



W elcome from the Chairman

A new Board of Directors is in operation since last April 2017 and a new organization of the Association is now available and active to support needs, innovation and competitiveness of the European Pressure Equipment Industry. The major objectives of EPERC is to manage and support R&D to answer different questions, as:

- what are the gaps and needs in Pressure Equipment Industries? In particular the new needs associated to "renewable" and "innovation"?
- what are the differences with other international similar Codes or Practices? What's the background and justification of these differences? What's the situation of Pressure Equipment EN Standards versus new needs?
- how to support European Pressure Equipment Industry?
- How to develop R&D on Pressure Equipment for this important Industry in Europe?

The major orientation is to work with the key actors, like EU, including JRC, like EIT, like CEN including all the Pressure Equipment Technical Committees, with European Companies concerned by Pressure Equipment, to develop, to share and to manage R&D projects, in order to propose improvements of European Codes & Standards and to guarantee knowledge transfer, innovation and competitiveness.

All interesting parties from any EU country, concerned with Pressure Equipment, are welcome to contribute, to shear experience, to ask questions or to make suggestions for areas that need development and dedicated R&D programs for short and long term applications.

In addition to this basic activities, EPERC will be in touched with similar organizations in the world like USA, Japan, Korea, India, China... to promote the EU Pressure Equipment Industry.

If you have any needs, ideas or R&D topics suggestion around Pressure Equipment (PE), please be free to send an email to EPERC or join the EPERC General Assembly on May 17, 2018 in Ghent (close to Brussels).

EPERC Chairman
Claude Faidy

EPERC Mission, Aims and Objectives

Mission: Co-ordinate, develop and promote the common technical interests and strategies of European industry with regard to pressure equipment industry innovation and competitiveness through:

- R**esearch in relation with the international context and European institutions,
- E**xchange of industry experience in design, materials, fabrication, use, inspection, monitoring, safe life assessment ...
- I**mprove the Codes and Standards by providing industry and research information, data and competitive rules.

Aims: Safeguard and represent the technical and economic interests of industries in Europe that rely on pressure equipment; facilitate the free trade of pressure equipment and common in-service requirements across borders at international and European level to assure safety and competitiveness through recognition of standards and recommended practices with associated background; promote and encourage co-operation through research and exchange of industry experience among the EPERC Stakeholders (Members) with an interest in the design, material, manufacture, examination and fitness for service analysis, inspection, monitoring, repair-replacement of pressure equipment for innovation in new technologies; perform and promote R&D projects to assure European competitiveness improvement of Pressure Equipment Industry

Objectives: Identify the needs for research and innovation and make pressure vessel industry safer, innovative and competitive through the exchange of industry experience and dedicated Technical Task Groups; establish priorities, timescales, scope and funding requirements; launch joint research and collaborative programs and activities based on needs identification; support the implementation of the joint projects, collaborative programs and activities; disseminate research results and industry experience, through different medium as e-learning, and facilitate the transfer of technology into practice; assist and advise authorities involved with legislation, standards and other issues concerning pressure equipment at the European level.

EPERC strategy

- **C**onsider all the Pressure Equipment actors: end users, designers, manufacturers, material organization, maintenance organization, professional institutes, R&D organization and Universities
- **B**e in touch with all the EU organization involved in any particular aspect of Pressure Equipment
- **R**emain closely in touch with EU organization: EC, EIT, JRC, CEN and all Pressure Equipment Technical Committees
- **I**ncrease number of topics to be considered for R&D programs and European Codes & Standards improvements

The major work will be attached to:

- **Thematic Task Groups** with a dedicated technical program (charter), form by a group of voluntary active members to express needs and to propose Technical Reports and R&D management
- **Regular Thematic Technical Seminars**, 1 to 3 days, open to members and visitors, minimum one every 6 months, to make a status on Gaps, Needs and recent program Results on a dedicated technical topic
- **International Conference**, minimum every 2 years, 3 to 5 days, to exchange at the International level on State of the Art in Pressure Equipment Technology, to promote European Pressure Equipment Industry, to compare existing international Codes & Standards
- **Training courses, master classes, summer school** proposals on different aspects of Pressure Equipment
- **Communication and Documentation**: major exchanges will be done through EPERC website (a new version is in preparation): www.eperc-aisbl.eu

The number of face to face meetings will be limited using in priority phone call conference or web-seminars as alternatives

All the historical and new EPERC Reports will be downloaded on the website very soon; all other free reports from any member could be also downloaded on the website, after BOD agreement.

EPERC Organization

Board of Directors (BOD)	Communication, Documentation and website
Members	
Thematic Task Group (TG) 1 to 10... with a TG Chairman in charge of TG management, a group of members, a charter and a list of potential R&D projects	
Periodic Thematic Seminars : - around existing active TG or New Topics, to develop State of the Art achievement and discuss potential needs for new programs	
International EPERC Conference on present and future Pressure Equipment Technical Activities status and associated needs to support: Safe, Competitive and Innovative Pressure Equipment and Renewable Industries	

EPERC Task groups running

Fatigue: in connection with EN13445 for Vessel first, and later with EN13480 for Piping systems; what's the detail background of existing rules, how to compare them with other Codes (non-nuclear and nuclear), how to consider different environments in fatigue analyses, what's the level of margins and conservatism attached to different rules, what kind of complementary R&D is needed...

Non Destructive Test as alternative to hydro proof tests: after analyses of a large questionnaire reviewing the different practices at the EU level, some practical proposals will be done for operating plants

In series produced pressure equipment: many specific aspects to the "series" aspects will be analyzed for practical proposals

Bolted Flange: (new task group, to be started at the next General Assembly) starting by an example of innovative bolted flange (lightweight, leak tightness assure by metallic seal, large case by case experience in many different industry...), and move to leak tightness criteria, gasket properties and design rules for EN 13445, EN13480, EN1591... in accordance with corresponding CEN TC 74, 54 & 267

The corresponding deliverables will be: different Code comparisons, background of existing rules and proposal to improve these rules with CEN TC's, gaps and needs identification and recommended practices associated to R&D programs

EPERC Potential R&D Task Groups

(generally in connection with corresponding CEN Technical Committee)

- **EN13445 Background:** Updated version for Vessel design rules in connection with TC 54
- **Piping design rules** in connection with TC 267 in order to enlarge the scope for innovation and renewable energy applications; for example piping system design rules under high level dynamic loads and strain criteria...
- **Hydrogen PE** and specific aspects of interaction of the pressure boundary with hydrogen
- **High pressure PE:** pressure greater than 500 bar (50 MPa) and consequences on design, construction or operation of these PE
- **High temperature PE:** temperature greater than 450°C and consequences on design, construction or operation of these PE due to creep and interaction with other damages as fatigue, plastic shakedown or buckling
- **Cryogenic PE:** temperature less than 0 °C and consequences on design, material and construction or operation of these PE
- **New welding procedure** and associated requirements
- **New NDE Techniques** and associated requirements

- **Non-metallic PE:** started by High Density Polyethylene Pipe to develop a dedicated appendix to EN 13480 for design, material, fabrication and installation, tests and operation guidelines attached to EN13480 through dedicated Appendix in connection with TC 267 & 155
- **Non-steel PE:** aluminum, copper, titanium... to be defined with end users, and material and manufacturer companies of corresponding PE
- **Non-linear design rules of PE:** development of limit load and elastic-plastic analyses rules for plastic collapse, instability, local failure, fatigue, ratchetting and plastic shakedown for vessels and piping systems to improve EN 13445 and 13480 standards
- **Fitness for Service and Risk Based Decision making:** toward a European Procedure consistent with existing Procedures, like RIMAP, API, ENIQ...
- **Defect evaluation rules:** cracks, thinning areas, leak before break...
- **New materials** for new innovative PE application
- **New welding techniques:** heat treatment and Repair technology for PE in operation
- **New NDE Techniques** and requirements
- **Specific needs for high safety application** as Nuclear, Aeronautic, Space, Car, Petro-chemistry or Rail industries manufacturing and operation of PE... Any actors or interesting EU parties are welcome for any exchanges with EPERC Association, or any topic to consider: **please express your needs, your comments, your suggestions and contact us through EPERC email addresses attached**
- **Formal General Assembly** managed by EPERC BOD: EPERC status, progress and structure, financial report, TGs – Seminars – International Conference progress, Future Activities, EPERC officers election (detailed updated information on EPERC website)
- **TG meetings**
 - o Fatigue TG
 - o Alternative to Pressure Tests
 - o Bolted Flange
- **Potential and Future TGs**
 - ✓ **Seminar on Fitness for Service:** under preparation, any volunteer to receive a 2-days Seminar is welcome and has **to contact EPERC Operating Agent**
 - ✓ **1st EPERC International Conference**
 - o **Title:** "Innovation and Safety of PE"
 - o **General topics:** Innovation – Competitiveness- Renewable- Design, Construction, Protection and Operation of Pressure Equipment
 - o (1) Codes & Standards; (2) Linear and Nonlinear Design & Analysis; (3) Bolted Joints, flanges and sealing; (4) Non-pressure Loads Engineering; (5) Degradation mechanisms: fatigue, corrosions, thermal ageing, vibration, water hammer...; (6) High Pressure Technology; (7) High Temperature Technology; (8) Cryogenic Technology; (9) Hydrogen Technology; (10) Plastic Pipe Technology; (11) Nuclear Technology; (12) Computer Technology; (13) New Materials & Manufacturing & Welding; (14) Additive Manufacturing & 3D Technologies; (15) Non-Destructive Examination; (16) Serially Produced PE; (17) Operations, Applications, & Components; (18) Fitness for Service and Risk based inspection
 - o **Conference Chairman:** Andrea Tonti – INAIL
 - o **Location:** **INAIL, Roma, Italy**
 - o **Date:** **April 1-3, 2019**

Upcoming Events

- ✓ **2018 EPERC General Assembly + TG meetings**
- **Date:** **May 17, 2018**
- **Location:** **SIRRIS, Technologiepark 935, 9052 Zwijnaarde, Ghent, Belgium**
(very close to Brussels)

All members and interesting parties will be welcome to this GA + TGs meeting and can check updated information on EPERC website.

Save the date and connect to EPERC website for detailed program, call for paper (**before June 30, 2018**) and regular updated information

How to contact us?

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For Information

(to be periodically updated)

Pressure Equipment EN Standards

MATERIALS

EN 10028 - Flat products made of steels for pressure purposes
EN 10216 - Seamless steel tube for pressure purposes
EN 10217 - Welded steel tube for pressure purposes
EN 10222 - Steel forgings for pressure purposes

PERMANENT JOINING

EN ISO 9606 - Approval testing of welders – Fusion welding
EN ISO 15614 - Specification and qualification of welding procedures for metallic materials

PRODUCTS

EN 286 - Simple pressure vessels
EN 378 - Refrigerating systems and heat pumps – Safety and environmental requirements
EN ISO 4126 - Safety devices for protection against excessive pressure
EN 12516 - Industrial valves – shell design strength
EN 12952 - Water tube boilers
EN 12953 - Shell boilers
EN 13445 - Unfired pressure vessels
EN 13480 - Industrial piping
EN 14276 - Pressure equipment for refrigerating systems and heat pumps
EN 13458 - Cryogenic vessels – Static vacuum insulated vessels

CEN Pressure Equipment Technical Committees

CEN/TC 23 - Transportable gas cylinders
CEN/TC 47 - Atomizing oil burners and their components - Function - Safety - testing
CEN/TC 54 - Unfired pressure vessels
CEN/TC 57 - Central heating boilers
CEN/TC 58 - Safety and control devices for gas burners and gas-burning appliances
CEN/TC 69 - Industrial valves
CEN/TC 70 - Manual means of fire fighting equipment
CEN/TC 74 - Flanges and their joints
CEN/TC 79 - Respiratory protective devices
CEN/TC 121 - Welding
CEN/TC 131 - Gas burners using fans
CEN/TC 132 - Aluminium and aluminium alloys
CEN/TC 133 - Copper and copper alloys
CEN/TC 138 - Non-destructive testing
CEN/TC 155 - Plastics piping systems and ducting systems
CEN/TC 182 - Refrigerating systems, safety and environmental requirements
CEN/TC 185 - Fasteners
CEN/TC 190 - Foundry technology
CEN/TC 194 - Utensils in contact with food
CEN/TC 210 - GRP tanks and vessels
CEN/TC 234 - Gas infrastructure
CEN/TC 235 - Gas pressure regulators and associated safety devices for use in gas transmission and distribution
CEN/TC 237 - Gas meters
CEN/TC 267 - Industrial piping and pipelines
CEN/TC 268 - Cryogenic vessels
CEN/TC 269 - Shell and water-tube boilers
CEN/TC 286 - Liquefied petroleum gas equipment and accessories
CEN/TC 326 - Gas supply for Natural Gas Vehicles (NVG)
CEN/TC 342 - Metal hoses, hose assemblies, bellows and expansion joints