



ES PIPELINES LTD

Operations

ESP Design Specification for Natural Gas Distribution Networks up to and including 2barg

ESP/PL/DM

Document Details			
Version	V9.2	Classification	External
Author	Compliance Manager: G. Ansell		
Reviewed by	Head of Asset Operations: M. Erskine	Last reviewed	July 2022
Approved by	Head of Asset Operations: M. Erskine	Approval date	July 2022
Review frequency	Annual or as required	Next review due	July 2023

Version history				
Version	Date	Author	Reason for new version	Sections affected
V1.0-3.0	Dec 06	Operations Engineer: P. Peart	Draft created & published Operations	Operations
V4.0	May 07	Operations Director: M. Carr	Minor changes made	Operations
V5.0	Dec 07	Safety and Compliance: A. Smith	Issued and approved	Operations
V6.0	Aug 09	Operations Engineer: P. Peart	General update	Operations
V7.0	Apr 12	Technical Admin: W. Miller	Revision to PRI outlet pressures	Operations
V8.0	Dec 13	Network Manager: A. Slee	General update	Operations
V9.0	Feb 19	Operations Manager (Verify and Adopt): V. Carver	Complete review and rewrite	Operations
V9.1	Apr 21	Compliance manager: G. Ansell	Exclusion of SCMBBox	Operations
V9.2	July 22	Compliance manager: G. Ansell	IGEM/G/5 published	Operations

Objective

To comply with its Safety Case obligations ESP has a duty to demonstrate that each natural gas distribution network that the Company owns and operates has been designed in accordance with industry standards and legislation.

The Design Manual has been developed to provide guidance for UIP organisations to ensure that distribution networks designed by a UIP and subsequently 'adopted' post construction meet ESP's design criteria.

Content

This document is intended to cover the design of distribution networks having a Maximum Operating Pressure (MOP) of 2 barg. The scope of this document covers mains networks and services up to and including the Emergency control valve (ECV) forming the service termination. *

* In the case of MOB design (Multi-Occupancy Buildings) a Thermal Cut off device and/or Excess Flow Valve may∞ be fitted to the outlet of/be integral with the ECV, in which case this document also covers these. See ESP/DP/2.

∞From August 2022 ESP require a combined ECV/EFV to be fitted at the service termination for all MOB constructs, including those supplied by "periphery" meters.

Advice and Assistance

Advice on the implementation of this procedure can be obtained from the Head of Network Gas

Any suggestions for the improvement or correction of this policy should be addressed to the Head of Network Gas

Additional Documentation

This document is the specific ESP criteria which must be included when designing networks for ESP adoption. It is to be used in conjunction with all documents listed in Appendix A.

1. Demand details

- 1.1 The network must be designed to meet the maximum demands of the system which is likely to occur in any period of not less than 6 minutes, expressed as an hourly rate.
- 1.2 Domestic loads only may be diversified for a site with 10 or more domestic plots.
- 1.3 For sites containing both domestic and non-domestic premises the total demand is based upon the diversified domestic load plus the peak demands of the non-domestic premises.
- 1.4 Where a Combined Heating and Power (CHP) unit to be installed on site; or a unit's consumption falls outside of the standard heating pattern; seasonal demand; night-time loads; etc., the GDN must be notified when the FM153/FM153a is submitted.
- 1.5 ESP must be consulted at the earliest opportunity where a booster/compressor is to be installed downstream of the network.

2. CSEP Applications

- 2.1 When requesting a new CSEP quotation from a GDN the UIP shall follow each GDNs procedure.
- 2.2 For CSEPs off an existing ESP network a new request is required to be submitted to the Design Team (Design@espug.com).
- 2.3 All CSEP requests must include:
 - FM153 (Schedule 1); see Appendix B
 - Plan clearly marking proposed connection point including easting and northing coordinates
 - A site plan
- 2.4 ESP will send the applicant a CSEP quotation via email. Once the quotation is accepted and paid the pressure offered on the quote can be used to design a new network proposal.
- 2.5 ESP must be consulted at the earliest opportunity regarding the proposal to install a booster/compressor downstream.

3. Design pressures

- 3.1 The minimum mains network pressure is: 22mbar.
- 3.2 Design minimum pressure at outlet of ECV is: 20.75mbar.*

* In the case of MOB design (Multi-Occupancy Buildings) an Excess Flow Valve (EFV) may be fitted to the outlet of/be integral with the ECV, and a Thermal Cut off device may also be fitted, in which case this minimum pressure is at the outlet of these.

4. Designs

- 4.1 Network design software should be an industry approved software (Gasworks 9 or 10, Snap, Synergy or Toolbox), all design must be accompanied by a noded pipe report including From Node, To Node, Pressure Regime, Size/Type (pipe diameter), Length in metres, pipe equivalent lengths, Peak Hourly Flow in kWh, Velocity in Meters/Sec, Inlet Pressure, Outlet Pressure, Pressure Drop, Customer count.

- 4.2 Designs must only be completed by a Competent Design house who is accredited under the relevant GRS registration scheme, particularly D-MOB for MOBs
- 4.3 For all commercial services a service isolation valve (SIV) must be installed and clearly labelled on the drawing.

5. Main and Service design requirements

- 5.1 The minimum mains pipe size is 63mm.
- 5.2 The minimum service pipe size is 25mm.
- 5.3 One service per meter point only.
- 5.4 Services must be laid perpendicularly from the nearest elevation of the building to the main taking the shortest possible route and terminate no further back than 2m from this elevation.
- 5.5 If 5.4 is unachievable seek advice from ESP.
- 5.6 ESP will not accept designs for gas meters located in areas designated as 'bin stores'.
- 5.7 **ESP will not accept designs for gas meters located in Semi Concealed Meter Boxes (SCMBs)**

5.8 MP Additional requirement

A Service Excess Flow Valve (SEFV) must be installed in all domestic services a part of the connection to the main.

6. Service terminations

6.1 LP - Hierarchy of Preferred Terminations (not including MOBs)

- Built in boxes (also known as Inset, Cavity and Flush fit boxes)
- Bolt on/Uni boxes
- Internal meter positions terminating immediately on the inside of the external wall

NOTE: ESP will not accept designs for gas meters located in Semi Concealed Meter Boxes (SCMBs)

6.2 MP

- 6.2.1 ESPs first preference is for the installation of a remote PRI to reduce the pressure of the network.
- 6.2.2 ESP MP 'meter kits' must be installed. These can only be obtained from ESPs preferred supplier Meter Provida.
- 6.2.3 All MP terminations must be to a Uni box unless agreed with ESP prior to construction commencing.

7. MOB Designs (Steel riser and manifolds)

- 7.1 For all steel riser and manifold designs, related to Multi Occupancy Buildings (MOBs) please see ESP/DP/2 and IGEM/G/5 Latest Edition.

8. Design Stage Risk Assessment

- 8.1 A preconstruction Risk Assessment must be completed by the UIP. This assessment must be provided to ESP at the design verification stage.
- 8.2 A separate MOB Risk Assessment MUST be completed for MOB Designs (ESP/MOB/RA)

9. Variations

- 9.1 Once ESP has granted verification to the UIPs design proposal any amendment made to this must be submitted to the ESP design team as a variation.
- 9.2 Using ESPs Variation matrix determine if the variation is minor or major. Minor variations do not require a resubmission. **ALL** MOB Variations need to be resubmitted for approval and acceptance.
- 9.3 Variations must be submitted to Design@espug.com.
- 9.4 Any paperwork impacted by the variation must be revised and resubmitted.
- 9.5 If the variation requires any third party involvement, this must be provided upon resubmission.

10. Easements/Servitude

- 10.1 Where the requirement for an easement/servitude has been identified, the UIP shall provide ESP with a copy of the instruction clearly being given to a notary of their choice.
- 10.2 Easements/Servitudes are required; but not limited to:
 - Mains to be installed in soft dig/verge
 - Mains to be installed in an allocated parking bay
 - Mains through third party owned land
 - Mains through National Trust land
 - Mains through Network Rail land
- 10.3 This is not a definitive list of easement/servitude requirements. ESP may insist on easements to legally protect their assets they deem at 'risk'. This will be determined on each project's own merits.
- 10.4 For the installation of PRIs, a land transfer/servitude must be obtained.

11. PRI

- 11.1 For all PRI submissions please refer to ESP/PL/PRI.

Appendix A

All design proposals must be completed in accordance with the Latest Editions of the following (Including but not limited to):

IGEM/GL/1 – Planning of gas distribution systems of MOP not exceeding 16bar

IGEM/TD/3 – Steel and PE pipelines for gas distribution

IGEM/TD/4 – PE and Steel gas services and service pipework

IGEM/TD/13 – Pressure regulating installation for transmission and distribution systems

IGEM/TD/101 – Adoption of pipe systems by a GT – Management of UIP activities

IGEM/G/5 – Gas in multi-occupancy buildings

BS6400-1 – Specification for installation, exchange, relocation, maintenance and removal of gas meters with a maximum capacity not exceeding 6scmh Part 1: Low pressure (2nd family gases)

BS6400-2 – Specification for installation, exchange, relocation, maintenance and removal of gas meters with a maximum capacity not exceeding 6scmh Part 2: Medium pressure (2nd family gases)

GIS/PL 2-1 – Technical specification for polyethylene pipelines and fittings for natural gas and suitable manufactured gas Part 1: General and PE compounds for use in PE pipes and fittings

GIS/PL 2 -4 – Technical specification for polyethylene pipelines and fittings for natural gas and suitable manufactured gas. Part 4: Fusion fittings with integral heating element(s)

Street works Volume 1 – Guidelines on positioning of and colour coding of underground utilities apparatus

Street works Volume 2 – Recommended positioning of utilities apparatus for new development sites

Street works Volume 4 – Guidelines for the planning, installation, and maintenance of utility services in proximity to trees

GIG2 – Lloyds Gas Industry Guidance document detailing GIRS requirements for registration

GIS – Gas Industry Standards as applicable

ESP/PL/PRI – Pressure regulations installations with inlet pressures not exceeding 7 bar gauge

ESP/PC/PRI Spec 1 - Specification for above ground construction requirements for PRIs

ESP/PC/PRI Spec 2 - Specification for below ground PRIs

ESP/PC/PRI Spec 3 - Specification for the extension of a PRI concrete slab

ESP/PL/PRI/Vent - Specification for the Installation of a vent stack on an above ground PRI

ESP/DP/2 – Requirements for the design and installations of gas in flats and other multi occupancy buildings, up to and including 75mbarg

ESP NCTS - Network Construction and Technical Specification

ESP/MOB/RA – Multi Occupancy Building Risk Assessment