

The following text is a translation¹ of the interpretation of the term "assemblies of machinery" used in the Machinery Directive 2006/42/EC from 5th May 2011

Federal Ministry of Labour and Social Affairs
Product Safety Act / 9th Ordinance on Product Safety (Machinery Ordinance)

Here: Interpretation paper on assemblies of machinery

– Notice from the Federal Ministry of Labour and Social Affairs of May 2011 – IIIb5-39607-3 –

[...]

Interpretation of the term "assemblies of machinery" used in the 9th Ordinance on Product Safety (Machinery Ordinance) respectively in the EC Machinery Directive 2006/42/EC from 5 May 2011

1. Definition of the term "assemblies of machinery"

According to article 2 letter a 4th indent of the MD [...] the term machinery includes:

— *Assemblies of machinery [...] or partly completed machinery [...] which, in order to achieve the same end, are arranged and controlled so that they function as an integral whole.*

2. Application of the machinery directive to assemblies of machinery

According to the definition in clause 1 it is therefore relevant that

1. there is a production-related coherence given by the following:
 - the individual machines respectively partly completed machinery are arranged as an entity in such a way that they can be regarded as an integral unit (this refers especially to the connected arrangement)
 - and
 - the individual machines respectively partly completed machinery collaborate as an entity, (this means e.g. that the collaboration has to be geared towards a common goal, e.g. the manufacturing of a certain product)
 - and
 - the individual machines respectively partly completed machinery are operated as one unit, i.e. by a common or higher-level functional control system or by common control devices.
 - and
2. the individual machines respectively partly completed machinery function as totality in respect of safety and so build an integral whole also in this respect (safety-related coherence).

¹ This is a non-authorized translation and the author does not take responsibility for the correctness of the translation and assumes no liability whatsoever with respect to the accuracy and completeness of the translation. References to German legislation are not included.

This is the case when machines or partly completed machinery are combined in such a way that an incident which arises in one part of the assembly results in a hazard in another component of the assembly and therefore safety measures have to be taken which are related to the whole assembly in order to bring all these components into a safe condition in case of a hazardous event.

In annex I number 1.2.4.4 of the MD is stated for an assembly of machinery:

"Assembly of machinery

In the case of machinery or parts of machinery designed to work together, the machinery must be designed and constructed in such a way that the stop controls, including the emergency stop devices, can stop not only the machinery itself but also all related equipment, if its continued operation may be dangerous. "

If individual machines are linked exclusively by a common emergency stop device, this does not automatically result in an assembly of machinery.

Where a production-related **and** a safety-related coherence exists, there is an assembly of machinery according to the MD. This assembly as a whole must fulfil the requirements of the MD.

In practical use of the term "assembly of machinery" the question arises frequently on large industrial plants (e.g. metallurgical plants, power plants or chemical plants), whether these plants are in the scope of the MD as assemblies of machinery.

Applying the decision steps described above on large industrial plants, frequently a production-related coherence exists, but usually no safety related coherence. In this case such plants are not within the scope of the MD. But it may be possible from the view of the MD to split such large plants into several parts which form an assembly of machinery.

Also the "Guide to application of the Machinery Directive 2006/42/EC" of the European Commission refers to this circumstance regarding complete industrial large plants. On this it states in the third paragraph of § 38 that the term assemblies of machinery is not necessarily applicable on a complete industrial plant as a whole. It is referred that these plants can usually be divided into sections which may be considered as assemblies of machinery, for example, raw material unloading and reception equipment - processing equipment - packaging and loading equipment for which the requirements of the MD are applicable.

3. Decision steps²

For the assessment whether several combined machines respectively partly completed machinery form an assembly of machinery according to the MD, the following decision steps and the diagram (figure 1) may be helpful.

1st step

The production-related coherence is characterized by the fact that the machinery respectively partly completed machinery is arranged as an entity (whereat in particular they are arranged coherently), collaborate and are operated in order to form a unit, geared towards a common goal (e.g. the manufacturing of a product).

Such coherence exists when the machinery respectively partly completed machinery is linked mechanically or control-related and when there is a common or superior control or if there are common control devices which are necessary for the production process. The common or superior control system therefore is essential and enables in

² Practical experience has shown that the production-related and the safety related coherence are the essential decision criteria. The diagram has been adapted accordingly.

the first place the goal-oriented production-related collaboration of the machinery respectively partly completed machinery as an entity. If there is no such production-related coherence, there is no assembly of machinery according to the MD and no declaration of conformity for an assembly of machinery is necessary but only for the individual machines.

2nd step

When on a machine respectively partly completed machine an incident can occur that may lead to a hazard on another machine respectively partly completed machine, safety-related measures are necessary geared to the assembly as a whole. In this case there is a safety-related coherence which is characterized by the fact that the safety of the assembly is provided e.g. by a control system which is related to the entire assembly or by safety components which do not belong to this control system such as fixed guards.

The risks which arise because of the collaboration at the interfaces of that the machinery respectively partly completed machinery shall be considered in the risk assessment for the assembly. The new "Guide to application of the Machinery Directive 2006/42/EC" of the European Commission supports this and emphasizes in § 38, that the safety of an assembly of machinery depends not only on the safe design and construction of the individual components but particularly on the fact whether the components fit with one another. Here the interfaces shall be assessed primarily.

For the assembly of machinery a declaration of conformity has to be drawn up and added to the assembly of machinery.

However if in the context of the production-related collaboration of individual machines neither the transmission of hazards from one machine to other machines nor the generation of new hazards on these or other machines is possible, there is no safety-related coherence. The machinery associated in such a way can be regarded as individual machines.

However the interfaces between the individual machines have to be assessed additionally. If, as a result of the risk assessment also the risks at the interfaces can be considered as low and if an acceptable risk can be achieved by simple technical safety measures which are effective independently of will, e.g. by fixed guards, or if the hazard can be eliminated or an acceptable risk can be achieved by integration of the measures in the safety concept of the individual machines, these machines can still be considered as individual machines.

The assessment, whether a combination of machinery complies with the definition of assemblies of machinery according to the MD, can be made according to the following diagram.

Assembly of machinery?

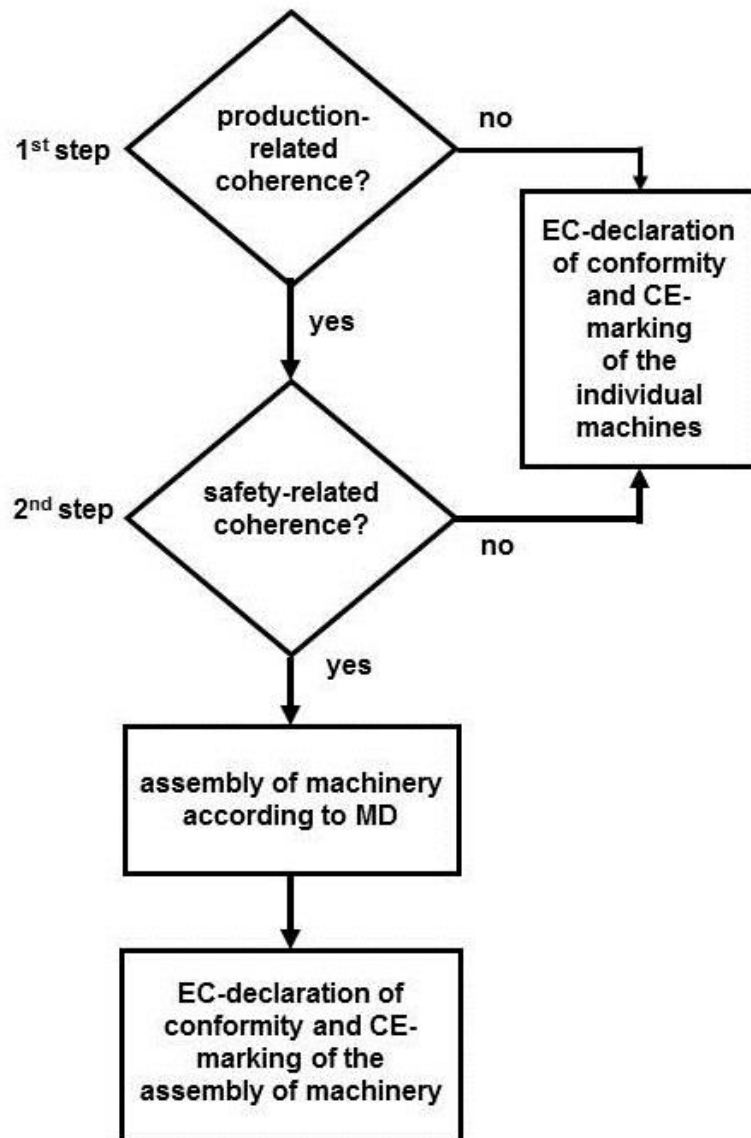


Figure 1: Decision steps – assemblies of machinery according to the Machinery Directive 2006/42/EC

4. Demarcation to other directives and CE-marking

If the result of the risk assessment described in clause 3 is, that there is an assembly of machinery, for the application of the MD particularly the demarcation to other directives and the principles of CE-marking shall be observed.

4.1. Demarcation to other directives

The demarcation of the MD to other directives is stated in article 3 of the MD[...]:

"Where, for machinery, the hazards referred to in Annex I are wholly or partly covered more specifically by other Community Directives, this Directive shall not apply, or shall cease to apply, to that machinery in respect of such hazards from the date of implementation of those other Directives."

It follows:

Where another directive covers hazards, which arise from an assembly of machinery, more specifically, for these hazards not the MD is applicable but the other EC-Directive. This may e.g. apply to pressure hazards³, which are covered more specifically by the directive 97/23/EC (pressure equipment directive) or to explosion risks, which are covered more specifically by the directive 94/9/EC (ATEX directive).

However, for electrical hazards on an assembly of machinery always the MD applies, because in annex I number 1.5.1 it embraces the objectives of the low voltage directive.

Furthermore the application of further directives may be necessary for aspects which are not covered by the MD, e.g. directive 2004/108/EC related to electro-magnetic compatibility (EMC-directive) or directive 2000/14/EC relating to the noise emission in the environment by equipment for use outdoors (Outdoor Noise Directive) for an assembly of machinery which is foreseen for use in an outdoor environment.

4.2. Principles of CE-marking

According to article 5 paragraph 4 of the MD the following principles for CE-marking apply:

"Where machinery is also the subject of other Directives relating to other aspects and providing for the affixing of the CE marking, the marking shall indicate that the machinery also conforms to the provisions of those other Directives."

It follows:

For the assembly of machinery these further directives always apply when

- other directives are relevant⁴ for specific hazards on the assembly of machinery (see 4.1), or
- the assembly is covered by EC-directives which relate to other aspects than the directives mentioned above (see 4.1).

By attaching the CE-mark according to article 16 of the MD [...] the compliance with all relevant EC-directives is certificated.

... [Annex not relevant]

³ See European guideline 1/26 on the pressure equipment directive

⁴ e.g. ATEX-directive 94/9/EC or pressure equipment directive 97/23/EC

