

A photograph of three workers in a large industrial facility. In the foreground, a woman in a dark blue uniform is using a large metal square to inspect a large, horizontal metal pipe. To her left, a man in a grey polo shirt and blue trousers is also looking at the pipe. In the background, another man in a blue and yellow uniform is working on a similar pipe. The facility has a high ceiling with a complex steel truss structure and large windows on the left side.

## Pressure Equipment Directive: Certification and Conformity

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# Content

- Introduction - TÜV Rheinland Industrial Services
- Global Concept of the European Union
- Meaning of the CE-marking
- Inspection of Industrial Installations in Europe
- Scope of the Pressure Equipment Directive
- Notified Bodies
- Certification of pressure equipment
- Conformity assessment procedure to be followed
- Application of codes
- Essential Safety Requirements
- Materials
- How do you benefit from CE-marking?



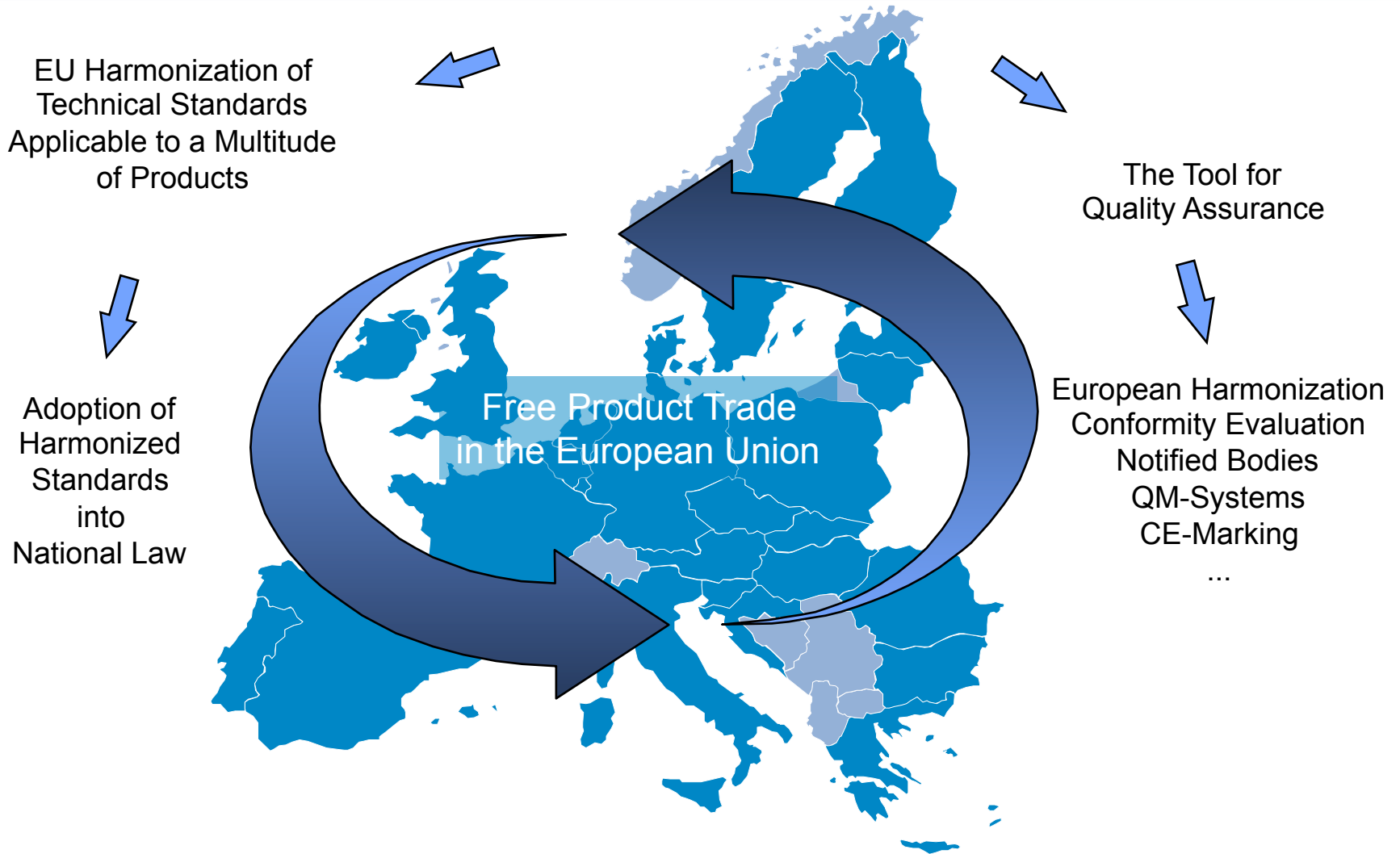
# TÜV Rheinland Industrial Services

## Pressure Equipment and Materials Technology



- Experienced and globally recognised service provider for pressure equipment and related components
- More than 140 years of experience in the industrial sector, with comprehensive technical knowledge for conformity assessment of pressure equipment
- Active in 65 countries
- Notified Body for the European Pressure Equipment Directive which supports the industry with certification, verification and compliance.

# Global Concept of the European Union



# Meaning of the CE-marking

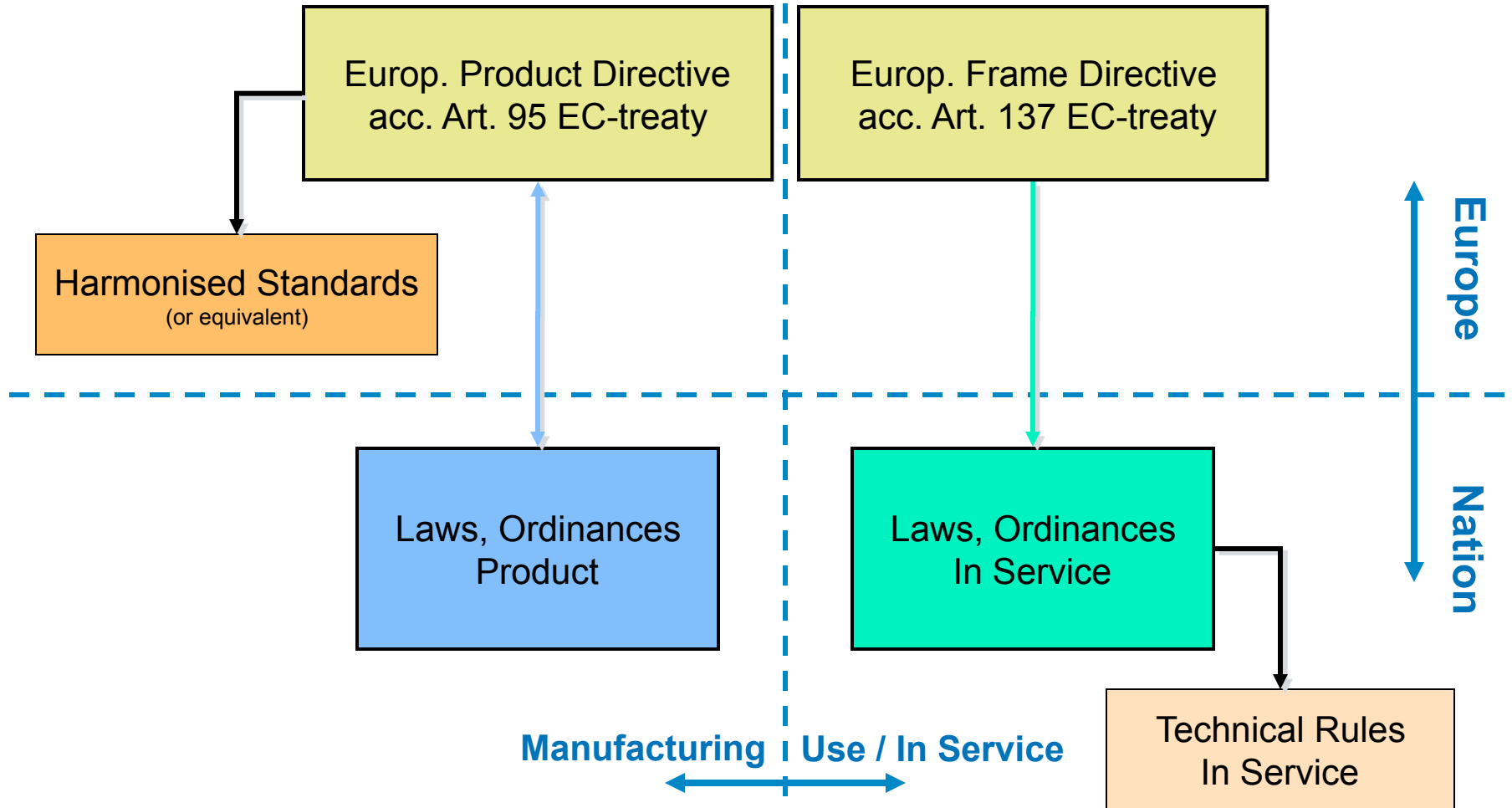


## Article 4: Free movement

Member States shall not, on grounds of the hazards due to pressure , prohibit ... the placing on the market or putting into service ... of pressure equipment or assemblies ... which comply with this Directive and bear the CE marking indicating that they have undergone conformity assessment ...

# Inspection of Industrial Installations in Europe

## Directives, Laws and Technical Rules



# Scope of the Pressure Equipment Directive PED

The PED applies to:

- **Design**
- **Manufacture**
- **Conformity Assessment**

of

## **Pressure Equipment and Assemblies**

with a MAWP (PS) > 0,5 bar

**Note:** The PED does **not** apply to:

- **In-Service Inspections and use**
- **Simple Pressure Vessels (SPV-87/404/EG)**
- **Transportable Pressure Equipment (TPED-99/36/EC)**
- **ADR, RID, IMDG, etc.**

# Scope of the Pressure Equipment Directive PED

## Pressure Equipment

- Unfired Pressure Vessels
- Fired Pressure Vessels
- Piping
- Safety Accessories
- Pressure Accessories (**Valves**)

## Assemblies

- Several pieces of pressure equipment assembled to constitute and integrated and functional whole

## Not in scope

- pipelines
- water distribution
- equipment for cars
- nuclear equipment

- machinery
- ships, rockets, aircraft
- carriage of dangerous goods
- ...



# Notified Bodies

A **Notified Body** is a third-party organisation that has been accredited by the EU to assess whether pressure equipment meets the preordained standards.

The assessment includes inspection, examination, verification and certification. It is meant to ensure and assess compliance to the defined standards and regulations, but also to provide an official certification mark or declaration of conformity.

For instance, TÜV Rheinland is an official recognised Notified Body for the Pressure Equipment Directive and can therefore provide pressure vessel certification, inspection and testing services to guarantee product compliance to the defined safety regulations.

**C** **€** 0035

# Classification of Pressure Equipment

- Pressure equipment is classified according to its risk potential as illustrated in the diagrams contained in Annex II of the PED.
- Based on:
  - ⇒ kind of fluid – dangerous or not
  - ⇒ aggregate state – gaseous or liquid
  - ⇒ pressure
  - ⇒ volume / diameter

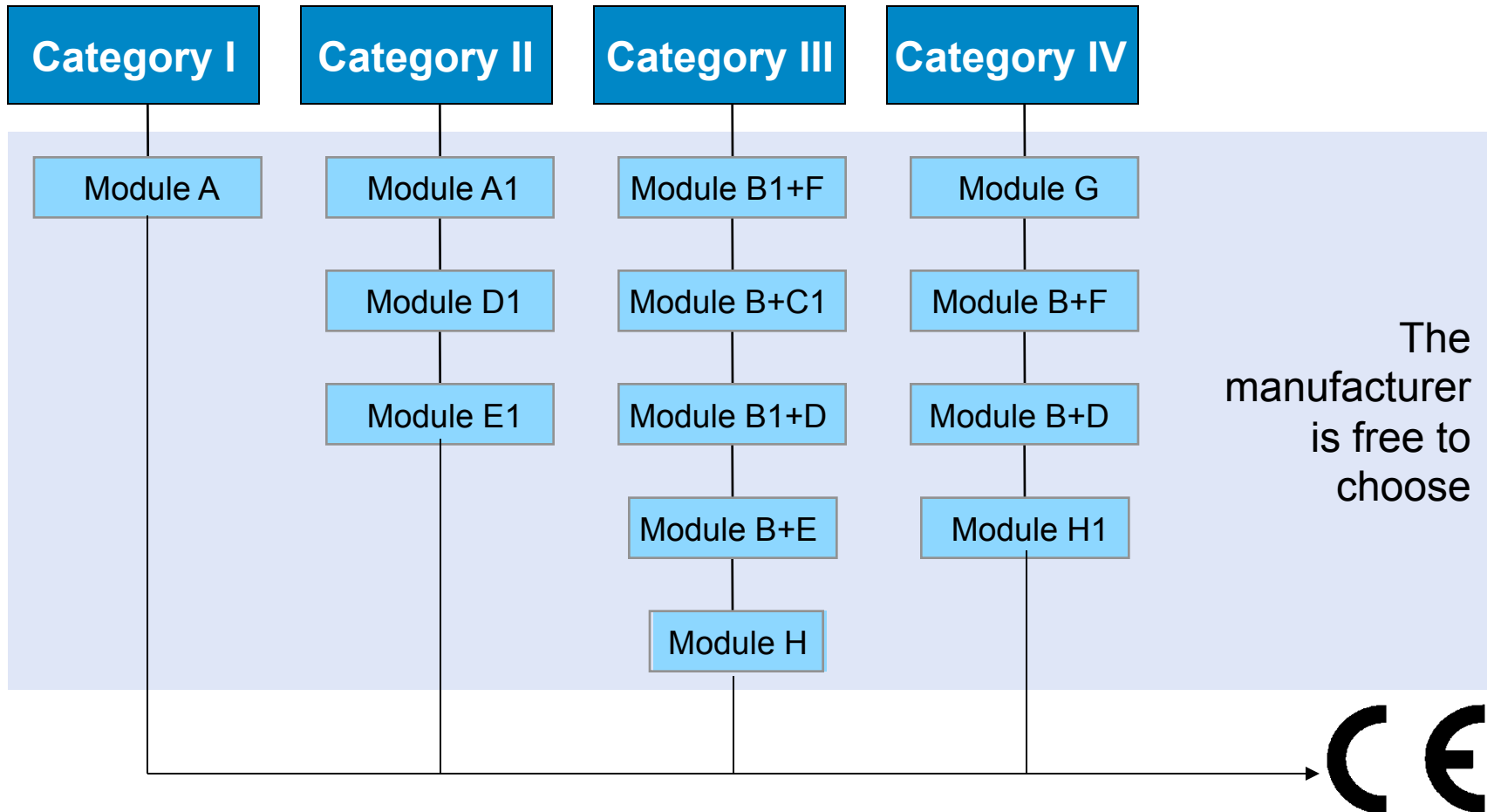
## > risk potential

- Application of the suited diagram for determination of the category (I , II, III or IV)

# Conformity assessment procedure to be followed for type of classification

- ⇒ Before placing pressure equipment on the market, the manufacturer shall subject each item of equipment to one of the conformity assessment procedures (art. 10)
- ⇒ Procedure has to follow Annex III according to the chosen module
- ⇒ The conformity assessment procedures is determined by the category
- ⇒ Not categorized Pressure equipment acc. [Article 3 \( 3\)](#) must be designed and manufactured in accordance with the sound engineering practice ([No CE marking](#))

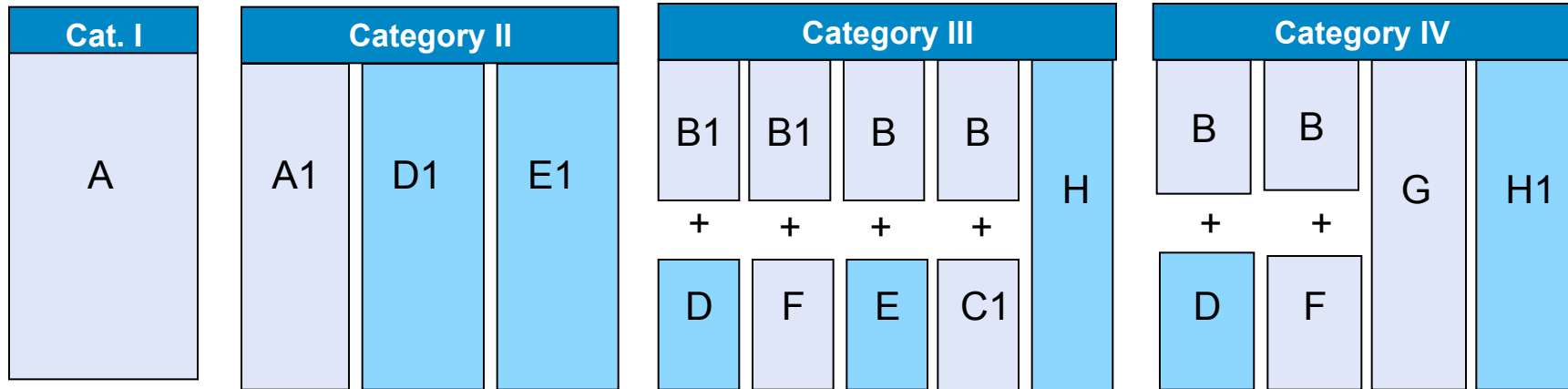
# Conformity assessment procedure to be followed for type of classification – Modular Concept



# Conformity assessment procedure to be followed for type of classification – Modular Concept

- The modules consist of the following three main points:
  - ⇒ **Description of the procedure** by which the manufacturer ensures and declares that respective pressure equipment conforms with the requirements of the directive
  - ⇒ **Definition of the tests** and surveillance measures to be carried out by the notified body
  - ⇒ **Definition of the documents** and documentation to be prepared
- The modules can be described as self-contained test packages addressing the development and production phases of pressure equipment with the goal of furnishing evidence that the basic requirements of the directive have been satisfied. Since not every module covers the development and production phases, module combinations can also be used

# Module Overview



without QA-System

with QA-System

A = Internal Production Control

A1 = Internal manufact. checks with monitoring of final assessment

B = EC-Type Examination

B1 = EC-Design Examination

C1 = Conformity to Type

D = Production Quality Assurance

H1 = Full Quality Assurance with Design Examination and special surveillance of final assessment

D1 = Production Quality Assurance

E = Product Quality Assurance

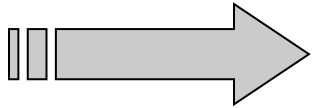
E1 = Product Quality Assurance

F = Product Verification

G = EC-Unit Verification

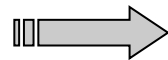
H = Full Quality Assurance

# Application of codes

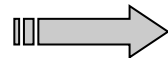


## Harmonized European Standards:

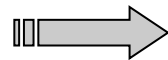
Developed by European standardisation organizations (CEN / CENELEC / ETSI) in order of the EU-Commission for a specific EC-Directive (mandated)



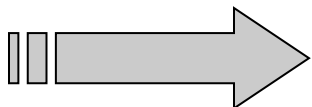
Fulfil the **Essential Safety Requirements** of the corresponding directive



**are not obligatory**

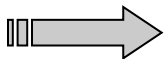


**Mandated Standard = Assumption of Conformity**



## Other Specifications:

International Codes, national Codes, national Standards, Manufacturer Specifications



**Verification of Conformity (Fulfilling of ESR) by the manufacturer**

# Essential Safety Requirements

- ⇒ Pressure Equipment must be designed, manufactured and checked, equipped and installed, in such a way as to **ensure its safety** when put into service.
- ⇒ The essential requirements are **obligatory**
- ⇒ The manufacturer is under an obligation **to analyse the hazards** of the equipment of pressure
- ⇒ The manufacturer must:
  - ⇒ Eliminate or reduce hazards as far as is reasonably practicable
  - ⇒ Apply appropriate protection measures against hazards which cannot be eliminated,
  - ⇒ Inform users or residual hazards and indicate whether it is necessary to take appropriate special measures to reduce risks
- ⇒ The pressure equipment must be designed to prevent danger from misuse or, if that is possible, adequate warning given that the pressure equipment must not be used in that way.



# Materials

- The **manufacturer** must provide in his technical documentation elements relating to compliance with the materials specifications of the Directive in one of the following forms:
  - by using materials which comply with **harmonized standards**
  - by using materials covered by a **European approval of pressure equipment materials (EAM)**...
  - by a **particular material appraisal (PMA)**
- For pressure equipment in **categories III and IV**, particular material appraisal must be performed by the **notified body** in charge of conformity assessment procedures for the pressure equipment

# Materials

- The equipment **manufacturer** must take appropriate measures to ensure that the material used conforms with the required specification
- Certificate of specific product control:
  - ⇒ Material manufacturer has an appropriate **quality-assurance system**
  - ⇒ Certified by a **competent body** established within the Community
  - ⇒ Having undergone a **specific assessment for materials**
  - ⇒ Certificates issued by the manufacturer are presumed to **certify conformity with the relevant requirements of the PED**
  - ⇒ **Material manufacturer** issues inspection certificate **3.1 [EN 10204]**
- No such QS-System
  - ⇒ **Notified Body** issues inspection certificate **3.2 [EN 10204]**

# How do you benefit from CE marking?

## Valve manufacturer

- Trade passport for exporting
- Only one set of rules to comply to for countries in EU
- Product will be safer and reduce damage and liability claims
- More competitive in the SA market (same methodology as SANS 347)

## Material manufacturer

- Can certify own material for PE
- Reduction in cost for having a NB inspector on-site for certifying material
- PE manufacturers more prone to buy from certified material manufacturers with PED compliant material



**Thank You!**

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