

## Guidelines

5/18/07

## 6. ESRs on Manufacturing

Guideline 6/1	
<p>[Original version as adopted on: <i>28 Jan 1999</i> and modified on <i>31 Mar 2006</i>]</p> <p><b>Pressure equipment directive 97/23/EC</b>  <b>Commission's Working Group "Pressure"</b></p> <p><b>Guideline related to:</b> <a href="#">Annex I Section 3.1.2</a></p> <p><b>Question:</b> According to point 3.1.2 (permanent joining) of Annex I, the third party must perform examinations and tests in order to carry out the approvals of operating procedures and personnel. Must the representative of the third party witness the whole permanent joining and testing process ?</p> <p><b>Answer:</b> No, in accordance with and under the responsibility of the notified body or of a third party organisation recognised by a Member State, some practical tasks concerning the approval of joining operating procedures and personnel may be accomplished by a competent person of a manufacturer according to a quality system.</p> <p><b>Note: 1</b> The Notified Body or Recognised Third Party Organisation must attend part of the different steps in the process for each procedure and for each person.</p> <p><b>Note 2:</b> See also section 6.5 of the "Blue Guide"</p>	
Accepted by WPG on: <b>28 Nov 2005</b>	
Accepted by Working Group "pressure": <b>31 Mar 2006</b>	
<b>Remarks:</b>	

Guideline 6/2	
<p>[Original version as adopted on: <i>28 Jan 1999</i>]</p> <p><b>Pressure equipment directive 97/23/EC</b>  <b>Commission's Working Group "Pressure"</b></p> <p><b>Guideline related to:</b> <a href="#">Annex I Section 3.2.1</a></p> <p><b>Question:</b> Which documents have to be available for the final inspection specified in Annex I, section 3.2.1?</p> <p><b>Answer:</b> In general the following documents should be available as appropriate:</p>	

- evidence of qualification of NDT personnel relevant to the equipment category;
- evidence of qualification of permanent joining personnel relevant to the equipment category;
- data dealing with heat treatment (e.g. diagram of temperatures);
- inspection documents for base materials and consumables;
- procedures for assuring material traceability;
- NDT test reports, including radiographic films;
- test reports of destructive tests (e.g. test coupons);
- reports on defects or deviations arising during manufacture;
- data related to the preparation of component parts (e.g. forming chamfering);
- evidence of qualification of permanent joining procedures;

These documents shall be available for final inspection whether that inspection is carried out by the manufacturer, the user inspectorate or the notified body.

Outcome of WGP discussions on 28/1/1999: To indicate that the need for documents for final inspection can vary depending on the case, the first sentence of the answer has been changed to start with "in general". An editorial amendment has been inserted in the last dash of the answer.

WGP agreed to the proposal. However, WPG was asked to include a requirement on the submission of some drawings.

Accepted by WPG on: **26 Nov 1998**

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**Remarks:**

### Guideline 6/3

**[Original version as adopted on: 28 Jan 1999]**

**Pressure equipment directive 97/23/EC  
Commission's Working Group "Pressure"**

**Guideline related to: [Annex I Section 3.1.1](#) , [Annex I Section 3.1.2](#)**

**Question:** How to interpret point 3.1.1 of Annex I as far as the forming procedures are concerned?  
Does it impose for the manufacturer a qualification procedure for forming operations which will be validated by the Notified Body?

**Answer:**

The Directive does not require for qualification of forming procedures in point 3.1.1 of Annex I, although it includes such a qualification for permanent joints in point 3.1.2 of Annex I.

But there is an essential requirement about the preparation of the component parts (cf Annex I, point 3.1.1) and the manufacturer shall demonstrate in the technical documentation of the equipment that this requirement has been satisfied.

Depending on the modules, the Notified Body may examine this technical documentation.

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**Remarks:**

#### Guideline 6/4

[Original version as adopted on: *29 Jan 1999*]

**Pressure equipment directive 97/23/EC**  
**Commission's Working Group "Pressure"**

**Guideline related to:** [Annex I Section 3.1.2](#)

**Question:** Must a Notified Body take into account a procedure of permanent joints qualified by another Notified Body or a recognised third-party organisation?

**Answer:** Yes, a Notified Body is not allowed to reject an approval of procedure of permanent joints made on the basis of a precise reference and applying competence in accordance with the PED.

Nevertheless, it is its responsibility to verify, if needed, that the joining process and the reference to the manufactured product are adequate.

Accepted by WPG on: **26 Nov 1998**

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**Remarks:**

#### Guideline 6/5

[Original version as adopted on: *29 Jan 1999*]

**Pressure equipment directive 97/23/EC**  
**Commission's Working Group "Pressure"**

**Guideline related to:** [Annex I Section 3.1.2](#) , [Annex I Section 3.1.3](#)

**Question:** Do the requirements related to permanent joints given in Annex I, points 3.1.2 and 3.1.3 apply also to permanent joints other than welding?

**Answer:**  
Yes

**Reason:** The definition in article 1 paragraph 2.8 also covers other permanent joints such as brazing, braze welding, expansion, gluing, frettagage,

riveting,... For that reason, the requirements of 3.1.2 and 3.1.3 apply also for these types of joints.

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**Remarks:**

#### Guideline 6/6

[Original version as adopted on: *23 May 2002*]

**Pressure equipment directive 97/23/EC**  
**Commission's Working Group "Pressure"**

**Guideline related to:** [Article 1 Paragraph 2.8](#) , [Annex I Section 3.2](#)

**Question:** In the absence of harmonized standards, what approach is to be followed for the approval of personnel carrying out permanent joining ?

**Answer:** In the absence of harmonized standards, the manufacturer shall refer to an existing document (draft standard candidate for harmonization, professional document, guide, recognised third party/notified body document, company document, etc.) or shall establish a specific document.

Such a document shall define at least:

- equipment to be used by the personnel;
- degree of automatization of the process and the operations to be carried out by the personnel;
- conditions to apply when making the test piece to be used for the test approval and results to be achieved;;
- range of validity and conditions for the duration of the validity.

See also Guideline [6/1](#).

For welding, see Guideline [6/12](#).

Accepted by WPG on: **13 Mar 2002**

Accepted by Working Group "pressure": **23 May 2002**

**Remarks:**

#### Guideline 6/7

[Original version as adopted on: *08 Nov 1999*]

**Pressure equipment directive 97/23/EC**  
**Commission's Working Group "Pressure"**

**Guideline related to:** [Annex I Section 3.1.3](#)

**Question:** Does the concept of non destructive testing as mentioned in Annex I section 3.1.3 also cover visual examination ?

**Answer:** No.

Consequently, section 3.1.3 in Annex I is not applicable to personnel undertaking "visual testing" as dealt with in EN 473:2000.

Accepted by WPG on: **18 Sep 2002**

Accepted by Working Group "pressure": **03 Oct 2002**

**Remarks:**

### Guideline 6/8

[Original version as adopted on: *26 Jun 2001*]

**Pressure equipment directive 97/23/EC**  
**Commission's Working Group "Pressure"**

**Guideline related to:** [Annex I Section 3.1.2](#)

**Question:** What are "the appropriate harmonized standards" in Annex I, section 3.1.2, last paragraph, which set out the examinations and tests for the approval of permanent joining procedures and personnel ?

**Answer:** The appropriate harmonized standards are

- the specific harmonized supporting standards, subject to verification of their suitability for the equipment being built.

or

- the relevant harmonized product standards.

In both cases the relevant requirements of PED Annex I section 3.1.2 are to be covered by the standard and these provisions are to be referenced in Annex ZA.

Accepted by WPG on: **21 Feb 2001**

Accepted by Working Group "pressure": **26 Jun 2001**

**Remarks:**

### Guideline 6/9

**[Original version as adopted on: 26 Jun 2001]**

**Pressure equipment directive 97/23/EC  
Commission's Working Group "Pressure"**

**Guideline related to:**

**Question:** Does the Pressure Equipment Directive require accreditation for the manufacturer's testing laboratory that carries out non-destructive tests (NDT) or destructive tests (DT) of pressure equipment or of parts intended as pressure bearing parts of pressure equipment?

**Answer:** No.

According to Annex I section 3.1.3 the PED requires qualification for NDT personnel that carry out NDT of permanent joints. No accreditation is required for the manufacturer's NDT or DT laboratory or for the testing laboratory that the manufacturer may subcontract for NDT or DT.

Accepted by WPG on: **21 Feb 2001**

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**Remarks:**

#### Guideline 6/10

**[Original version as adopted on: 27 Feb 2002]**

**Pressure equipment directive 97/23/EC  
Commission's Working Group "Pressure"**

**Guideline related to:** [Annex I Section 3.1.2](#)

**Question:** If a manufacturer has a procedure for permanent joining approved by a notified body or other recognized third-party organization at one site (location), may that manufacturer use the same procedure at other sites for similar applications?

**Answer:** Yes, provided the other sites are under the same technical and quality management.

**Note:**

Standard EN 719 on welding co-ordination and standard EN 729-1 on quality requirements for welding define manufacturing organization as welding workshops or sites under the same technical and quality management. Standard EN 288-3 on welding procedure tests states that an approval of a welding procedure specification (WPS) obtained by a manufacturer is valid for welding in workshops or sites under the same technical and quality control of that manufacturer.

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**Remarks:**

### Guideline 6/11

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Pressure equipment directive 97/23/EC  
Commission's Working Group "Pressure"

Guideline related to: [Article 1 Paragraph 2.8](#) , [Annex I Section 3.1.2](#)

**Question:** In the absence of harmonized standards, what approach is to be followed for the approval of permanent joining procedures ?

**Answer:** In the absence of harmonized standards, the manufacturer shall refer to an existing document (draft standard candidate for harmonization, professional document, guide, recognised third party/notified body document, company document) or shall establish a specific document.

Such a document shall define at least:

- essential variables for the procedure that may affect the properties of the permanent joining;
- inspection and testing to be carried out for the qualification of the procedure;
- acceptance criteria ;
- range of validity.

**Note :**The directive states that " *the properties of permanent joints must meet the minimum properties specified for the materials to be joined unless other relevant property values are specifically taken into account in the design calculations*".

See also Guideline [6/1](#) .

For welding, see Guideline [6/12](#).

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**Remarks:**

### Guideline 6/12

[Original version as adopted on: 23 May 2002 and modified on 03 Nov 2003]

Pressure equipment directive 97/23/EC  
Commission's Working Group "Pressure"

Guideline related to: [Annex I Section 3.1.2](#)

**Question:** In the context of approval of welding procedures and personnel, what is meant by "the third party must perform examinations and tests as set out in the appropriate harmonised standards or equivalent examinations and tests" ?

**Answer:** Where the directive refers to equivalent examinations and tests it is required that suitable and sufficient tests are conducted to determine the same range of technological properties as those in the harmonised standards. Where similar tests have already been conducted that establish a particular property but the precise testing conditions vary from those in the above standard, there is no requirement to repeat the test. However, those technological properties which are not the subject of these similar tests shall be added to the testing schedule. If for example the impact property in

the weld has already been tested but not the heat affected zone (HAZ), this latter remains to be tested.

As long as there are no harmonized standards for the approval of welding procedures or personnel, it is appropriate (according to guideline [6/8](#)) to follow the "welding section" of harmonized product standards, EN 13445 (unfired pressure vessels), 13480 (piping), 12952 (water tube boilers) and 12953 (shell boilers) for respective fields of application. These standards use as a basis for qualifying welding procedures standard EN 288 and for personnel standard EN 287.

**Note 1:**

EN 287 and EN 288 series, in the version valid in May 2002, are not harmonized standards.

**Note 2:**

Some properties, such as those below, may not be sufficiently dealt with in EN 288 in the context of particular applications:

- Yield strength
- Impact toughness
- Elongation
- Micro-structure

The directive states that "the properties of permanent joints must meet the minimum properties specified for the materials to be joined unless other relevant property values are specifically taken into account in the design calculations".

**Note 3:**

The current version of ASME Boiler & Pressure Vessel code Section IX is another example of where properties are not sufficiently dealt with for some applications in order to comply by itself with the PED (e.g. impact property in the HAZ). Furthermore, it does not require that the tests and examinations shall be performed under the responsibility of a third party (see also guidelines [6/1](#) and [6/4](#)).

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**Remarks:**

### Guideline 6/13

[Original version as adopted on: *17 Mar 2004*]

**Pressure equipment directive 97/23/EC**  
**Commission's Working Group "Pressure"**

**Guideline related to:** [Annex I Section 3.1.3](#)

**Question:** For pressure equipment in categories III and IV, can Non-Destructive Testing personnel holding qualifications other than those satisfying criteria of the



harmonised standards (e.g. EN 473:2000 General principles for qualification and certification of NDT personnel) be approved by Recognised Third Party Organisations (RTPO) notified by a member state under Article 13 paragraph 1?

**Answer:** Yes.

NDT personnel certified under standards, other than the harmonised standards, may be approved by a RTPO provided it is satisfied that certification criteria equivalent to the harmonised standards have been met, and that the scope of certification is relevant to the testing of permanent joints in pressure equipment.

A RTPO may sub-contract part of its work, within the provisions of the New Approach guide, but shall keep the full responsibility and issue the approval. The approval of the personnel shall be done by a RTPO on an individual basis.

**Note:** Approval of an individual solely on the basis of a certificate issued by another body where no contractual arrangement exists with the RTPO does not fulfil the requirement of the Pressure Equipment Directive.

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**Remarks:**

#### Guideline 6/14

[Original version as adopted on: *19 Jan 2005*]

**Pressure equipment directive 97/23/EC  
Commission's Working Group "Pressure"**

**Guideline related to:** [Annex I Section 3.1.1](#) , [Annex I Section 3.1.2](#)

**Question:** Does any welding operation on a pressure bearing component have to require a qualification of the welding procedures and of the welders/welding operators?

**Answer:** Examples of welding operation for which qualification is required according to Annex I section 3.1.2 include:

1. Welding of a lifting lug on a pressure bearing chamber;
2. Welding of an attachment to a valve body;
3. Welding of reinforcing pads for nozzles;
4. Repair by welding on a chamber before placing on the market;
5. Major welding on a casting during production.

Examples of welding operations for which qualification is required according to Annex I section 3.1.2, unless the hazard analysis demonstrates that there is no pressure hazard, include:

1. Minor welding on a casting during production;
2. Battering of a tubesheet;
3. Overlay welding on a pressure chamber (anticorrosive, wear coating...).

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**Remarks:**