



PROPOSAL FOR REACTIVATION OF ISO/TC 11 *BOILERS AND PRESSURE VESSELS*

PROPOSER:

DATE OF CIRCULATION:

SAC

2023-08-03

CLOSING DATE FOR VOTING:

2023-10-26

A proposal for a new field of technical activity shall be submitted to the Office of the CEO (to tmb@iso.org), which will process the proposal in accordance with [ISO/IEC Directives, Part 1, Clause 1.5](#).

Furthermore, a proposal will be considered as complete if every information field is complete and follows the guidelines for proposing and justifying a new field of activity given in the [ISO/IEC Directives, Part 1, Annex C](#).

Statement from the ISO Technical Management Board (TMB)

The TMB, through [TMB resolution 54/2023](#) has chosen to postpone its decision reactivating ISO/TC 11 *Boilers and pressure vessels*. The reason for deferring the decision is to conduct an evaluation of the necessity to reactivate ISO/TC 11 and to assess the level of active participation through a consultation to all ISO Member Bodies.

TITLE

(Please see the [ISO/IEC Directives, Part 1, Annex C, Clause C.4.2](#))

Boilers and pressure vessels

SCOPE OF THE REACTIVATED TECHNICAL COMMITTEE

(Please see the [ISO/IEC Directives, Part 1, Annex C, Clause C.4.3](#))

Standardization of construction of boilers and pressure vessels.

Excluded:

- railway and marine boilers covered by ISO/TC 8;
- gas cylinders covered by ISO/TC 58;
- aircraft and vehicle components covered by ISO/TC 20;
- equipment used for fire-fighting covered by ISO/TC 21;
- personal safety equipment covered by ISO/TC 94;
- components of rotating or reciprocating devices;
- nuclear pressure equipment covered by ISO/TC 85;
- piping systems;

- cryogenic vessels covered by ISO/TC 220.

Note:

Construction is an all-inclusive term that includes design, materials, fabrication, examination, inspection, testing and conformity assessment.

PURPOSE AND JUSTIFICATION FOR REACTIVATION

(Please see the [ISO/IEC Directives, Part 1, Annex C, Clause C.4.13](#))

The boilers and pressure vessels covered by ISO/TC 11 are vital equipment in industry, no matter in electric power, petrochemical industry, light industry, or in food processing, metallurgy etc. They act as basic equipment in heating and cooling systems for homes, offices, hospitals, schools or factories. The global trading volume of boilers and pressure vessels are huge every year. And the need of setting global standards to regulate and facilitate free trade is urgent, which can improve the safety level of boilers and pressure vessels and promoting the development of the global economy.

Besides, over the past 20 years, boilers and pressure vessels have been developing to the direction of large size, severe parameters, harsh operation conditions and long running cycle. The demanding of carbon emission control is attracting more and more countries concerns, coming with lightweight design, clean and efficient combustion and green energy etc. containing new demands for boilers and pressure vessels. At the same time, the development of digital technology and artificial intelligence propels constructions of boilers and pressure vessels to be more digital, network and intelligence.

Over the past two decades, new materials and structures of boilers and pressure vessels have emerged. Welding and non-destructive testing techniques have been developed rapidly. Correspondingly, many ISs for materials, welding and non-destructive testing have been issued since the last revision of ISO 16528 published in 2007. The published ISs of ISO/TC44 (Welding and Allied Processes) and ISO/TC135 (Non-destructive Testing) are about 321 and 96, respectively. Therefore, it is time to revise ISO 16528 to encompass the latest development in the relevant fields. For example, ISO 9328 has introduced the materials and requirements from related standards of the United States, EN, and Japan etc. The guideline for using materials from different countries should be introduced in ISO 16528. Therefore, the national standards of different countries can select material according to ISO material standards(e.g. ISO 9328), which will reduce costs of products and promote international trade. Standards such as ASME BPVC in the United States and GB/T 150 in China have recognized some of each other's materials, which have greatly promoted bilateral trade.

In September 2021, The London Declaration to combat climate change through standards defines ISO's commitment to achieve the climate agenda by 2050. Recently, all secretariats received the TMB action plan "ISO standards in support of action on climate change". Boilers and pressure vessels play a significant role in improving climate change. In addition to the consideration of quality and safety, the basic requirements of energy efficiency and environmental protection are also proposed to be introduced in the standards of ISO/TC11 to keep pace with the evolvement of ISO standardization system. Besides, according to the ISO 2030 strategy, the goals of digital, sustainable etc. have also put forward new requirements for ISO/TC11. It is time to unite more countries together and reach some consensus for the common goal of sustainable development of mankind.

Due to the standby state, considering the issues of global concern, it is proposed that ISO/TC 11 could focus on standardization in three directions in the future:

(1) Fundamental standards with the basic requirements related to the quality and safety of boilers and pressure vessels. These standards can contribute to international trade and reduce manufacturing costs, such as standards on general requirements for material mutual recognition, standard welding procedure specification of pressure vessels.

(2) Deliverables related to addressing climate change. In order to meet the goals such as net zero guidelines and the London Declaration, the existing standards (ISO 16528-1 and ISO 16528-2) should be revised to include climate considerations; while new standards for improving climate changes relating to boilers and

pressure vessels could be developed, e.g. new standards about the basic requirements for energy efficiency evaluation of high energy consuming boilers and heat exchangers.

(3) Deliverables related to new types of boilers and pressure vessels, especially those used in clean energy industry, including new IS/TS/TR/PAS/IWA of construction methods, materials, and products. For example, IS/TS/TR/PAS/IWA of the design methods for new types of heat transfer and storage collector tubes and specially-shaped heat exchangers; and the performance requirements and testing methods of long-life heat transfer and storage medium such as molten salts and heat-conducting oils.

Experts related to boilers and pressure vessels from various countries shall get back together and use the platform of ISO/TC11 to give deliverables to improve safety and quality of the two products and contribute to climate change.

PROPOSED RE-ESTABLISHED PROGRAMME OF WORK

Please see the [ISO/IEC Directives, Part 1, Annex C.4.4 and C-4.5](#))

For each item, the initial work programme shall define the deliverable type and target dates. The re-established work programme shall also assign priorities to the different items.

The proposed work:

(1) Revising standards-IS

- a) Revising ISO 16528-1:2007 Boilers and pressure vessels – Part 1: Performance requirements
- b) Revising ISO 16528-2:2007 Boilers and pressure vessels- Part 2: Procedures for fulfilling the requirements of ISO 16528-1

(2) New proposals

- a) Guidelines for Mutual Recognition of Pressure Vessels Materials-IS
- b) General Requirements for Standard Welding Procedure Specification of Pressure Vessels-IS
- c) Energy Efficiency Testing and Evaluation of Plate-and-Frame Heat Exchangers-IS
- d) Energy Efficiency Evaluation of High Energy Consuming Boilers-IS
- e) Failure-based Method for Design of Internally Pressurized Ellipsoidal and Torispherical Heads-TR

Note: Due to the standby state, the chair hopes to reactivate ISO/TC11. So that ISO members can have a platform to submit new proposals and communicate with each other. Especially to climate change, boilers and pressure vessels cannot be absent.

RELATION OF THE PROPOSAL TO EXISTING INTERNATIONAL STANDARDS AND ON-GOING STANDARDIZATION WORK

- The proposer has checked whether the proposed scope of the new committee overlaps with the scope of any existing ISO or IEC committee or JTC1 sub-committee
- If an overlap or the potential for overlap is identified, the affected committee has been informed and an agreement has been reached between proposer and committee on
 - i. modification/restriction of the scope of the proposal to avoid overlapping,
 - ii. potential modification/restriction of the scope of the existing committee to avoid overlapping.
- If agreement with the existing committee has not been reached, please explain why the proposal should be approved.
- Have proposals on this subject been submitted into an existing committee and rejected? If so, what were

the reasons for rejection?

LISTING OF RELEVANT DOCUMENTS (SUCH AS STANDARDS AND REGULATIONS) AT INTERNATIONAL, REGIONAL AND NATIONAL LEVEL

(Please see the [ISO/IEC Directives, Part 1, Annex C, Clause C.4.6](#))

ISO standards:

- ISO 638 Heat treatable steels, alloy steels and free - cutting steels
- ISO 3452 Non-destructive testing — Penetrant testing
- ISO 4136 Destructive tests on welds in metallic materials - Transverse tensile test
- ISO 4761 Non-destructive testing of welds — Phased array ultrasonic testing (UT-PA) for thin-walled steel components — Acceptance levels
- ISO 5173 Destructive tests on welds in metallic materials - Bend tests
- ISO 6892-2 Metallic materials-Tensile testing Part2: Method of test at elevated temperature
- ISO 9016 Destructive tests on welds in metallic materials — Impact tests — Test specimen location, notch orientation and examination
- ISO 9328 Steel flat products for pressure purposes - Technical delivery conditions
- ISO 9934 Non-destructive testing — Magnetic particle testing
- ISO 10675 Non-destructive testing of welds — Acceptance levels for radiographic testing
- ISO 20485 Non-destructive testing — Leak testing — Tracer gas method
- ISO 50001 Energy Management

European Union directives:

- Pressure Equipment Directive PED2014/68/EU

European standards:

- EN 13445-2021 Unfired pressure vessels
- EN 12952-15: 2003. Water-tube boilers and auxiliary installations-Part15: Acceptance tests.
- EN 12953-11: 2003. Shell boilers-Part 11: Acceptance tests

American standards:

- ASME BPVC Section VIII-2023 Rules for Construction of Power Boilers
- ASME BPVC Section VIII-2023 Rules for Construction of Heating Boilers
- ASME BPVC Section VIII-2023 Rules for Construction of Pressure Vessels

British standards:

- PD 5500:2021 Specification for unfired pressure vessels
- BS 2790 Specification for design and manufacture of shell boilers of welded construction

German codes:

- AD 2000 Pressure vessel code
- Technical rules for steam boilers (TRD)
- DIN EN 483 Gas-fired central heating boilers

French code:

- CODAP: French Code for Construction of Unfired Pressure Vessel

Chinese standards:

- GB/T 150-2011 Pressure vessels
- GB/T 16507-2022 Water-tube boilers
- GB/T 16508-2022 Shell boilers
- JB 4732 - 1995 Steel pressure vessels – Standard for analysis and design

Japanese standards:

- JIS B 8201 Stationary steel boilers
- JIS B 8265 Construction of pressure vessels – General rules
- JIS B 8266 Construction of pressure vessels – Specific rules
- JIS S 3021 Oil burning water boilers

Canadian standard:

- CSA B51 Boilers, pressure vessels, and pressure piping code

Etc.

LISTING OF RELEVANT COUNTRIES WHERE THE SUBJECT OF THE PROPOSAL IS IMPORTANT TO THEIR NATIONAL COMMERCIAL INTERESTS

(Please see the [ISO/IEC Directives, Part 1, Annex C, Clause C.4.8](#))

The countries in the ISO system at present:

- 24 P-members of ISO/TC11: Algeria, Austria, Belgium, Brazil, Canada, China, Colombia, Denmark, France, Germany, India, Indonesia, Iran Islamic Republic of, Italy, Japan, Kenya, Korea Republic of, Malaysia, Romania, Russian Federation, Saudi Arabia, Ukraine, United Kingdom, United States
- 32 O-members of ISO/TC11: Argentina, Australia, Bosnia and Herzegovina, Croatia, Cuba, Czech Republic, Estonia, Finland, Greece, Hungary, Iraq, Korea Democratic People's Republic of, Mauritius, Mexico, Mongolia, Montenegro, Netherlands, New Zealand, Pakistan, Philippines, Poland, Portugal, Serbia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Tunisia, Türkiye, Viet Nam

LISTING OF RELEVANT EXTERNAL INTERNATIONAL ORGANIZATIONS OR INTERNAL PARTIES (OTHER THAN ISO AND/OR IEC COMMITTEES) TO BE ENGAGED AS LIASONS IN THIS WORK

(Please see the [ISO/IEC Directives, Part 1, Clause C.4.9](#))

- United Nations Industrial Development Organization (UNIDO)
- ISO/TC 5 Ferrous metal pipes and metallic fittings
- ISO/TC 17 Steel
- ISO/TC 21 Equipment for fire protection and fire fighting
- ISO/TC 44 Welding and allied processes
- ISO/TC 58 Gas cylinders
- ISO/TC 135 Non-destructive testing
- ISO/TC 153 Valves
- ISO/TC 192 Gas turbines
- ISO/TC 197 Hydrogen technologies
- ISO/TC 220 Cryogenic vessels

IDENTIFICATION AND DESCRIPTION OF RELEVANT AFFECTED STAKEHOLDER CATEGORIES(Please see [ISO Connect](#))

	Benefits/ Impacts/ Examples
Industry and commerce – large industry	<ul style="list-style-type: none"> • Improve design and manufacture level • Reduce construction costs • Promote trade • Control carbon emission <p>Examples:</p> <ul style="list-style-type: none"> • BASF • SINOPEC • Valero Energy Corp • etc.
Industry and commerce – SMEs	<ul style="list-style-type: none"> • Improve design and manufacture level • Reduce construction costs • Promote trade <p>Example:</p> <ul style="list-style-type: none"> • SMEs design, manufacture, inspection of boilers and pressure vessels
Government	<ul style="list-style-type: none"> • Control the quality and safety of boilers and pressure vessels • Help to realize carbon control goal <p>Example:</p> <ul style="list-style-type: none"> • National and local governments
Consumers	<ul style="list-style-type: none"> • Give guidance on how various standards around the world meet the same requirements. • Various material brands can be mutual recognition so as to save cost. • Contribute to climate changes from the aspect of boilers and pressure vessels. <p>Examples:</p> <ul style="list-style-type: none"> • Stakeholders reacted to boilers and pressure vessels.
Labour	Improve design and manufacture abilities

Academic and research bodies	<ul style="list-style-type: none"> • Promote academic communication • Promote the application of new technologies and methods related to boilers and pressure vessels <p>Example:</p> <ul style="list-style-type: none"> • Experts related to boilers and pressure vessels around the world communicate using platform of ISO/TC11.
Standards application businesses	<ul style="list-style-type: none"> • Guidance on design, manufacture, inspection and all relevant stakeholders of boilers and pressure vessels • Control and improve carbon emission <p>Examples: Any organization applying the standards</p>
Non-governmental organizations	<p>Enable NGOs that offer consulting services to adopt standards.</p> <p>Example: NGOs provide consulting services about energy control of boilers.</p>
Other (please specify)	None

EXPRESSION OF LEADERSHIP COMMITMENT FROM THE PROPOSER

(Please see the [ISO/IEC Directives, Part 1, Annex C, Clause C.4.12](#))

China is willing to undertake the work of the Secretariat and the leader of the proposed proposals may be discussed after reactivating ISO/TC11.

- The proposer confirms that this proposal has been drafted in compliance with iso/iec directives, part 1, annex c**

SIGNATURE OF THE PROPOSER

Shou Binan

COMMENTS OF THE ISO CENTRAL OFFICE(IF ANY)