UK Pressure Equipment

A guide to the information to be supplied to the PSSR competent person for drawing-up a written scheme of examination

SAFed publication PEDG03 - Edition 01
EEMUA publication 248 - Edition 01

Foreword

This document has been developed by the Pressure Equipment Consultation Forum (PECF), Safety Assessment Federation (SAFed) and the Engineering Equipment and Materials Users Association (EEMUA) in consultation with LRQA and other stakeholders within the pressure equipment industry to help users, competent persons and owners of pressure equipment achieve their legal requirements before pressure equipment is put into service in the United Kingdom.

This document has been prepared using technical advice provided by the Health and Safety Executive (HSE).

Within this document are references to UK Legislation, GB Regulations and variations of the two. This document was published in 2024, at the time of publication the UK had legislated to continue recognition of CE marked equipment. The relationships of UK Legislation, GB Legislation and CE marking will likely change as technical and administrative divergence commences. The reader is encouraged to confirm the in-force legislation.

In producing this document, the authors noted that many of the roles and responsibilities overlap and it is recommended that the entire document is read, not just a single section as some content is shared and may be missed on selective review.

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1. Introduction

This document has been written to aid stakeholders in the process of transfer of knowledge from those responsible for the manufacture of equipment, assemblies and systems to the user/owner and competent person, who are responsible under the Pressure Systems Safety Regulations 2000 (PSSR) for a Written Scheme of Examination (WSE). To draw up an effective WSE and enable effective examinations, inspections, repairs and modifications to the equipment once it enters service, the transfer of such information and knowledge is imperative. The authors have assumed a certain amount of basic knowledge exists in the readership and recognise that the legislation covered encompasses a broad spectrum of equipment assemblies and used cases.

Whilst this document primarily relates to pressure systems containing a relevant fluid as defined under the PSSR, where a relevant fluid is not present, other applicable legislation such as PUWER, COMAH and DSEAR must be consulted. Where a WSE, or risk mitigation document is required under such regulations, the methodology in this document may still be a useful means of obtaining the information.

The Pressure Equipment (Safety) Regulations 2016 (PE(S)R) was originally transposed European Directive 2014/68/EU and following various amendments remains the UK law relating to design, manufacture and supply of pressure equipment in the UK which has a pressure greater than 0.5 bar gauge.

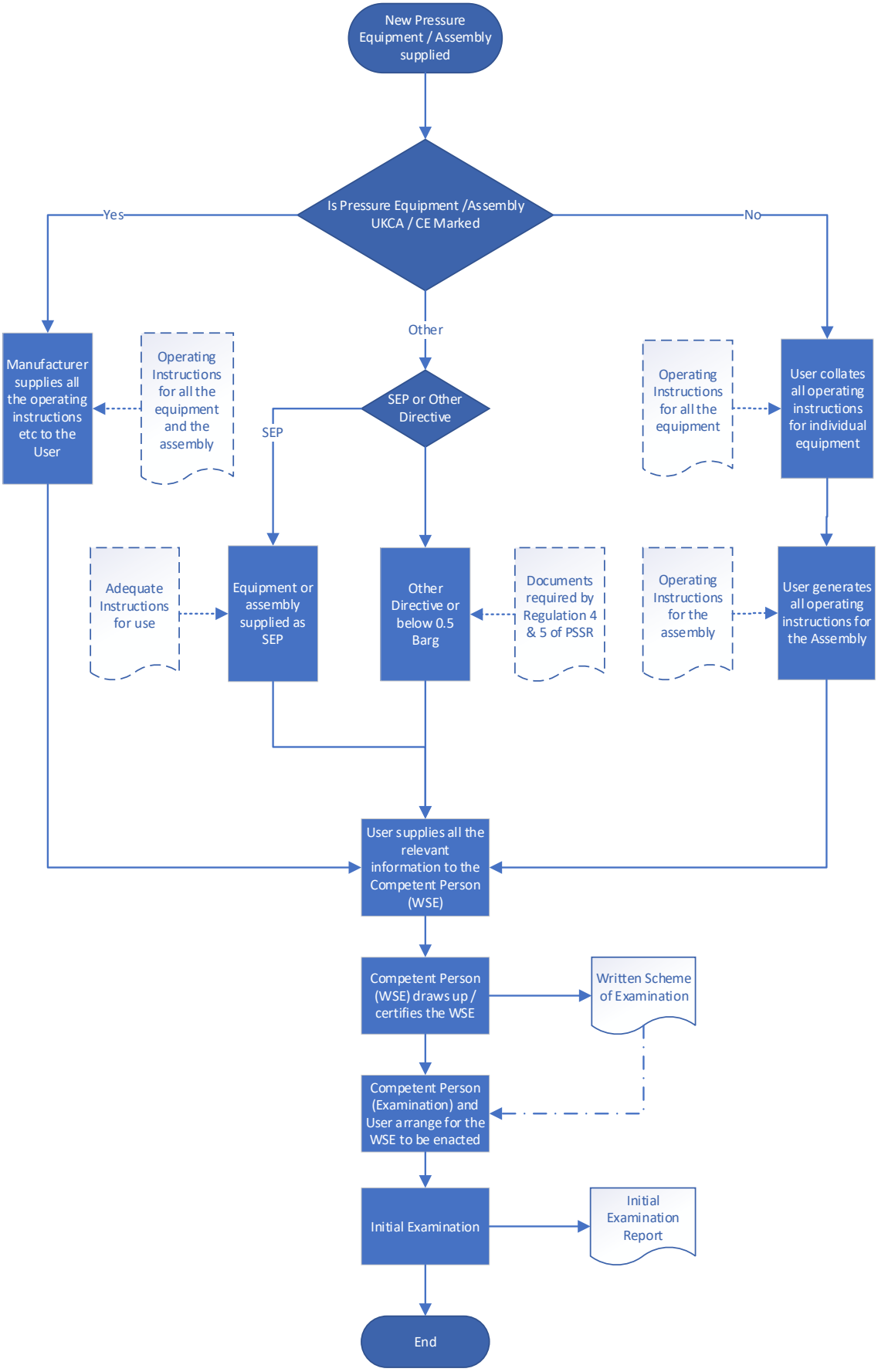
The Pressure Systems Safety Regulations (PSSR) 2000 are the UK law pertaining to pressurised equipment containing a relevant fluid. However, it should be noted that in certain areas PSSR is not aligned directly with PE(S)R as the lineage of these regulations is considerably different. For example, PSSR deals with steam at any pressure, specifically the scalding effects of steam and hence considers this below 0.5 barg, whereas PE(S)R is limited to applications greater than 0.5 barg.

It is illegal to operate pressure systems which fall under the PSSR without establishing safe operating limits and having a suitable WSE in place. This document aims to help in the understanding of information supplied by those responsible for manufacture to the user / owner and competent person to aid in the production of a suitable WSE.

2. Nomenclature

ACOP	Approved Code of Practice (recognised by UK regulatory authority)
COMAH	Control of Major Accident Hazards Regulations 2015
CE marking	Conformity assessment marking for products placed on the market in the European Economic Area (EEA)
DSEAR	The Dangerous Substances and Explosive Atmospheres Regulations 2002
EEMUA	The Engineering Equipment and Materials Users Association
ESR	Essential Safety Requirements as defined in PE(S)R
GCA	Global Conformity Assessment
HSE	Health and Safety Executive (UK regulatory authority)
NDT	Non-destructive Testing
OEM	Original Equipment Manufacturer
PECF	Pressure Equipment Consultation Forum

PED	Pressure Equipment Directive 2014/68/EU
PE(S)R	Pressure Equipment (Safety) Regulations 2016
PS	Maximum pressure as defined in PE(S)R
PSSR	Pressure Systems Safety Regulations 2000
PUWER	Provision and Use of Work Equipment Regulations 1998
SAFed	The Safety Assessment Federation
SEP	Sound Engineering Practice
UKCA marking	Conformity assessment marking for products placed on the market in the United Kingdom
UKNI marking	Conformity assessment marking for products placed on the market in Northern Ireland
WSE	Written Scheme of Examination



Note: Reference to Operating Instructions is detailed in Appendix A.

Figure 1 - Flow Chart for information to be supplied to the user and subsequently to the competent person

3. Scope

The purpose of this document is to provide practical advice on what information is required to be supplied to the user / owner and competent person, as defined in the PSSR, so that a suitably comprehensive and accurate Written Scheme of Examination can be produced.

A summary of the various routes for this information to be supplied to the user and subsequently to the competent person is shown in the flow diagram (Figure 1). Whilst the diagram refers only to the user, the same flows of information would apply for the owner to meet their PSSR responsibilities (see next Section).

The user must make available, site-specific factors relating to the operation of the pressure system and also provide information on the context of the pressure system to the competent person. This may include intended operating modes, physical location, or other relevant information to enable the WSE to capture potential failure modes.

4. Roles and responsibilities

There are generally four roles to consider:

- the owner of the equipment
- the user of the equipment
- the competent person under PSSR
- the supplier of pressure equipment

a) Owner

From the PSSR: - *"owner" in relation to a pressure system means the employer or self-employed person who owns the pressure system or, if he does not have a place of business in Great Britain, his agent in Great Britain or, if there is no such agent, the user.*

In most cases, the owner also uses the pressure system and so the role and responsibilities fall to a single entity. In this case, responsibilities are described under user, as below.

In some instances, the equipment may be hired to the user by the owner (e.g. a mobile air compressor) or operated by the user under a contract with the owner (e.g. installed water treatment unit). In these instances, the responsibilities may be split and PSSR legislation makes this clear. This arrangement is not specifically covered by this guidance and reference should be made to the PSSR. However, whatever the arrangements are, the duties and responsibilities require the same information about the system to be available as it still requires to be operated safely, maintained and examined under a WSE.

The PSSR state that in the case of mobile pressure systems the owner is responsible for compliance.

b) User

Once a suitable pressure system is purchased and commissioned, it is normally the user (the entity in control of the operation in the pressure system) who has the primary duty for meeting the ongoing legal requirements. Duties will include safe operation, maintenance and examination to demonstrate any deterioration is within acceptable bounds. To demonstrate the latter, equipment under PSSR requires periodic examination by a competent person to the requirements of a Written Scheme, also drawn-up or certified by a competent person.

The PSSR state that in the case of fixed installed pressure systems the user is responsible for compliance.

It is the responsibility of the user to select a competent person capable of carrying out the duties in a proper manner with sufficient expertise in the type of system. The user's organisation may have sufficient expertise to fulfil the role. Other organisations will have to employ a suitable third party, often known as an inspection body, to fulfil the role.

Whatever the arrangement, it will be the user's responsibility to provide all the necessary information to their competent person for the WSE. Irrespective of the competent person requirements, the user has to supply appropriate information to their internal departments to ensure they operate pressure systems safely (and to define the Safe Operating Limits under PSSR) and maintain them in good repair and ensure they are examined appropriately. The duty to maintain is separate to the duty to undertake statutory examinations.

Equipment not covered by PSSR (e.g. because it doesn't contain a relevant fluid) is likely to fall under PUWER. However, there are similar duties under PUWER and, in the context of pressure equipment, the adoption of the WSE approach is regarded as good practice (see EEMUA 231 / SAFed IMG1 with foreword by HSE).

To fulfil these duties, the user needs to secure necessary information about the pressure system. This will normally be from the supplier or manufacturer. The user will have to engage with the supplier at an early stage in the procurement process, particularly when the pressure system is complex. They should consider including the requirement for comprehensive information transfer in the supply contract (see Appendix A), otherwise it may be limited to the minimum required under PE(S)R.

User as installer

On occasion, the user may take responsibility for modifications to existing pressure systems or the installation of new assemblies of pressure systems at their own site and this may not fall under the PE(S)R. However, the user will still be responsible for meeting the requirements of the PSSR and providing information about the systems for their safe operation and maintenance and also for them and a competent person to fulfil WSE requirements.

c) Competent person

From the PSSR ACOP: - *28 The term 'competent person' is used in connection with two distinct functions:*

a) drawing up or certifying schemes of examination (Regulation 8); and

b) carrying out examinations under the scheme (Regulation 9).

For a) in particular, the competent person requires relevant information from the user about the pressure system, including about its design, manufacture, installation and testing, operation and maintenance, to ensure that the scheme of examination is suitable.

Typically, an independent, accredited, third-party body is engaged to carry out the competent person function. However, a suitably independent and accountable in-house competent person is allowable. In both cases the competent person must be independent from the operating functions of the owner / user organisation (refer to PSSR ACOP paragraph 33).

d) **Supplier**

The supplier is not a term defined in the Regulations. A supplier may be an importer, or distributer, or owner or a manufacturer, or any other entity that provides equipment or systems. In some cases, where they are the importer (or procurer) of equipment the user may be a supplier either to themselves or another part of their corporate group.

These roles are further described in PEDG1 / EEMUA 237, PEDG2 / EEMUA 245 and the associated regulations.

The supplier organisation will be the source of information about the pressure systems that is required by the user to fulfil their responsibilities under the PSSR.

User and supplier for complex pressure systems

Often, especially for established complex pressure systems, expert knowledge about potential deterioration of pressure systems resides with the user where they have full understanding of operating parameters, feedstock properties and their deleterious effect over time on the features and materials in the pressure systems. Clearly, this is a further important source of information for the competent person.

Also, the user may produce the outline specification for the supply of new pressure systems to manufacturers. This is likely to include information on deterioration mechanisms expected and, as above, would be a further source of information for the competent person.

5. Guidance for the user / owner on information to be supplied to the competent person

There are various scenarios for the supply of pressure equipment that may be inspected under the PSSR, with various documentation / certification requirements, these are detailed below along with the information that may be needed.

a) Individual Equipment (Pressure Vessel / Protective Device / Pipework) - UKCA / UKNI / CE marking

Under the PE(S)R there is a legal requirement for the manufacturer to supply information to the user, please see Appendix A - which sets out clearly the requirements for information pertinent to the drawing up of a scheme.

b) Assemblies supplied UKCA / UKNI / CE marked

Many systems are supplied to users as complete or partially complete assemblies that are declared as compliant with the PE(S)R. The information supplied for these systems should include the information required, within the OEM manual for both the individual equipment and for the assembly.

Please refer to Appendix A - which sets out clearly the requirements for information pertinent to the drawing up of a WSE.

c) Assemblies supplied under the responsibility of the user

Many systems are installed on site under the responsibility of the user, often referred to as an ‘industrial installation’, whilst this term is used in the PED it is not used in the PE(S)R, however the intention in the scenario is the same. In this scenario the individual equipment will need to meet the requirements of the PE(S)R (see a) above) and information pertinent to the assembly will need to be supplied directly from the user, see Appendix B.

Please refer to PEDG2 / EEMUA 245.

d) Sound Engineering Practice (Equipment and assemblies)

Any pressure equipment supplied under SEP, either individual equipment or assemblies are not excluded from Regulation 4 & 5 (1) and 5(4) of the PSSR, hence they will need to comply with the full requirements of these regulations, as equipment that falls outside of the PE(S)R.

Appendix B provides a quick reference guide to the information that will be required to be supplied for equipment and assemblies in this area.

e) Pressure Equipment supplied outside of the PE(S)R

Any pressure equipment that is supplied outside of the PE(S)R, eg. equipment containing steam below 0.5 barg, must comply with the requirements of Regulations 4 and 5 of the PSSR.

The aim of Regulation 5 is to ensure that sufficient written information about the pressure systems is supplied to the user by designers, suppliers, or importers, so that the other requirements of the PSSR can be met.

Appendix B provides a quick reference guide to the information that will be required to be supplied for equipment and assemblies in this area.

f) Initial scope of WSE

The responsibility for ensuring the scope of the WSE is suitable rests with the user / owner. To ensure a properly informed decision is made the user / owner would normally consult their competent person for advice on the extent and content of the WSE. Competent person input is especially advisable where the user / owner chooses to exclude parts of the pressure system from the written scheme.

HSE guidance INDG178 explains that each pressure system is likely to be unique, and the following questions may help the user / owner to arrive at some decisions on scope of the WSE:

- Do the manufacturers of the plant or equipment forming the pressure system give guidance, instruction and the precautions to take for safe operation of the system?
- Could failure of any part of the pressure system cause someone in the vicinity to be injured by the release of pressure, in the form of projectiles or fluid, e.g. steam?
- Does the pressure system contain any protective devices?

PEDG3 / EEMUA 248 builds upon the high-level guidance of INDG178 and advises a close interaction between the user / owner and the competent person, to ensure the necessary interchange of information takes place. This will involve a number of elements, such as:

1) Guidance and instruction from the manufacturer(s)

Details of design standards, construction drawings and safe operating limits provided as part of the supply documentation should be made available by the user / owner to enable the competent person to draw up a WSE that matches the particular pressure system that has been assembled / installed. This will include details from the Global Conformity Assessment and / or conformity modules used in the original supply / handover of the pressure system, as these provide details of how the

various pressure components were designed and integrated to ensure the overall pressure assembly functions as intended. This will be especially relevant where the PE(S)R and UKCA marking are used in combination with items of equipment that are CE marked, but equally applies to a pressure installation.

2) Commissioning plan

The competent person must familiarise themselves with the actual pressure system to be examined. There will be additional emphasis especially where commissioning of the newly created pressure system has been recently undertaken, as issues identified during commissioning may affect the proposed WSE in place. The user / owner should consider the availability of the commissioning plan as aiding the process. Whilst targeted towards machinery, *BS 14100 (2020) Control of Hazardous energy on machinery - specification* provides relevant context to the evolving WSE for a pressure system in that:

Communication, co-ordination and planning are critical to ensure safety during commissioning because:

a) commissioning can involve many people, sometimes from different disciplines and different companies; and

b) the behaviour of the machine might not have been fully validated, therefore mistakes in the design, installation or software can cause unexpected behaviour.

Any discrepancies found during commissioning should be fed back to ensure that the hazards from the use of machinery are reduced.

For a new pressure system, outcomes from the commissioning plan should be provided to the competent person, to inform them of:

- any significant learning or changes to the design concept for operation;
- performance and maintenance targeting as a result of the commissioning process, as work is often completed whilst construction is being undertaken;
- performance and maintenance targeting when normal safeguards are not operational, or in place.

It is considered good practice to have a draft WSE in place prior to introducing a relevant fluid into the system (even if for commissioning). The user / owner and commissioning entity (if different) should consider appointing a mutually acceptable competent person to enable a free flow of knowledge from commissioning to operation and the effective capture of issues and update of draft WSE.

EEMUA publication 231 / SAFed IMG1 provides guidance on the importance of undertaking an examination before equipment is put into service for the first time. It can be used to allow material thickness measurements to be taken before any deterioration has taken place. Material tolerances mean that actual thicknesses can be quite a bit different from those shown on drawings and specifications and this can lead to concerns about material loss during examination and tests later in life. It also allows the WSE for the scheduled examinations to be tested

under more realistic conditions and to permit the trial of those techniques being considered.

g) Review of WSE after initial period of running

After an initial period of operation, more complex pressure systems have an 'out-of-service' examination. This first out-of-service examination is often a key milestone to allow internal examination and strip-down of the pressure system to take place. This provides evidence at an early stage, that the behaviour of the pressure system is as per design intent.

Depending on the type of system there may not be an "out of service" examination, for example refrigeration systems often have all in-service examinations carried out under normal operating conditions due to vapour sealing/moisture ingress etc. as a result of disassembly. These different requirements are recognised in paragraph 106 of HSE ACOP L122.

Whether in-service, or out-of-service, agreeing a milestone for a review of the WSE after an initial period of running provides opportunity for the actual WSE to be assessed for accuracy and content:

a) It provides comparison between the predicted and actual normal running condition of the main components of the pressure system identified in the WSE.

b) Reflection can be made on the periodicity of examinations stated in the WSE. SAFed PSG04 considers the periodicity of examination for protective and safety devices and notes that in the light of experience with protective and safety devices fitted to individual vessels the period between examinations may need to be reduced. The aim should be to ensure that sufficient examinations are carried out to identify at an early stage any deterioration or operational malfunction which may affect the safe operation of the vessels (and other pressure components).

c) Impact on maintenance strategy. It is important that early indicators of problems found during a statutory examination can be resolved through the correct maintenance. Regulation 12 of the PSSR and BS 14200 Maintenance of machinery, emphasises that it should be clear as to how monitoring and analysis of faults is undertaken, including responsibility for providing all necessary information about how the equipment is being used, maintenance and operational history and details of the site-specific application.

6. Discussion

For items of pressure equipment placed on the market under the PE(S)R and subject to either the Essential Safety Requirements (ESR) or Sound Engineering Practice, there is the duty for manufacturers, importers and their respective distributors to provide instructions and safety information to the user which as a minimum is adequate to enable safe use. The ESR require additional information for the mounting, putting into service and maintenance. The PE(S)R do not make explicit cross reference, however for items of equipment which fall within the scope of the PSSR it should be assumed this duty extends to ensure information provided is adequate for the user's competent person to produce a suitable WSE. Information provided should also be sufficient to allow the equipment to be commissioned, maintained and examined in accordance with the written scheme and other regulations.

Whilst this responsibility to provide information to the competent person does not reside with the manufacturer, it is expected that documentation and information supplied to the user / owner in accordance with PE(S)R should be adequate to allow the competent person to produce a suitable WSE and to fulfil the duties of the user owner under the PSSR.

In some instances, and for certain types of equipment, the manufacturer may be able to provide a generic written scheme of examination which can be used to provide the basis for a site-specific document. However, the responsibility for the WSE still resides with the owner / user of the equipment and their competent person who should ensure it is of appropriate scope and contains all necessary information regarding nature and frequency of examinations, any special measures needed to prepare the system for safe examination and is fit for purpose.

Unless the correct information is supplied by the manufacturer to the user and passed on to their competent person there is the risk that:

- A WSE cannot be produced and the equipment cannot be legally put into service.
- Any WSE that is produced will be generic and could contain incorrect information or an unsuitable level of detail.
- It will not be possible to carry out effective examinations, repair and modification to the equipment once it enters service.
- It may not be possible to define the correct periodicity between examinations resulting in either risks to plant and personnel, or an overly conservative approach to examination frequency.
- For site installed assemblies under the responsibility of the user, the integration of equipment cannot be assessed as being safe if the end user is unable to provide sufficient information and hazard analysis.

It is therefore necessary to ensure early engagement with all stakeholders and to have clearly defined the requirements for transfer of information from the manufacturer of the equipment to the user / owner and their competent person. This guidance sets out to address this aspect.

After a period of operation there may have a been changes to the pressure system and therefore there would need to be a review of the WSE to confirm its suitability. Additionally, the original WSE, after review, may require augmentation (refer to Appendices C and D for examples).

If the user / owner substantially changes the configuration of the pressure system, then re-certification may be required. Additionally, the WSE will need to be amended. The user / owner must consult with their competent person to advise of any modification.

The PSSR and guidance expect that when a modification to a pressure system takes place, a full re-assessment should be considered where:

> The additional connection of new or previously used components is undertaken, or where a change of a pressure system by physical or digital means takes place, not foreseen or planned by the OEM / assembler, and which affects the safety of a pressure system by creating a new hazard, or by increasing an existing risk, requiring the:
>
> a) modification of protective devices to the pressure system, and which necessitates the alteration of the existing safety control system; or

b) adoption of additional protective devices to continue to provide the stability or strengthen protection of a pressure system.

Where the competent person carrying out the WSE raises concern or identifies an issue affecting the adequacy of the current WSE, they should draw this to the attention of the user / owner, providing recommendations for the amendment of WSE scope, however, it remains the responsibility of the user / owner to authorise such amendment or dismissal of such.

7. Bibliography and References

- Pressure Equipment (Safety) Regulations (PE(S)R) 2016)
- Pressure Equipment Directive 2014/68/EU, European Union
- Product Safety and Metrology (Amendment) (EU Exit) Regulations 2020
- HSE GS4 - Safety requirements for pressure testing 2012 Safety of pressure systems.
- Pressure Systems Safety Regulations 2000. Approved Code of Practice L122
- SAFed PSG01 - Pressure Systems Guidelines on Periodicity of Examinations
- SAFed PSG04 - Pressure Systems Guidelines for the Production of Written Schemes of Examination and Examination of Pressure Vessels Incorporating Opens to Facilitate Ready Internal Access
- EEMUA 231 (SAFed IMG1) - The mechanical integrity of plant containing hazardous substances.
- EEMUA 237 / SAFed PEDG1 - UK Pressure Equipment - Pressure Equipment (Safety) Regulations: Global Conformity Assessment, A Guide to Site Installed Assemblies
- EEMUA 245 / SAFed PEDG2 - UK Pressure Equipment, A Guide to Pressure Systems installation where site assembly is required under the control of the end user
- INDG 178 Written schemes of examination, Pressure System Safety Regulations 2000, Health and Safety Executive
- BS 14100: 2020 Control of hazardous energy on machinery specification, British Standards
- BS 14200: 2023 Maintenance of machinery - Specification, British Standards

NOTE: *Where a document is dual designated as EEMUA / SAFed then the text will be the same and the document will be freely available on the respective organisation's website.*

8. Appendices

Appendix A - EU Guideline H-03

Appendix B - Examples of information to be supplied when outside of PE(S)R

Appendix C - Example 1 - Incomplete information supplied to the competent person

Appendix D - Example 2 - Design Information not supplied to the competent person

Appendix A - EU Guideline H-03

Guideline H-03

Pressure Equipment Directive PED 2014/68/EU
Commission's Working Group "Pressure"

Guideline related to: Annex I section 3.3 and 3.4

Question	**What safety information must be given to the user in relation to Annex I points 3.3 and 3.4?**
Answer	When pressure equipment is placed on the market, the manufacturer is required by the PED to ensure that it is accompanied by instructions for the user containing certain safety information; such information is mandatory. Additional information may be requested by the user or recommended by the manufacturer, and agreed as part of the order or contract; this information is not a PED requirement and therefore is optional. Both types of information are elaborated below. The following are **required by the PED**: – Details accompanying the CE mark, per clause 3.3a, 3.3b and 3.3c – Operating instructions for mounting, putting into service, use and maintenance, per clause 3.4a, which include as far as relevant to the equipment: • safe operating limits and design basis (includes anticipated operating and assumed design conditions, intended life, design code used, joint coefficients and corrosion allowances) • features of the design relevant to the life of the equipment per clause 2.2.3b last indent • residual hazards not prevented by design or protective measures, that might arise from foreseeable misuse, per clause 1.3, 3.3c, and 3.4c • technical documents, drawings and diagrams necessary for a full understanding of these instructions, as per clause 3.4b • information about replaceable parts, for example per clause 2.7
Reason	
Note 1	Where an assembly of pressure equipment includes a number of different PS, it is acceptable not to provide these different PS on the assembly marking but they must be provided by other suitable means for example on an assembly layout diagram accompanying the operating instructions.
Note 2	Without prejudice of clause 3.4a, other information, not required by the PED, may be included by contractual agreement, such as: hazard analysis, material test certificates, detailed design calculations, "as built" drawings, heat treatment records, welding records, NDT results, results of dimensional check, full records of proof test, details and results of special checks, details of any corrective repair or modifications, full documentation of any concessions

	made.

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Therefore, the manufacturer needs to supply the information noted above.

Appendix B - Examples of information to be supplied when outside the scope of PE(S)R

Quick Reference guide - Indicative information to be supplied to the user in writing. This information should form part of the Global Conformity Assessment (GCA) compiled / undertaken by those producing the overall pressure system (see EEMUA 237 / PEDG1 or EEMUA 245 / PEDG2, depending on whether the pressure system is classed as an assembly or installation respectively).

1) Individual items of pressure equipment:
    a) Design standards used and evidence of compliance with national / international standards or documentation showing conformity.
    b) Design pressures (maximum and minimum)
    c) Fatigue life assessment, considering the intended application the pressure equipment will be placed
    d) Design temperatures (maximum and minimum)
    e) Creep life
    f) Intended fluid contents, especially where the design has been carried out for a specific process
    g) Flow rates and discharge capacities
    h) Corrosion allowances based on the site-specific environment
    i) Wall thickness's
    j) Volume capacities, maximum pressures, filling ratios, etc.
    k) Materials of construction and any relevant references to material certification
    l) Operating and maintenance instructions
2) Additionally, when talking about a complete pressure system, the following should be provided - based on the GCA, additionally to those above:

    Information /confirmation that the assembly has been assessed, including:
    a. Standard pressure test / leak test / NDT on completion
    b. Assessment of design, flexibility studies, safety valve reactions, piping loads, support loads, etc.
    c. Identification of all safety components including assessment of any protection requirements for the system, including protective devices required under PSSR
    d. Detailed operating instructions for the assembled equipment
    e. Schedule of spare parts and maintenance schedules based on theoretical design information

Appendix C - Example 1 - Incomplete information supplied to the competent person

After six months operation of a new biomass boiler at a site, several unintended steam releases took place from process valves. Global Conformity Assessment was not provided (or requested) by the end user, such that limited information was available to the competent person and those responsible for maintenance:

- Subsequently it transpired that those undertaking the GCA had excluded valving and pipework from their assessment after raising concerns during their site visit.
- Valve manufacturer expected the maintenance workers to check the maintenance and tighten the bolts (screws) periodically during the life of the valve.

In the above scenario, it was impossible to produce a suitable WSE and subsequently personnel were put at risk because the process valves were not suitable for the application.

Appendix D - Example 2 - Design information not supplied to the competent person

A system containing steam was presented to the competent person by the user, on the information supplied this is a standard steam system and was treated as such by the competent person with the general examination requirements of SAFed PSG01, i.e. general visual examination every 26 months.

However, upon investigation it was found that the system had the following characteristics that would have impacted upon the competent person's examination strategy.

a) A defined fatigue life, in cycles that would have brought in specific examination points during the examination cycle.

b) A recommendation to replace certain pipework within 5 years, due to erosion from the contents.

c) Vibration analysis which indicated a fatigue issue on some of the nozzles.

All of the above led to a WSE that was wholly inappropriate for the equipment and did not mitigate the risks of the equipment failure in the subsequent in-service examination regime.

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