



EPERC chairman and all the Board of Directors wish you a Happy New Year!

In 2019 EPERC a large EPERC "reconstruction" was operate and an important event take place in INAIL-Roma on April 2019, with a large success: 1st International Conference on "**Pressure Equipment Innovation and Safety**", Abstracts and Proceedings can be download from the new EPERC website, continuously in progress.

The major objectives of EPERC is to develop and manage R&D to cover different needs, as: innovation, new operating conditions, new materials and new technology to support associated Codes & Standards development of Pressure Equipment.

The major orientation is to work with the key actors at the European level, in one hand with Industry and in the other hand with CEN Standards Pressure Equipment Technical Committees, all supplemented by International Cooperation (with USA, Japan, Korea, China, Russia, India, and many other countries...).

All Companies concerned by Pressure Equipment interesting by innovation, to share knowledge and to manage R&D projects, are Welcome in EPERC! EPERC will be in the same time directly involved on knowledge transfer, training of users, development of benchmarks and practical case examples on different innovative option of Codes & Standards.

The major event beginning of 2020 is a Task Group Conference where all interesting parties will meet, topic by topic, to define a detailed program around a group of experts in the domain: January 28-29, 2020 in Milano.

If you have any needs, any initiative, any ideas or any suggestions on "Codes & Standards" or "R&D topics" around Pressure Equipment (PE), please join us at the TG Conference in Milano!

Claude FAIDY EPERC Chairman

Remember EPERC 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 Standard Technical Task Groups; establish priorities, timescales, scope and funding requirements to 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.

EPERC proposed tools

The major EPERC activities are 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 Define and Manage different R&D programs
- **Regular Thematic Technical Seminars**, 1 to 3 days, open to members and visitors, to make a status on Gaps, Needs and recent program Results on a dedicated technical topic in order to check R&D needs
- **International Conference**, 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**: major exchanges will be done through EPERC website (a new version under regular development): 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

- **Reports and Documentation:**

All the historical (since 1995) 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	
<p>Thematic Task Group (TG) 1 to 19... with a TG Chairman in charge of TG management, a group of members, a charter and a list of potential R&D projects</p>	
<p>Periodic Thematic Seminars : around existing active TG or New Topics, to develop State of the Art achievement and discuss potential needs for new programs</p>	
<p>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</p>	

EPERC Task groups running or close to open

- **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, as all type of weld joint fatigue reduction factors or how to consider plasticity and cyclic nonlinear material constitutive equations (in connection with EPERC TG on Nonlinear Design Rules)...
- **Non Destructive Testing 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 alternatives
- **Bolted Flange**: a task group will start during the Milan TG Conf. 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. Potential new topic: "fugitive emission"
- **Nonlinear Design Rules**: after a large comparison of existing rules in International Codes, a task group will be launched during the Milan TG Conf. to develop limit load and elastic-plastic analyses rules for monotonic loads (plastic collapse, plastic instability, fatigue plasticity amplification factor, local failure and rupture analysis) and cyclic loads (plastic shakedown and fatigue). 2 methods are proposed with material properties, criteria and margins: limit load analysis and direct elastic-plastic analyses

Many new partners have join us recently with 2 major requirements:

- a slight enlargement of the scope to nonlinear fracture mechanic and bolted flange nonlinear analysis
 - a dedicated experimental program to support different methods and material constitutive equations is under definition and will be launched during the Milan TG Conf.
 - **Additive Manufacturing**: new task group will start during the Milan TG Conf. to define how to use this technology for Pressure Equipment in connection with CEN TC 438 and what are the major R&D needs.
 - **Creep Design Rules**: temperature greater than 450 °C and consequences on design, construction or operation of these PE due to creep (including negligible creep criteria) and interaction with other damages as fatigue, plastic shakedown or buckling
 - **Fitness for Service and Risk Based Decision making**: toward a European Procedure consistent with existing Procedures, like RIMAP, API, ENIQ, ASME-RIM... including **Defect evaluation rules**, as cracks, thinning areas, leak before break... 3 parts in this TG: no-creep condition, creep condition and Risk Based Inspection
 - **The corresponding deliverables of each Task Group** will be: different International Code comparisons, review background of existing rules and proposal to improve these rules with CEN TC's, gaps and needs identification for new innovative use, recommended practices associated to R&D programs and Standards Code Cases proposals in accordance with EN PE Technical Committee.
- ### EPERC Potential other Task Groups
- (Generally in connection with corresponding CEN Pressure Equipment Technical Committee)
- **Nuclear-Non nuclear bridge**: new task group will be defined soon with 2 major objectives:
 - how to consider seismic event for non-nuclear plants
 - how to use non-nuclear pressure equipment Codes & Standards for Safety application as valves, pumps and heat exchangers
 - **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**: specific rules for pressure greater than 500 bar (50 MPa) and consequences on design, construction or operation of these PE

- **PE recertification:** rules for the certification of old pressure equipment, originally designed according to the National rules of the single member States and/or rules for the certification after relevant modifications of CE pressure equipment
- **Cryogenic PE:** temperature less than 0 °C and consequences on design, material and construction or operation of these PE
- **New NDE Techniques** and associated requirements in accordance with to-day State of the Art, including potential use of drone and robot to perform ISI
- **New fabrication process** and associated requirements in accordance with to-day State of the Art
- **Non-metallic PE:** started by High Density Polyethylene Pipe to develop a dedicated appendix to EN 13480 (in connection with TC 267 & 155) for design, material, fabrication, installation, tests and operation guidelines
- **Non-steel PE:** aluminum, copper, titanium... to be defined with end users, and material and manufacturer companies of corresponding PE
- **New materials** for new innovative PE application, as high pressure, high temperature...
- **New welding techniques:** Heat Treatment and Repair technology for PE in operation, for Construction and Repair Technology as Excavation or different Repair constraints, in accordance with to-day State of the Art
- **Specific needs for high safety application** on design, manufacturing and operation of PE, as Nuclear, Aeronautic, Space, Car, Petro-chemistry, Rail, Medical or other specific industries, as Leak Before Break or Incredibility Of Failure or Reliability approach of Pressure Systems for Design, Manufacture and Operation...
- **Any other TG can be proposed by group of volunteers under BOD agreement**

EPERC Recent Events

- ✓ **EPERC and ASME – ST LLC meeting**
 - Bolted flange and Sealing, Hydrogen, Creep, Ratcheting, Codes and Standards status and on-going development...
 - The program of the November 2019 Code Week and the EPERC presentation will be downloaded soon on EPERC website
- ✓ **EPERC CORDEL-CSTF meeting**
 - The Minutes of the September 2019 Code & Standard Task Force and the EPERC presentation to the meeting will be downloaded soon on EPERC website
- ✓ **EPERC participation to UIA Conference**
 - Union of International Associations: 13th Round Table Europe on November 4, 2019 in Brussels

- The Minutes of the meeting will be downloaded soon on EPERC website

EPERC Future Events

✓ EPERC TGs Conference



"Operating TGs status and New TGs launching"

- **General topics covered:**
 - Innovation – Competitiveness- Renewable
 - Codes & Standards, Design and Fabrication, Non-Destructive Examination and In Service Inspection in Operation, Fitness for Service and Risk based inspection, Degradation mechanisms, Additive Manufacturing, Drones & Robots for Inspection...
 - EPERC and SNETP (Suitable Nuclear Energy Technical Platform)
- **Location:** INAIL, Milano, Italy
UNITA' OPERATIVA TERRITORIALE DI CERTIFICAZIONE VERIFICA E RICERCA
Corso di Porta Nuova 19
20121 MILANO (MI)
- **Date:** January 28-29, 2020
- **Updated information** is available on EPERC website
- **Registration:**
 - Each participant to Milan EPERC TGs conference has to be **EPERC member** (refer to Membership Form on EPERC website)
 - Each participant has to **register to the Milan Conference** using Milan Conference Registration Form on EPERC website: www.eperc-aisbl.eu.
 - Each participant who is not yet an individual member or doesn't belong to a member organization can automatically obtain an individual membership for 2020 with a 30% discount.
 - Participants to the International Conference of April 2019 in Roma have automatically obtained a complimentary membership valid up to January 31, 2020.

- Some experts can exceptionally ask to join some TG meeting through direct request to corresponding TG Chairman.
 - Develop cooperation with corresponding CEN Technical Committees
 - Prepare a "chart" for each task groups
- ✓ **In 2020, a general EPERC / CEN TC Workshop** will be organized with active and potential EPERC Task Groups and CEN Technical Committees on Pressure Equipment.

EPERC Board of Directors

- New version of the website (on-going action)
- Assure success of the 4 running TG's and the 3 new one with dedicated charters; be prepare to launch other TGs ...
- Develop a large group of interesting EPERC members or potential members from EU countries
- Develop a dedicated action toward "Universities"

Action Plan

- Define an R&D road map in each TG with some project definition in order to have some proposal for EU budget support requests (Reports or Experimental Programs)
- Define location, date and program for EPERC Seminars, if possible close to an involved EPERC member or close to a CEN Technical Committee meeting; all location proposal by any interesting parties are welcome and will be considered by EPERC BOD...
- Develop regular update information on EPERC website on Task Groups and Seminars
- Continue to develop EPERC international cooperation

If you have any needs, any initiatives, any ideas or any suggestions on "PE Codes & Standards" or "R&D topics" around Innovation on Pressure Equipment (PE)

Welcome and please Join us in the Milan EPERC TGs Conference!



How to contact us?

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