




CEN activities in relation to the Pressure Equipment Sector

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Some important horizontal decisions taken at CEN level

Mr Lars Flink, the new chairman of the CEN Board, outlined the challenges facing CEN in the next three years:

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- ***3-year timeframe*** for the development of standards: the successful implementation of this action;
 - ***Construction Products*** directive: a significant increase in the number of standards adopted (e.g. target of 300 harmonized standards by the end of 2004);
 - ***Enlargement of CEN***: participation of all CEN Member bodies in the technical work.

- **Technical work in the enlarged CEN (Resolution BT 10/2004)**

BT created a group (BT/CAG 172 *Technical work in enlarged CEN*) to advise the Chairman on ways to facilitate the participation of the National Standards Bodies in the technical work, at all levels.

- **Global relevance of standards (Resolution BT 17/2004)**

BT noted that BT/WG 152 *Global relevance in standards* is developing guidance to CEN technical committees on the implications of global relevance.



The Pressure Equipment Advisory Nucleus:PE-AN

- The pressure Equipment Advisory Nucleus is a group reporting to the CEN Technical board.
- There are 16 members (NSBs, EC, Notified Bodies, Users, Manufacturers, CMC,...)
- The role of the PE-AN is to manage the sector activities
- The PE-AN has plenary meetings 2 to 3 times a year. Next meeting: 20 October 2004



PE-AN

- The PE-AN issues recommendations that are handles by the CEN Programme manager. This could lead for example to:
 - BT decisions
 - Messages to CEN/TCs
- The PE-AN could be addressed to answer to specific concerns related to the sector



Specific principles in the pressure sector

- The pressure equipment standards are classified into two categories
 - Type 1 standards (Cited in the Official Journal)
 - Type 2 standards (not cited)



Classification of Standards: Type 1 standards

- Provide a technical solution to [fully] achieve one or more specific **PED Essential Safety Requirements** either by itself or by calling up other references (see guideline 10.5).
- It can be a product standard (i.e. a standard dealing with items of pressure equipment or assemblies) or a standard dealing with materials, procedures for permanent joining, approval of NDT personnel etc.



Classification of Standards: Type 2 standards

- Provide useful elements that contribute to the fulfilment of ESR(s)
- cannot alone give presumption of conformity to these ESRs.
- Examples: NDT test methods, general principles, terminology.
- Type 2 standards are likely to be used as normative references in type 1 standards





The work programme and status of standards



European Standards

- Some 24 CEN and 9 ECISS Technical Committees relate to the PED
- 287 harmonized standards
- 587 supporting standards

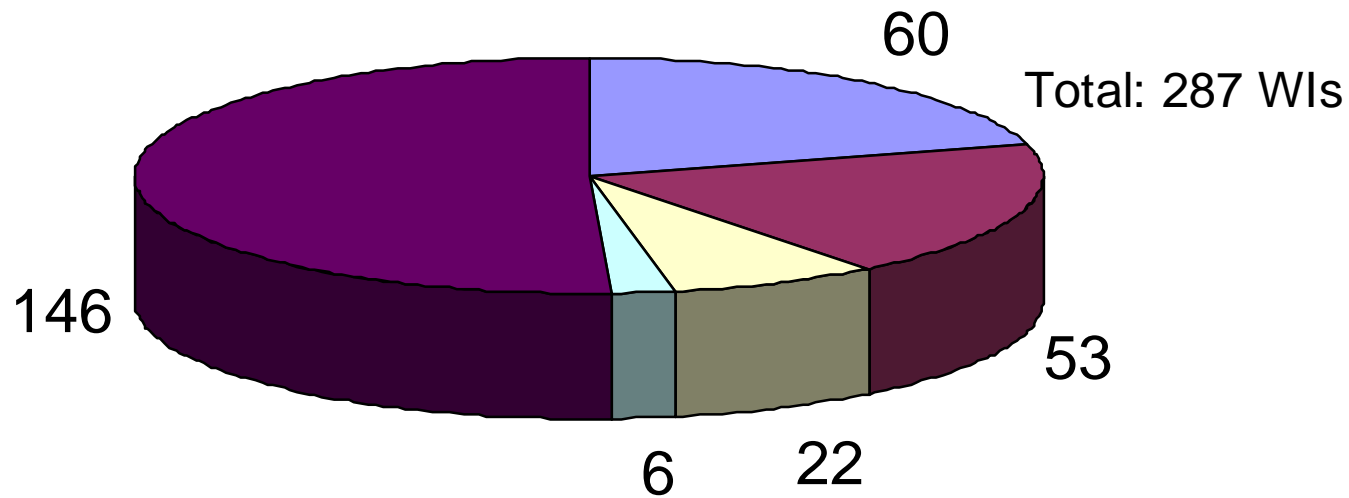







Harmonized standards by TCs

Technical Committee	Title	# of standards
TC 23	Transportable gas cylinders	8
TC 54	Unfired pressure vessels	28
TC 57	Central heating boilers	1
TC 58	Safety and control devices for gas-burners and gas-burning appliances	8
TC 69	Industrial valves	35
TC 70	Manual means of fire fighting equipment	5
TC 74	Flanges and their joints	14
TC 121	Welding	26
TC 132	Aluminium and aluminium alloys	3
TC 133	Copper and copper alloys	11
TC 138	Non-destructive testing	3
TC 155	Plastics piping systems and ducting systems	3
TC 181	Dedicated liquefied petroleum gas appliances	2

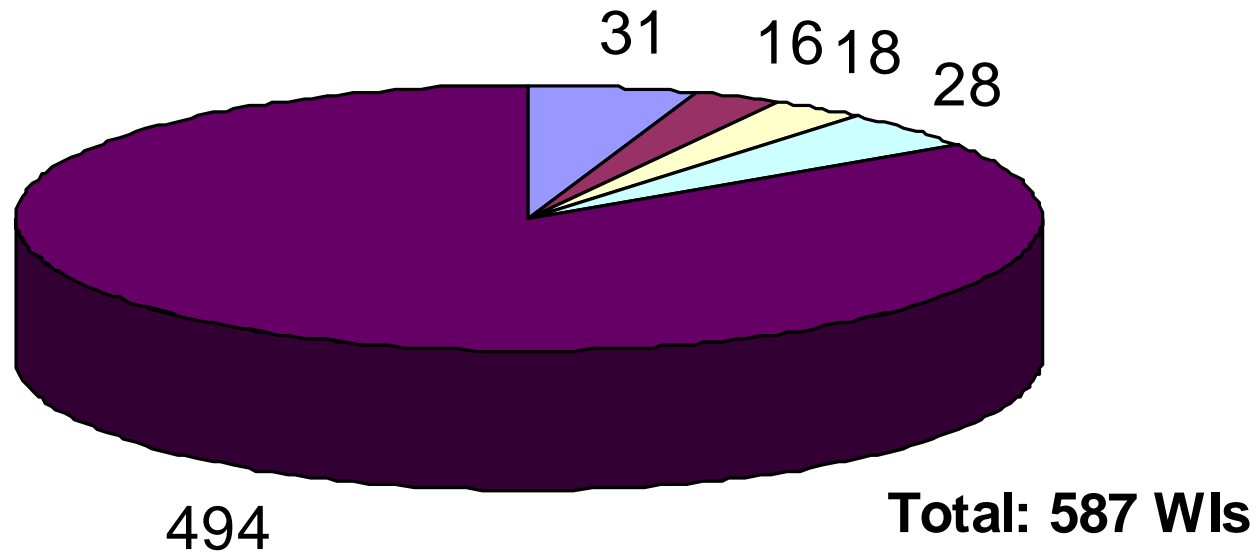
Technical Committee	Title	# of standards
TC 182	Refrigerating systems, safety and environmental requirements	8
TC 194	Utensils in contact with food	1
TC 210	GRP tanks and vessels	4
TC 235	Gas pressure regulators and associated safety devices for use in gas transmission and distribution	4
TC 237	Gas meters	2
TC 267	Industrial piping and pipelines	11
TC 268	Cryogenic vessels	19
TC 269	Shell and water-tube boilers	25
TC 286	Liquefied petroleum gas equipment and accessories	11
TC 326	Gas supply for Natural Gas Vehicles (NGV)	2
TC 342	Metal hoses, hose assemblies, bellows and expansion joints	2
ECISS/TC 9	Technical conditions of delivery and quality control	1
ECISS/TC 22	Steels for pressure purposes - Qualities	11
ECISS/TC 28	Steel forgings	7
ECISS/TC 29	Steel tubes and fittings for steel tubes	27
ECISS/TC 31	Steel castings	5

The status of harmonized standards



- | | |
|---|--|
|  Drafting |  Enquiry |
|  Formal vote |  Ratified |
|  Available | |

The status of supporting standards



■ Drafting
■ Formal vote
■ Available

■ Enquiry
■ Ratified

Harmonized Standards published in 2004

Reference	Title	CEN/TC	Piblication date
EN ISO 4126-1:2004	Title: Safety devices for protection against excessive pressure - Part 1: Safety valves (ISO 4126-1:2004)	CEN/TC 69 Industrial valves	2004-02-15
EN ISO 4126-4:2004	Title: Safety devices for protection against excessive pressure - Part 4: Pilot operated safety valves (ISO 4126-4:2004)	CEN/TC 69 Industrial valves	2004-02-15
EN 593:2004	Title: Industrial valves - Metallic butterfly valves	CEN/TC 69 Industrial valves	2004-02-25
EN 287-1:2004	Title: Qualification test of welders - Fusion welding - Part 1: Steels	CEN/TC 121 Welding	2004-03-03
EN 14197-3:2004	Title: Cryogenic vessels - Static non-vacuum insulated vessels - Part 3: Operational requirements	CEN/TC 268 Cryogenic vessels	2004-03-10
EN ISO 15614-5:2004	Title: Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 5: Arc welding of titanium, zirconium and their alloys (ISO 15614-5:2004)	CEN/TC 121 Welding	2004-03-15
EN ISO 4126-5:2004	Title: Safety devices for protection against excessive pressure - Part 5: Controlled safety pressure relief systems (CSPRS) (ISO 4126-5:2004)	CEN/TC 69 Industrial valves	2004-03-15

Harmonized Standards published in 2004

Reference	Title	CEN/TC	Piblication date
EN 10216-1:2002/A1:2004	Title: Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 1: Non-alloy steel tubes with specified room temperature properties	ECISS/TC 29 Steel tubes and fittings for steel tubes	2004-03-17
EN 10216-2:2002/A1:2004	Title: Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 2: Non-alloy and alloy steel tubes with specified elevated temperature properties	ECISS/TC 29 Steel tubes and fittings for steel tubes	2004-03-17
EN 10216-3:2002/A1:2004	Title: Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 3: Alloy fine grain steel tubes	ECISS/TC 29 Steel tubes and fittings for steel tubes	2004-03-17
EN 10216-4:2002/A1:2004	Title: Seamless steel tubes for pressure purposes - Technical delivery conditions - Part 4: Non-alloy and alloy steel tubes with specified low temperature properties	ECISS/TC 29 Steel tubes and fittings for steel tubes	2004-03-17
EN 13445-6:2002/A1:2004	Title: Unfired pressure vessels - Part 6 :Requirements for design and fabrication of pressure vessel and vessel parts constructed of spheroidal graphite cast iron - Annex D Assessment of fatigue life	CEN/TC 54 Unfired pressure vessels	2004-04-28
EN ISO 15613:2004	Title: Specification and qualification of welding procedures for metallic materials - Qualification based on pre-production welding test (ISO 15613:2004)	CEN/TC 121 Welding	2004-06-15

PE Major Product Standards

CEN/TC 54:

- EN 13445:2002 series "Unfired Pressure Vessels" (7 parts)

CEN/TC 269:

- EN 12952:2001 series "Water-tube boilers and auxiliary installations" (16 parts)
- EN 12953:2002 series "Shell boilers" (13 parts)

CEN/TC 267

- EN 13480:2002 series "Metallic industrial piping" (8 parts)

Unfired Pressure Vessels

Reference	Title	Status
EN 13445-1:2002	General	Harmonized (Type 1)
EN 13445-1:2002/prA1	General - DBA	Harmonized (Type 1)
EN 13445-2:2002	Materials	Harmonized (Type 1)
EN 13445-2:2002/prA1	Materials - Part 2: DBA	Harmonized (Type 1)
EN 13445-3:2002	Design	Harmonized (Type 1)
EN 13445-3:2002/prA1	Design - Creep	Harmonized (Type 1)
EN 13445-3:2002/prA2	Design - Design by experimental methods	Harmonized (Type 1)
EN 13445-3:2002/prA3	Design - Alternative Route	Harmonized (Type 1)
EN 13445-3:2002/prA4	Design-Reinforced and toroidal bellows in fixed tubesheet Heat Exchangers	Harmonized (Type 1)
EN 13445-3:2002/prA5	Design -Openings in shells	Harmonized (Type 1)
EN 13445-3:2002/prA6	Design -Flat ends amendment	Harmonized (Type 1)
EN 13445-3:2002/prA8	Design-Flat walls supported by stays, stay tubes and other reinforcing elements	Harmonized (Type 1)
EN 13445-3:2002/prA10	Design-Flanges	Harmonized (Type 1)

Reference	Title	Status
EN 13445-4:2002	Fabrication	Harmonized (Type 1)
EN 13445-4:2002/prA1	Fabrication - DBA	Harmonized (Type 1)
EN 13445-5:2002	Inspection and testing	Harmonized (Type 1)
EN 13445-5:2002/prA1	Inspection and testing - DBA	Harmonized (Type 1)
EN 13445-5:2002/prA2	Inspection and testing- proof test	Harmonized (Type 1)
EN 13445-5:2002/prA3	Inspection and testing- NDT of specific welds in particular single run welds	Harmonized (Type 1)
EN 13445-6:2002	Requirements for the design and fabrication of pressure vessels and pressure parts constructed from spheroidal graphite cast iron	Harmonized (Type 1)
EN 13445-6:2002/A1:2004	Requirements for design and fabrication of pressure vessel and vessel parts constructed of spheroidal graphite cast iron - Annex D Assessment of fatigue life	Harmonized (Type 1)
EN 13445-6:2002/prA2	Requirements for the design and fabrication of pressure vessels and pressure parts constructed from spheroidal cast iron	Harmonized (Type 1)
CR 13445-7:2002	Guidance on the use of the conformity procedures	Supporting
prEN 13445-8	Additional requirements for pressure vessels of aluminium and aluminium alloys	Harmonized (Type 1)

Water-tube boilers and auxiliary installations

Reference	Title	Status
EN 12952-1:2001	General	Harmonized (Type 1)
EN 12952-2:2001	Materials for pressure parts of boilers and accessories	Harmonized (Type 1)
EN 12952-3:2001	Design and calculation for pressure parts	Harmonized (Type 1)
EN 12952-4:2000	In-service boiler life expectancy calculations	Supporting (type 2)
EN 12952-5:2001	Workmanship and construction of pressure parts of the boiler	Harmonized (Type 1)
EN 12952-6:2002	Inspection during construction; documentation and marking of pressure parts of the boiler	Harmonized (Type 1)
EN 12952-7:2002	Requirements for equipment for the boiler	Harmonized (Type 1)
EN 12952-8:2002	Requirements for firing systems for liquid and gaseous fuels for the boiler	Harmonized (Type 1)
EN 12952-9:2002	Requirements for firing systems for pulverized solid fuels for the boiler	Harmonized (Type 1)
EN 12952-10:2002	Requirements for safeguards against excessive pressure	Harmonized (Type 1)
prEN 12952-11	Requirements for limiting devices of the boiler and accessories	Harmonized (Type 1)
EN 12952-12:2003	Requirements for boiler feedwater and boiler water quality	Supporting (type 2)
EN 12952-13:2003	Requirements for flue gas cleaning systems	Supporting (type 2)
EN 12952-14:2004	Requirements for flue gas DENOX-systems using liquified pressurized ammonia and ammonia water solution	Harmonized (Type 1)
EN 12952-15:2003	Acceptance tests	Supporting (type 2)
EN 12952-16:2002	Requirements for grate and fluidized-bed firing systems for solid fuels for the boiler	Harmonized (Type 1)

Shell boilers

Reference	Title	Status
EN 12953-1:2002	General	Harmonized (Type 1)
EN 12953-2:2002	Materials for pressure parts of boilers and accessories	Harmonized (Type 1)
EN 12953-3:2002	Design and calculation for pressure parts	Harmonized (Type 1)
prEN 12953-3/prA1	Design and calculation for pressure parts	Harmonized (Type 1)
EN 12953-4:2002	Workmanship and construction of pressure parts of the boiler	Harmonized (Type 1)
EN 12953-5:2002	Inspection during construction, documentation and marking of pressure parts of the boiler	Harmonized (Type 1)
EN 12953-6:2002	Requirements for equipment for the boiler	Harmonized (Type 1)
EN 12953-7:2002	Requirements for firing systems for liquid and gaseous fuels for the boilers	Harmonized (Type 1)
EN 12953-8:2001	Requirements for safeguards against excessive pressure	Harmonized (Type 1)
prEN 12953-9	Requirements for limiting devices of the boiler and accessories	Harmonized (Type 1)
EN 12953-10:2003	Requirements for feedwater and boiler water quality	Supporting (type 2)
EN 12953-11:2003	Acceptance tests	Supporting (type 2)
EN 12953-12:2003	Requirements for grate firing systems for solid fuels for the boiler	Harmonized (Type 1)
prEN 12953-13	Operating instructions	Harmonized (Type 1)

Metallic industrial piping

Reference	Title	Status
EN 13480-1:2002	General	Harmonized (Type 1)
EN 13480-1:2002/prA1	General	Harmonized (Type 1)
EN 13480-2:2002	Materials	Harmonized (Type 1)
EN 13480-3:2002	Design and calculation	Harmonized (Type 1)
EN 13480-3:2002/prA1	Design and calculation - Calculation Method for Large openings	Harmonized (Type 1)
EN 13480-3:2002/prA2	Design and calculation - application of the design rules for gasketed circular flange connections	Harmonized (Type 1)
EN 13480-4:2002	Fabrication and installation	Harmonized (Type 1)
EN 13480-5:2002	Inspection and testing	Harmonized (Type 1)
EN 13480-6:2004	Additional requirements for buried piping	Harmonized (Type 1)
prEN 13480-6/prA1	Additional requirements for buried piping - Sizing of buried piping	Harmonized (Type 1)
CEN/TR 13480-7:2002	Guidance on the use of conformity assessment procedures	Supporting (type 2)
prEN 13480-8	Additional requirements for aluminium and aluminium alloy piping	Harmonized (Type 1)

CEN/TC 121

- Destructive and Non-destructive tests on welds
- Specification and approval of weld procedures
- Approval testing of welders
- Recommendations for welding metallic materials
- Recommendation for joint preparation
- Basic welded joint details in steel
- Brazing



Welders :

- The Vienna agreement was broken for prEN ISO 9606-1 so that it has become **EN 287-1:2004** “Qualification test of welders - Fusion welding - Part 1: Steels”



- **prEN ISO 9606-2** “Qualification test of welders - Fusion welding - Part 2: Aluminium and aluminium alloys (ISO/FDIS 9606-2:2004)” will **replace EN 287-2**

This standard was submitted to formal vote on the 2004-06-17

Welding procedures

- EN ISO 15607 is the “general” standard replacing 288-1
- Welding procedure specifications will be covered by EN ISO 15609 series
- Qualifications will be covered by (EN 15610, EN 15611, EN 15612 and EN 15613)
- Welding procedure tests will be covered by the prEN ISO 15614 series
- Only welding procedure tests standards (except for cast iron) and the standard EN ISO 15613 will be cited in the OJ

Some examples

New standards	Title of new standards	Replacing:
EN ISO 15607:2003	Specification and qualification of welding procedures for metallic materials - General rules (ISO 15607:2003)	EN 288-1:1992
prEN ISO 15609-1	Specification and qualification of welding procedures for metallic materials - Welding procedure specification - Part 1: Arc welding (ISO/FDIS 15609-1:2003)	EN 288-2:1992
EN ISO 15614-1:2004	Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1:2004)	EN 288-3:1992
EN ISO 15612:2004	Specification and qualification of welding procedures for metallic materials - Qualification by adoption of a standard welding procedure (ISO 15612:2004)	EN 288-7:1995

“Materials” standards

ECISS/TC	EN series	Steel
10	10163	Structural
22	10028 eg part 2	elevated temp.
28	10222	Forgings
31	10213	Castings
29	10216	Seamless
29	(10217)	Welded tubes



ECISS/TC 9

Standards for material inspection and documentation



EN 10168: Iron & Steel products
Inspection documents

EN 10204 Metallic materials – Types of
inspection documents (undergoing
revision)

Some non-ferrous materials

TC 132 Aluminium and its alloys



TC 133 Copper and its alloys

TC 210 Glass Reinforced Plastic tanks and vessels including GRP materials''

Achievements

- ✓ Pressure Vessels EN 13445 series; Help Desk
- ✓ Boilers EN 12952 and 12953 series
- ✓ Industrial pipework EN 13480; Help Desk
- ✓ Materials standards
- ✓ Specialist applications standards: GRP, Cryogenics



Amendment, revision, maintenance

- Amendment, revision : new technology
- Maintenance :
specific procedure for EN 13445,
EN 13480, EN 12952 and EN 12953
because of the complexity of the standards for :
 - correction of potential errors and mistakes;
 - answering queries raised by users.





The Promotion of Pressure Equipment Standards



- CEN does not sell standards but encourages their use
- The promotion of standards is to the benefit of all, especially the NSBs
- Ways of promoting are:



- Writing “case studies” on the success of manufactures using ENs
- Being present at important conferences (speakers, booths)
- Publishing articles on important standards
- Organising workshops/conferences
- Developing help desks
- ...

Promotion of standards outside Europe: Visibility Fund

The European Commission Services' *Visibility Fund* for co-financing projects aimed at the promotion of standards outside Europe has been used in 2004 for four projects :



- Presentation of the Design Criteria of EN 13445 During the 57th Annual Assembly of the International Institute of Welding (IIW), Osaka (Japan) 11-16 July 2004; This includes 16 presentations from European experts;

- Presentation of the European position on sealing technology, creep damage and repairs at the Pressure Vessel Research Council Meetings of April 5-8, 2004 in Savannah, Georgia, USA.; by Guy Baylac;
- Presentation of the results of the “Comparative Study on Pressure Equipment Standards” at the ASME PVP Conference 2004, July 25 –29, San Diego, CA, USA, by Prof. Josef Zeman TUW (Vienna, Austria);
- Lectures at the Pressure Vessel Association of China, and the East China University of Science & Technology in September 2004, by John Darlaston





Conclusions

- The CEN work programme supporting the PED has well progressed
- Some gaps should be filled:
 - Harmonized standards for Cast Iron are still an omission
 - Develop copper and aluminium material standards for pressure purposes
- CEN looks forward for the Completion of mandated programme
- Major product standards are available and need to be used more by industry



- Extension of EN 13445 to:

- The creep range

- Aluminium

- Design by experiments

- others

Is ongoing (all will be completed by 2006)

- CEN looks to further improve competitiveness of ENs

- And to promote EN standards



Useful Websites

- **PED Text and Guidelines (hyperlinked)**
<http://ped.eurodyn.com>

 **www.europa.eu.int/comm/enterprise/newapproach/standardization/harmstds/reflist/equippre.html**

- **CEN Website**
<http://www.cenorm.be>
- **CEN contact person for pressure equipment:**
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