Guide for the identification of non-compliant shot blasting machinery

Does this shot blasting machine comply with European legislation?
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The guide is meant for guidance only and provides only an overview to assess whether a shot-blasting machine complies with European legislation. It makes neither a claim to completeness nor to the exact interpretation of existing legislation. It may not replace the study of the relevant directives, laws and regulations. Furthermore, the special features of the respective products as well as their different application possibilities must be taken into account. For this reason, the assessments and procedures mentioned in the guide could include a large number of other constellations.
1 Introduction

Shot blasting machines placed on the market for the first time in the European Economic Area (EEA) must comply with the relevant legal regulations and all applicable safety and environmental requirements. Shot blasting machines that do not comply with the law must not be placed on the market or put into service in the European internal market.

This guide is intended to help distinguish more easily between shot blasting machinery that complies with regulations and shot blasting machinery that does not. It only describes criteria that can be verified without sound knowledge and technical information. The examples given allow an initial evaluation and serve for the inspection of a blasting plant by non-specialists. If one or more points deviate from the criteria described here, it is most likely that the blasting plant does not comply with EU regulations. In addition to these obvious criteria, there are other requirements, compliance with which can usually only be determined by experts.

The most common points for non-compliance with EU regulations are:

1. marking (type plate, marking of danger points),
2. declaration of conformity / declaration of incorporation, assembly instructions, operating instructions,
3. insufficient machine safety and protective equipment.
2  Marking

2.1  Type plate

Figure 1

All machines placed on the market in the European internal market must be clearly and permanently marked with a type plate in an official language of the European Union - this does not have to be the national language.

The following information must be on the type plate:

- name and full address of the manufacturer and, where appropriate, his authorised representative,
- designation of the machinery,
- series or type designation,
- serial number,
- year of manufacture, i.e. the year in which the manufacturing process was completed.

The CE marking can be part of the type plate.

Typical shortcomings are

- incomplete data (e.g. missing or incomplete address of the manufacturer; incomplete type designation of the machine),
- not an official EU language,
- missing type plate,
- missing marking of the electrical system (electrical cabinet).

Figure 1: Complete type plate

Figure 2: correct CE-marking according to Machinery Directive
2.2 CE-marking

Figure 2

The CE marking must be affixed in the immediate vicinity of the indication of the manufacturer or his authorised representative and must be applied in the same technique as it.

2.3 Marking of danger points

Figures 3 and 4

Each danger point at the shot blasting machine must be clearly marked (see EN 1248:2010, 7.2).

Information and warnings on the machine should preferably be given in the form of easily understandable symbols or pictograms.

All written or verbal information and warnings must be in the official languages of the Member State of the Community in which the machinery is placed on the market and/or put into service.

Typical shortcomings are
• missing warning signs;
• incorrectly attached warning signs.
3 Documentation

A shot blasting machine that is a complete machine must be placed on the market with complete user information and declaration of conformity.

A shot blasting machine which is an incomplete machine must be accompanied by installation instructions and a declaration of incorporation. In the case of partly completed machinery, it must be stated that putting into service is not allowed until the machinery in which the partly completed machinery has been incorporated has a CE marking. Incomplete machines are no work equipment.

User information must comply with EN ISO 12100:2010, 6.4, in particular 6.4.5 "Operating Instructions" and 6.4.4 "Labelling". The documentation accompanying all machinery must contain instructions in the official language or languages of the Member State in which the machinery is placed on the market and/or put into service.

The instructions accompanying the machine must be either "original instructions" or "translations of the original instructions"; translations must be accompanied by original instructions. However, the operating instructions in the required national language can also be designated by the manufacturer as original operating instructions. In this case, only the original operating instructions must be supplied.

The user information must contain information for all activities which the user is supposed to be able to perform, such as the information for installation, commissioning and use, together with instructions for maintenance, and the intended use specified by the manufacturer. The operating instructions do not contain any information for activities which the user shall not carry out, as they are reserved for the manufacturer’s personnel or for personnel authorised by the manufacturer.
3.1 Declaration of conformity

Like all other work equipment covered by the Machinery Directive, shot blasting machines must comply with the European regulations for CE marking. It is not only a formal requirement that the machine must bear a CE marking and be brought to market with an EC declaration of conformity. The machine must also comply with the safety requirements of Annex I of the Machinery Directive. For this purpose, the manufacturer shall apply the state of the technology. The machine must not only be CE marked, but the machine must also be designed and constructed conform to European law.

The EC declaration of conformity must comply with Annex II, No. 1 letter A of the Machinery Directive and must contain the following information:

- business name and full address of the manufacturer and, where appropriate, his authorised representative;
- name and address of the person authorised to compile the technical file, who must be established in the Community;
- description and identification of the machinery, including generic denomination, function, model, type, serial number and commercial name;
- a sentence expressly declaring that the machinery fulfils all the relevant provisions of this Directive and where appropriate, a similar sentence declaring the conformity with other Directives and/or relevant provisions with which the machinery complies. These references must be those of the texts published in the Official Journal of the European Union;
- where appropriate, the name, address and identification number of the notified body which carried out the EC type-examination referred to in Annex IX and the number of the EC type-examination certificate;
- where appropriate, the name, address and identification number of the notified body which approved the full quality assurance system referred to in Annex X;
- where appropriate, a reference to the harmonised standards used, as referred to in Article 7(2);
- where appropriate, the reference to other technical standards and specifications used;
- the place and date of the declaration;
- the identity and signature of the person empowered to draw up the declaration on behalf of the manufacturer or his authorised representative.

Typical shortcomings are

- incomplete declaration of conformity,
- incomplete declaration of incorporation,
- declaration of conformity for partly completed machinery,
- declaration of installation for complete machine.
3.2 Operating instructions

Instructions for safe use are required by the harmonisation legislation, such as the Machinery Directive, and must be enclosed with the machine when it is placed on the market or must be available by the time it is put into service at the latest.

The basic requirements are the following:

- they must be drawn up in the official language or languages of the Member State in which the machinery is placed on the market or put into service.
- they must be available either as “original operating instructions” or as a “translation of the original operating instructions”, whereby the translation must be accompanied by the original operating instructions.
- the word “original operating instructions” must appear on the language version(s) checked by the manufacturer or his authorised representative. The manufacturer is always responsible for the contents of the manual, whether it is the translation or the original. If no “original operating instructions” are available and translations are supplied, they must be marked with the words “translation of the original operating instructions”.
- the instructions must cover the intended use of the machinery as well as reasonably foreseeable misuse.
- the instructions must contain the name and address of the manufacturer.
- the instructions must repeat the labels on the machine with the exception of the serial number.
- the instructions must repeat the main points of the declaration of conformity.
- the instructions must also contain the instructions for the installation, operation, maintenance and dismantling of the machine.

The typical shortcomings are

- operating instructions are not in the official language of the user country,
- missing operating instructions,
- incomplete content,
- warnings or explanations of the warning labels are missing from the operating instructions,
- missing assembly instructions in the operating manual of incomplete machines (supplier).
4 Machinery Safety

This section gives examples of criteria for machine safety of shot blasting machines that are easy to check.

4.1 General

4.1.1 Bucket conveyor, Figure 5

The bucket conveyor must be secured by a brake or backstop (see EN 1248:2010, 5.4).

Verification by function test of the
- braking effect and/or
- backstop.

4.1.2 Tripping edges, Figure 6

Tripping edges in the free-blasting chamber must be avoided.

Verification by
- visual inspection for tripping hazards.

4.1.3 Automatic doors

Closing edges on automatic doors must be secured (see EN 1248:2010, 5.3.1.5).

Verification by
- visual and functional testing of closing edge protection.

4.1.4 Machine parts with dangerous movement

Access to machine parts with dangerous movement must be prevented (see EN 1248:2010, 5.2.1, 5.2.3, 5.3.1.1, 5.3.1.5, 5.3.1.6, 5.3.1.7, 5.4.1, 5.4.2, 5.5.1, 5.5.2, 5.6.1, 5.7.1, 5.7.2, 5.7.3, 5.7.4, 5.8.1).

Verification by
- visual inspection for unsecured danger points due to moving machine parts,
- functional test of protective devices.
4.1.5 Dedusting, Figure 7

Technical ventilation must be sufficient to avoid the formation of dangerous atmospheres caused by blasting dust.

**Verification** by function test
- blasting operation without technical ventilation must not be possible,
- technical ventilation must effectively remove the blasting dust from the blasting chamber.

4.1.6 Exhaust air recirculation into the working area, Figure 8

When the air is recirculated into the working area, a fine filter (control filter) must be present (see EN 1248:2010, 5.12.1).

**Verification** by:
- visual inspection,
- measurement,
- check of the documentation.

4.1.7 Explosion protection, Figure 9 and 10

Explosion protection at the shot blasting machine is required if the blasting dust is explosive (see VDMA 24388). Ignition sources must be avoided (see EN 1248:2010, 5.12.2).

**Verification** by visual inspection
- construction of the air ducts (material, grounding),
- marking of equipment installed in potentially explosive atmospheres.
4.1.8 Main switch, Figure 11

The blasting machine must have a main switch which is designed according to the standard (see EN 1248:2010, 5.9.1).

Verification by visual inspection.

4.1.9 Electrical cabinet, Figure 12

The ventilation of the electrical cabinet must be protected against dust and splash water (see EN 1248:2010, 5.9.1).

Verification by visual inspection.

4.1.10 Safety related controls, Figure 13

Control interlocks (e.g. technical ventilation and blasting operation) must be safety-oriented (see EN 1248:2010, 5.1.3, 5.8).

Verification by visual inspection

- the controller contains safety-related components (if none are present, it can be assumed that the controller does not meet the requirements),
- documentation provides information on safety-related control.
4.2 Wheel blast machines

4.2.1 Securing the access to the blasting chamber, Figure 14

Access possibilities must be guard-locked to prevent access to the blasting chamber during blasting operation (see EN 1248:2010, 5.3.11, 5.12.1, 5.13.2).

Verification by
- visual inspection whether guard locking is present,
- functional test of the guard locking.

4.2.2 Protection against entrapment in the blasting chamber, Figure 15 and 16

Illuminated emergency stop contact on the inside of the blasting chamber door or in the blasting chamber (see EN 1248:2010, 5.3.1.3).

Verification by
- visual inspection for emergency stop contact,
- functional test of the emergency stop contact.
4.3 Air blasting machines / free-blasting rooms

4.3.1 Dead man’s switch in the free-blast room, Figure 17

When letting go manually held blasting equipment, an uncontrolled movement of the nozzle and/or leakage of blasting media shall be avoided (see EN 1248, 5.3.3.1).

**Verification by**
- visual inspection,
- functional test.

4.3.2 Control device for blasting material hose, Figure 18

The blasting material hose of free blasting equipment must be equipped with a control device with independent resetting. The maximum run-on time is 1 second.

**Verification by**
- visual inspection,
- functional check of the overrun.

4.3.3 Connection for forced-ventilated respiratory protection

Connection for forced-ventilated respiratory protection / operator information on respiratory protection

**Verification by**
- visual inspection,
- examination of the documentation (approval).

4.3.4 Respiratory air conditioning, Figure 19

A supply of non-contaminated breathing air must be ensured (see EN 1248, 5.13.1).

**Verification by**
- visual inspection,
- examination of the documentation (approval).
4.3.5 **Workplace illumination,**  
*Figure 20*

Insufficient / non-existent illumination of the workplace of the shot blasting machine.

**Verification by**
- visual inspection,
- functional test.

4.3.6 **Illumination of escape route,**  
*Figure 21*

Escape routes in the free blasting room must be equipped with emergency lighting (workplace directive).

**Verification by**
- visual inspection,
- functional test.
5 Figures / References

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6 Regulations


- **EN 1248:2010** Foundry machinery – Safety requirements for abrasive blasting equipment

- **VDMA 24388** Blasting technology – Fire and explosion protection
VDMA
Surface Technology

Lyoner Str. 18
60528 Frankfurt am Main
Phone +49 69 6603-1290
E-Mail oberflaeche@vdma.org
Internet ot.vdma.org/en

Contact
Dr. Martin Riester
Phone +49 69 6603-1290
Fax +49 69 6603-2290
E-Mail martin.riester@vdma.org
Internet ot.vdma.org/en/strahltechnik

ot.vdma.org/en/strahltechnik