 2 LPG Plant Location and Safety Distances

Clause 2.3.1.1 states that LPG storage vessels must never be located and installed:

- in buildings;
- on roofs;
- above or below any other LPG vessel or any other tank such that their outlines
- overlap when viewed in plan;
- in cellars; or
- in pits.

Reference to DSEAR[(4)] has been added to Clause 2.3.4.

A note has been added to Clause 2.3.5 is to remind designers and operators that if two or more vessel groups feed the same supply, the design will need to clearly indicate how to isolate the gas supply in the event of an emergency. In practice this can be achieved by the vessels' physical proximity, by the use of remotely operated shut off valves and by clear signage.

Installations subject to Clauses 2.5.2.2, 2.5.2.3 and 2.5.2.4 may have bunding to a height not exceeding 500mm around the LPG storage vessel. This is only permitted if the design aids the swift removal of liquid LPG spillages away from the LPG storage vessel into an evaporation area (in accordance with Clause 2.5.2.4) which can cope with the maximum credible LPG spillage.

Clause 2.5.2.3 states that for installations requiring evaporation areas diversion kerbs with a height not exceeding 500 mm to avoid forming gas traps may be required to direct possible spillage away from vessels and sources of ignition to a safe area for evaporation or containment.

Precautions against damage to vessel(s) and ancillary equipment e.g. pumps and dispensers from vehicular impact damage shall be taken.

Regulator(s) shall be designed or sited to avoid the ingress of water through vent hole(s) and should also be easily accessible.

Except for those vaporisers described in Clause 2.12.2, vaporisers shall not be installed within 1.5 m of a storage vessel. Direct fired or non-ATEX rated electrical vaporisers (Clause 3.7.1) shall be installed no nearer to LPG storage vessels than the distances permitted in columns (a) and (b) of Table 1 in UKLPG CoP 1 Part 1[(1)] as appropriate.

Where the vaporiser design and the manufacturers installation instructions permits installation closer than 1.5 m to the storage vessel(s), it shall be considered as part of the vessel(s) for installation safety distances (see Tables 1, 2 and 3). There is a note to this clause that advises: When using Table 1 for this purpose, the water capacity of the LPG section of the vaporizer needs to be included when calculating the LPG vessel's water capacity.

Section 3: Design

New valves, fittings and gauges must comply with the Pressure Equipment (Safety) Regulations 2016[(5)].

For vessels up to 60 tonnes LPG capacity the discharge capacity shall meet the requirements of BS EN 14129[6]. Pressure relief valves shall be set to start to discharge at a pressure not less than the service pressure given in Clause 3.1.2, table 5 and shall not be set to discharge at a pressure higher than the vessel design pressure. For above ground vessels the rate of discharge at full flow of the relief system shall not be less than that specified in Appendix C.

Each pressure relief valve shall be plainly and permanently marked in accordance with BS EN 14129.

Excess flow valves shall be designed to BS EN 13175[7] and any fixed maximum liquid level device shall be designed to BS EN 13799[8].

The title on Clause 3.1.13 has been changed to Non Return Valves. Non return valves are also known as Back Check Valves. Non return valves shall be designed to BS EN 13175[7].

The bullet point list of acceptable adaptors and couplings has been removed and are included in Table 7.

Clause 3.1.17 states that Vessels of more than 5 000 litres water capacity (2.2 tonnes) should be equipped with a suitable pressure gauge connected to the vapour space of the vessel and easily readable from ground level. Where fluid shock or vibration is likely to be encountered, the design shall be of a type compatible with these conditions.

All contents gauges shall be designed to BS EN 13799[8].

A Note has been added to Clause 3.3.4 which provides guidance that adequate artificial lighting may include portable lighting carried by a delivery driver, or lighting from the delivery vehicle. Reference to DSEAR[4] is made in this Clause.

Electric motors shall have an Ingress Protection (IP) rating that is suitable for their location.

Regulators must comply with the requirements of the Pressure Equipment (Safety) Regulations: 2016 [5]. For regulators of capacity up to100kg/hr, they shall comply with BS EN 16129[9], for regulators of capacity greater than 100kg/hr they shall comply with UKLPG Code of Practice 22[10].

The design, materials and construction of vapour meters should comply with Clauses 3.2.2.2 and 3.2.2.3. Where guidance is required on liquid flow meters, reference should be made to UKLPG Code of Practice 19[11]. For vapour meters up to 6m^3, reference should be made to BS 6400-3[12].

Vaporisers should be classified in four groups:

- Indirect vaporisers are those which do not constitute a source of ignition;
- Direct fired vaporisers are those in which a source of ignition may be present;
- Carrier gas heaters, although not officially classified as vaporisers, is a system to enhance the vaporisation of LPG by heating a carrier gas so that it will cause liquid LPG to vaporise when mixed with it;
- External heating devices, although not officially classed as vaporisers, is a system which, will enhance the vaporisation capacity, when directly attached to an LPG vessel.

Section 4 Fire Precautions

Steps to mitigate the effects of a foreseeable incident shall be taken where it is safe to do so. In order of priority these steps shall be to:

- protect people;
- protect the environment; and
- protect property.

Following fire, engulfment vessels should be withdrawn from service and re-assessed by a Competent Person.

Section 5 Electrical and Electrostatic Hazard Precautions

The object of regulation 16 of the Electricity at Work Regulations[13] is to ensure that people are not placed at risk due to a lack of skills on their part or others in dealing with electrical equipment and installations.

Section 6 Installation and Commissioning

When purging in or out of service this shall be carried out in accordance with UKLPG Code of Practice 1 Part 3[14].

Where lifting lugs have been provided as integral parts of the vessel, these may be used, provided they are adequate for the lift required. Lifting lugs on LPG vessels are not normally designed to lift more than the empty vessel itself. Unless it can be shown that the lifting lugs have been designed to lift a vessel containing liquid product, this should not be attempted.

Lifting lugs shall never be used to attempt to lift a vessel with an attached additional structure e.g. a skid unit, unless they have been specifically designed to do so.

Where lugs are not used, the vessel should be correctly slung so that it will not move out of the horizontal plane during the lifting operations. Slings or chains should be positioned outside the legs.

A Note has been added to Clause 6.6.1 which states that 1st stage regulators need to be sited so there is no chance of re-liquefied LPG passing through the regulator. This is achieved by locating the regulator above pipework seeing tank pressure and the design of the vapour pressure pipework.

Where regulators have been supplied factory set, their operating pressure shall be checked under known flow conditions.

Section 7 Operations

Clause 7.1.3.2 states that as a minimum any proposed alterations to plant shall be assessed against this CoP to ensure continued compliance. Part of this assessment shall ensure operating instructions are checked and updated where necessary. All changes to plant and, operating instructions, shall be brought to the attention of those effected by them and additional training provided if necessary.

Section 9 Records

A new Clause 9.1.4 has been added which states that any LPG installation that has electrical equipment shall be certificated to ensure it complies with the requirements outlined in Section 5 of UKLPG CoP 1 Part 1[1] by a suitably qualified electrician.

Appendix B Area Classification

The following values should be used unless a specific DSEAR risk assessment justifies a lower value:

- Any pit, trench, drain, duct entry or depression falling within or below a Zone 1 or Zone 2 location should be treated as being Zone 1 throughout, unless a suitable interceptor or water trap is installed;
- For electrical hazards attention is drawn to BS 60079(15):
- The term 'outdoors in open air' includes areas which are covered by an open sided canopy.

Appendix L Conversion of Water Capacity to Nominal Tonnage

The example of a typical electric test certificate has been replaced by Table I which gives typical water LPG tanks containing butane.

Summary

As previously stated, this Industry Standards Update is only a brief overview of the information contained in the amended Standard. Registered businesses should be aware that they have a responsibility to ensure that they are fully apprised of all of the requirements of the whole published Standard and its practical application.

Bibliography

(1) *UKLPG CoP 1 Part 1: 2017 Bulk LPG Storage at Fixed Installations Design, Installation and Operation of Vessels Located Above Ground*
(2) *UKLPG CoP 1 Part 2: 2012 Bulk LPG Storage at Fixed Installations Vapour offtake Small Bulk Propane Installations*
(3) *UKLPG CoP 1 Part 4: 2008 Bulk LPG Storage at Fixed Installations Buried/Mounded LPG Storage Vessels*
(4) *Dangerous Substances and Explosive atmospheres Regulations 2002 (DSEAR)*
(5) *Pressure Equipment (Safety) Regulations 2016*
(6) *BS EN 14129: 2014 LPG Equipment and accessories. Pressure relief valves for LPG pressure vessels.*
(7) *BS EN 13175: 2014 LPG Equipment and accessories. Specification and testing for Liquified Petroleum Gas (LPG) pressure vessel valves and fittings.*
(8) *BS EN 13799: 2012 LPG Equipment and accessories. Contents gauges for Liquid Petroleum Gas (LPG) pressure vessels*
(9) *BS EN 16129: 2013 Pressure regulators, automatic change-over devices, having a maximum regulated pressure of 4 bar, with a maximum capacity of 150kg/h, associated safety devices and adaptors for butane, propane, and their mixtures*
(10) *UKLPG CoP 22: 2011 Design, Installation and Testing of LPG Piping Systems*
(11) *UKLPG CoP 19 Liquid measuring systems for LPG. Part 1: 2001 Flow rates up to 80 litres per minute in installations dispensing road vehicle fuel. Part 2: 2003 Transfers between mobile equipment and fixed LPG storage at flow rates above 80 litres/minute*
(12) *BS 6400 – 3: 2007 Specification for installation, exchange, relocation and removal of gas meters with a maximum capacity not exceeding 6m^3/h – Part 3: Low and and medium pressure (3rd family gases)*
(13) *Electricity at Work Regulations 1989*
(14) *UKLPG CoP 1 Part 3: 2012 Bulk LPG Storage at Fixed Installations Examination and Inspection*
(15) *BS EN 60079-10-1: 2015 Explosive atmospheres. Classification of areas. Explosive gas atmospheres*

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