

CE marking of pressure equipments and compressors



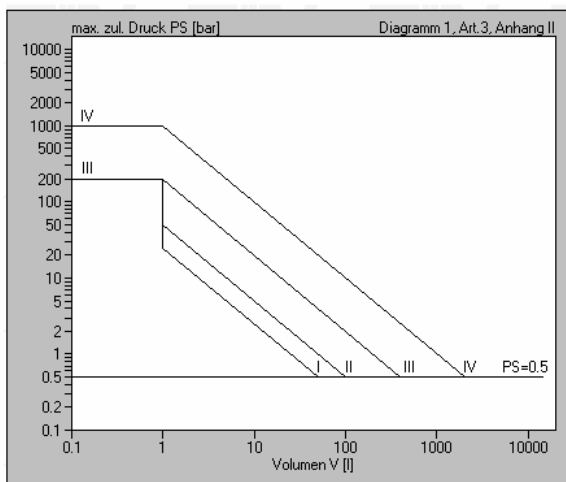
Since May 2002 the Pressure Equipment Directive (hereafter PED) 97/23/EG is valid in Europe. This directive covers design, manufacturing, approval and commissioning of any pressure equipment. In contradiction to the previous regulations the responsibility of the manufacturer is significantly enhanced.

1. Pressure equipments

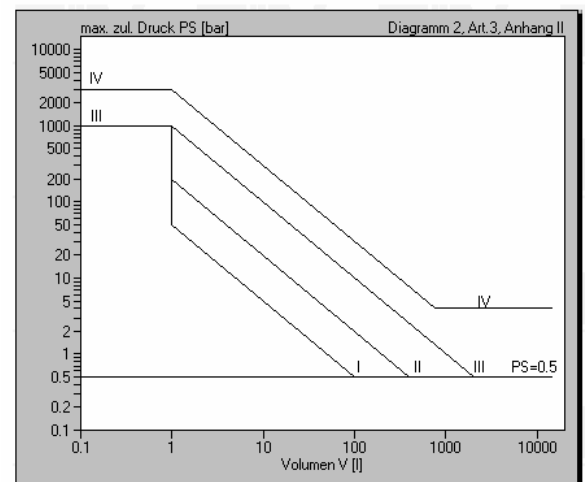
Classification, forthcoming approval and marking of any pressure equipment primarily concerns the manufacturer. However, this simplifies the commissioning and operation of any pressure equipment, too.

Classification according to PED 97/23/EG results in categories, depending on:

- Pressure volume multiplication ($P \times V$)
- Medium (hazardous media or non-hazardous media)



Group 1 (hazardous media) i.e. CNG



Group 2 (non-hazardous media) i.e. air

According to aforementioned diagrams any pressure equipment is classified as

- Article 3, paragraph 3
- Category I
- Category II
- Category III
- Category IV

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CE marking of pressure equipments and compressors



Aforementioned classification defines the required CE mark of any pressure equipment (refer to table 1).

Classification	CE mark acc. PED	Requirement / module
Article 3, paragraph 3	./.	Responsibility of manufacturer (good craftsmanship)
Category I	CE	Internal manufacturing control (A)
Category II	CE0036x	Internal manufacturing control incl. monitoring of final inspection (A1) or quality assurance of production (D1) or product (E1)
Category III	CE0036	extensive quality assurance (H)
Category IV	CE0036 or CEXXXX (number depends on notified body resp. body who executes single test and approval)	extensive quality assurance incl. design approval and special monitoring of final inspection (H1)

Tabel 1: CE mark of pressure equipment

Pressure equipments which are classified as article 3, paragraph 3 are designed and manufactured in compliance with good craftsmanship as valid and practised in any member state of the EC which assures safe application. These equipments do not have any CE mark.

Pressure equipments which are classified as category I are subject to internal manufacturing control (module A) and therefore do have a CE mark.

Since BAUER KOMPRESSOREN GmbH practises a certified quality assurance system according to PED 97/23/EG Appendix III Module H / H1, BAUER KOMPRESSOREN GmbH is allowed to test and approve any self manufactured vessel classified as categorie II, III or IV. These pressure vessels do have a CE0036 mark.

Pressure equipments which are classified as category IV, however not manufactured by BAUER KOMPRESSOREN GmbH, do have a CE mark of either the notified body as applicable to the supplier or the body who executes single test and approval (i.e. CE0044).

2. (Compressor) Systems

According to PED 97/23/EG a (compressor) system is to be classified to the highest category of pressure equipments as comprised in that particular system. I.e. when a compressor system comprises a pressure vessel classified as category III, the whole system will be classified as category III, too.

Since BAUER KOMPRESSOREN GmbH is certified according to PED 97/23/EG module A1, BAUER KOMPRESSOREN GmbH is allowed to test and approve any (compressor) system that comprises self manufactured pressure equipments up to and including category II. Any (compressor) system that comprises pressure equipments of a higher classification are subject to single test and approval (i.e. executed by TÜV).

CE marking of pressure equipments and compressors



On principle every BAUER (compressor) system bears a CE mark on the type identification tag. This CE mark indicates that the (compressor) system complies with

- EC machine directive (98/37/EG)
- Low Voltage Directive (73/23/EWG)
- Elektromagnetic compatibility (EMV – 89/336/EWG)

CE mark on the type identification tag may vary depending on classification and applicable directives (refer to table 2).

Highest classification of any pressure equipment in a (compressor) system	Mark on the type identification tag	Applicable directives	Final test and approval
Article 3 paragraph 3	CE	<ul style="list-style-type: none"> • EC machine directive (98/37/EG) • Low Voltage Directive (73/23/EWG) • Elektromagnetic compatibility (EMV – 89/336/EWG) 	BKM Quality Assurance
Category I	CE	<ul style="list-style-type: none"> • EC machine directive (98/37/EG) • Low Voltage Directive (73/23/EWG) • Elektromagnetic compatibility (EMV – 89/336/EWG) • PED (97/23/EG) 	BKM Quality Assurance
Category II	CE0036 (notified body)	<ul style="list-style-type: none"> • EC machine directive (98/37/EG) • Low Voltage Directive (73/23/EWG) • Elektromagnetic compatibility (EMV – 89/336/EWG) • PED (97/23/EG) 	BKM Quality Assurance
Category III	CE0036 (notified body)	<ul style="list-style-type: none"> • EC machine directive (98/37/EG) • Low Voltage Directive (73/23/EWG) • Elektromagnetic compatibility (EMV – 89/336/EWG) • PED (97/23/EG) 	TÜV single test and approval
Category IV	CE0036 (notified body)	<ul style="list-style-type: none"> • EC machine directive (98/37/EG) • Low Voltage Directive (73/23/EWG) • Elektromagnetic compatibility (EMV – 89/336/EWG) • PED (97/23/EG) 	TÜV single test and approval

Table 2: CE marking of (compressor) systems

3. Safety valves and auxiliaries

Final pressure safety valves

According to PED 97/23/EG a final pressure safety valve is to be classified to the highest category of pressure equipments as comprised in that particular system. On principle all BAUER final pressure safety valves are designed and manufactured to comply with pressure vessels classified as category IV. Therefore, all Bauer final pressure safety valves do have a CE0036 mark.

This enables to enlarge any (compressor) systems which is classified as i.e. article 3 paragraph 3 or category I, II or III with higher classified pressure equipments i.e. category III or IV without any further modification what so ever.

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A system is to be regarded as a by manufacturer combined number of pressure equipments of known classifications. However, a complete new and therefore different system of a higher classification might appear after the owner/user has reconfigured the existing system, i.e. by attaching a storage battery classified as category IV. Due to the fact that aforementioned Bauer final pressure safety valves are classified as category IV, further modification is not required.

Intermediate pressure safety valves

Intermediate pressure safety valves do secure the corresponding intermediate separators only . These intermediate separators are pressure vessels which are classified as article 3, paragraph 3 and are designed and manufactured in compliance with good craftsmanship as valid and practised in any member state of the EC which assures safe application. Both intermediate separators and intermediate pressure safety valves do not have any CE mark.

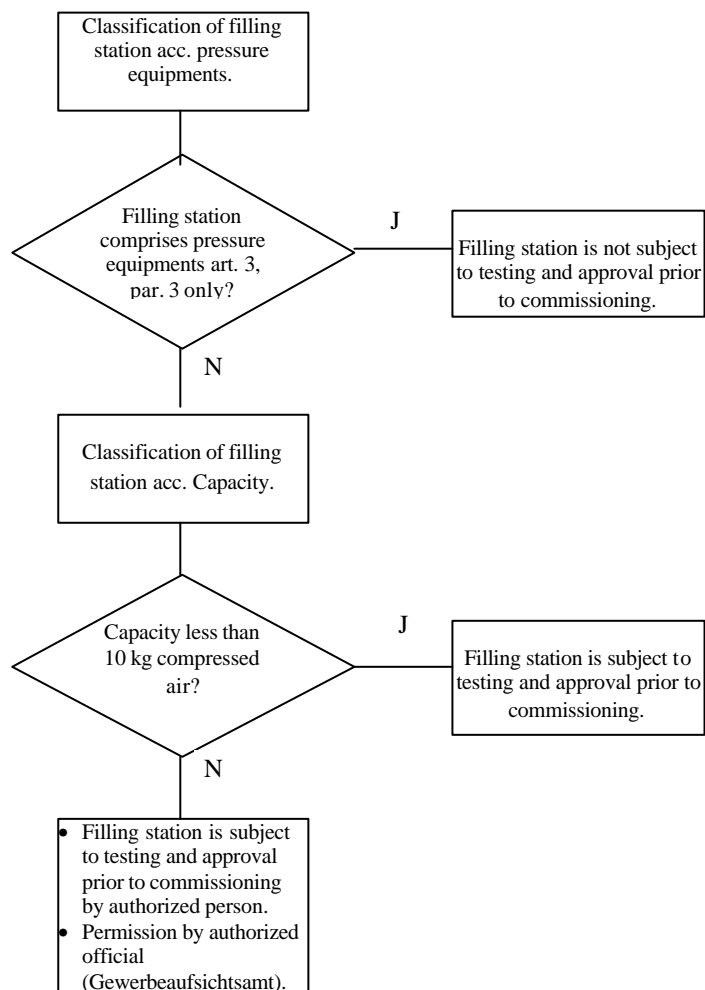
4. Commissioning of filling stations

Filling stations are to be defined as follows.

- Stations for the purpose of (re-)filling pressure storage vessels with compressed gasses by means of any movable and/or portable pressure equipment.
- Stations for the purpose of (re-)filling any movable and/or portable pressure equipment with compressed gasses.
- Stations for the purpose of (re-)filling any vehicle, craft or aircraft with compressed gasses.

Commissioning of filling stations is subject to regulations as valid in the EC. Due to specific national requirements these regulations may vary per member state of the EC.

In the following example the commissioning of a filling station according to "Betriebssicherheitsverordnung" (German regulation) is described.



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With this summary we sincerely hope to have given you a profound explanation of the European Directives for CE marking of pressure equipments and compressors.

In case of any questions, please do not hesitate to contact us.

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