



## BUSINESS PLAN

### ISO/TC 161

“Control and protective devices for gaseous and liquid fuels”

### EXECUTIVE SUMMARY

#### Scope

Standardization of safety, construction, performance and testing requirements for controls and protective devices using gaseous and liquid fuels. This includes:

- Controls for use in burners and appliances for residential, commercial and industrial applications, like:
  - automatic and semi-automatic shut-off valves;
  - pressure regulators;
  - valve-proving systems for automatic shut-off valves;
  - manual gas valves;
  - thermoelectric flame supervision controls;
  - multifunctional controls;
  - mechanical gas thermostats;
  - vent valves;
  - fuel/air ratio controls, electronic type (includes liquid fuels);
  - filters
- Controls for use in gas transmission, distribution and relevant installations like:
  - safety shut-off devices;
  - pressure regulators;

Excluded are corrosive and waste fuels and gasoline and applications which are covered by the scope of ISO/TC 67.

For the advisory group and working groups scopes see Annex A of the Business Plan.

#### Definitions

**Gaseous fuels** are natural gas (including compressed and liquefied in its gaseous state), manufactured gas or liquefied petroleum gas (LPG in its gaseous state), biomethane, hydrogen (admixture with natural gas and 100% hydrogen), synthetic and renewable gaseous fuels which are compatible for heating purposes, or their supply thereof.

**Liquid fuels** are oil, oil types (e.g. middle distillate fuel oil, crude oil, heavy fuel oil or kerosene), biofuels, synthetic and renewable liquid fuels, in their liquid state, which are compatible for heating purposes.

#### Business Environment

The business environment comprises the following aspects:

- Manufacturing of mechanical, electrical and electronic controls or a combination thereof
- Use of these controls for domestic, commercial and industrial gaseous and liquid fuel burning appliances and burners

- Use of these controls in fuel gas transmission and distribution grids (gas infrastructures)
- Manufacturing, packaging and system integration of furnaces
- Stationary combustion engines and turbines burning gaseous fuels and fuels using appliances like fuel cells
- Stakeholders involved:
  - Manufacturers of control and protective devices
  - Manufacturers of gaseous and liquid fuel burning appliances
  - Manufacturers of gaseous and liquid fuel burning burners
  - Manufacturers of engines and turbines burning gaseous fuels
  - Manufacturers of furnaces and associated thermal processing equipment
  - Gaseous and liquid fuel suppliers
  - Test laboratories and approval bodies and/or surveillance authorities as well as government and insurance representatives
  - Service personnel

### **Benefits**

- Since 2004, 16 Standards have been published (number includes updates)
- World-wide standards provide benefits to the industry in the manufacturing and certification of these controls
- Confidence of appliance manufacturers, gas suppliers, and consumers with respect to control and protective devices used in gaseous and liquid fuel relevant applications
- A wide range of controls are classified, designed and described for several applications to be referred to by the application standards

## 1 INTRODUCTION

### 1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the expected benefits of International Standards and to ensure adequate resources for projects throughout their development.

### 1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for planning, development and adoption of International Standards: [ISO](#) (International Organization for Standardization) is responsible for all sectors excluding electrotechnical standards which lie within the responsibility of [IEC](#) (International Electrotechnical Committee) and most of them are Telecommunications Technologies that are largely under the responsibility of [ITU](#) (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 165 countries (organizations representing social and economic interests at international level), supported by a central secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the [International Standard](#).

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These principles are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties and they are also supported by a public comment phase (the ISO Technical Enquiry). ISO and its [Technical Committees](#) are also able to offer ISO Technical Specification (ISO/TS), ISO Publicly Available Specification (ISO/PAS) and ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and therefore they do not have the same status as International Standard.

ISO also offers the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest which means that it is not accorded the status of an International Standard.

## 2 BUSINESS ENVIRONMENT OF THE ISO/TC

### 2.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal and social dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC and they may significantly influence how the relevant standards development processes are conducted and eventually the content of the resulting standards.

The market of control and protective devices for gaseous and liquid fuel burning burners and burning appliances is a small but special market for OEMs (Original Equipment Manufacturers) where

customers are represented by the heating appliance and burner manufacturers industry. There is no visual public market and no direct interest to consumers themselves.

The market for gaseous and liquid fuel burning burners and burning appliances progressively requires a system approach instead of a set of individual controls. Furthermore it requires covering of electronic, electrical and mechanical technology in one single standardization framework. ISO/TC161 is well positioned for this task, having all necessary expertise to develop standards for this challenge. Examples are already available within today's work program.

The use of gas from so called "unconventional sources" increases the scope of applications and has an impact on the distribution and supply channels. The distribution of Liquefied Natural Gas LNG opens the door to decentralized non pipeline connected users and almost mobile applications. Storage systems and applications are directly connected and make use of the increased supply pressure. Gas fired internal combustion engines and turbines make use of increased fuel pressure to enhance the efficiency of energy used and to reduce environmental impact.

Alternative gaseous fuels, like biomethane, hydrogen and renewables gases are increasingly foreseen as alternative fuels for the future since they all help to reduce total carbon emissions. These alternative gaseous fuels are not completely covered yet by International Standards as far as the products covered in this business sector.

Decentralized power supply in remote places needs modern fast reacting energy production to stabilize the national grid which are supporting the use of renewable, solar and wind energy.

Essential safety requirements are typically defined in national or regional legislation. Beyond that performance requirements are being defined by customers. The implementation of legal requirements is typically done via national and regional standards.

Examples are:

- Japan Gas Business Act (Act No. 51 of March 31, 1954)
- EU regulation (EU) 2016/426 of 9 March 2016 on appliances burning gaseous fuels.

The safety of burners and appliances and gas transmission, distribution grids can be realised only by means of safe and durable and reliable controls and protective devices.

The state-of-the-art equipment used in heating and heat treatment applications with gaseous and liquid fuels is tested against standards with constructional, functional and inherent safety requirements. All appliances and protective devices are type tested and manufactured in factories with quality assurance systems.

The major innovation in the field of control and protective devices is the development of combined controls which include functionality in mechanical, electrical and electronic technology using dedicated software and sensor technology. The relevant technical committee that is responsible for developing requirements for electrical and electronic technology, software and sensing technology is IEC TC 72 whose standards are referenced in ISO TC 161 series of standards. These standards are recognized and referenced in international and regional safety regulations.

The stakeholders for ISO/TC 161 are represented by the manufacturers of control and protective devices, the manufacturers of gaseous and liquid fuel burning burners and burning appliances, suppliers, test laboratories and approval bodies and/or surveillance authorities as well as government and insurance representatives.

It is desirable to harmonize safety requirements globally making use of experience gained with different applications worldwide.

Potential trade barriers consist of the world-wide different test and certification procedures which are referenced in different standards. The aim of ISO/TC 161 is to develop International Standards by integrating and harmonizing requirements from existing standards (e. g. from ANSI, CEN and JISC) if applicable and providing if necessary also new standards. This is a significant benefit for manufacturers of controls, customers and test houses.

## **2.2 Quantitative Indicators of the Business Environment**

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of ISO/TC 161:

- There is a wide market for safety and control devices due to the large number of controls and safety devices used. Export and import of controls are a matter of individual business between controls manufacturers and appliances manufacturers or installations and station assemblers, operators or users.
- The economic value of standards in this field cannot be related directly to the value of the production and the trade value of controls and safety devices. There is certainly a cost reduction for each manufacturer if he can sell his products worldwide with one test and one certificate covering all known safety aspects and all risks in using it in an appliance.
- But the savings are not only related to trade figures. Each preventable accident caused when using gaseous and liquid fuels by a certified control and protective device can save life.

## **3 BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC**

Due to the nature and the intended use of the control and protective devices in the scope of ISO/TC 161, it is an important element to reference the appropriate relevant application standards.

In this respect the work of ISO/TC 161 can provide help for those committees preparing standards for appliances burning gaseous and liquid fuels and for gas transmission/distribution networks and installations. It is not necessary to repeat all constructional, functional and safety requirements for control devices in the appliance standard.

The standards are expected to be cited as normative references in the standards of the following Committees:

- ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries"
- ISO/TC 67/SC 6 "Processing equipment systems";
- ISO/TC 67/SC 2 "Pipeline transportation systems"
- ISO/TC 70 "Internal combustion engines";
- ISO/TC 109 "Oil and gas burners";
- ISO/TC 197 "Hydrogen technologies"
- ISO/TC 244 "Industrial furnaces and associated processing equipment";
- ISO/TC 291 "Domestic gas cooking appliances";
- IEC/TC 72 "Automatic electrical controls";

ISO/TC 161 gathers information from the above-mentioned committees via liaisons.

## **4 REPRESENTATION AND PARTICIPATION IN THE ISO/TC**

### ***4.1 Countries/ISO members bodies that are P and O members of the ISO committee***

Countries and ISO Member Bodies that are P and O members of ISO/TC 161 can be found by clicking [here](#).

### ***4.2 Analysis of the participation***

All major manufacturers and some test houses concerned are represented in ISO/TC 161. The most important group is represented by the manufacturers.

The geographically oriented main market forces (i.e. North America, Europe, Asia Pacific) are represented by technical experts as well.

## **5 OBJECTIVES OF THE ISO/TC AND STRATEGIES FOR THEIR ACHIEVEMENT**

### ***5.1 Defined objectives of the ISO/TC***

ISO/TC 161 is the responsible TC for developing and maintaining a package of International Standards in the field of control and protective devices for gaseous and liquid fuels covering mechanical, electrical and/or electronic technology. These standards will cover constructional, safety and performance requirements for type testing of controls in the fuel using applications. Standards of ISO/TC 161 will define the safety classes for control functions in relation with the intended use of the control device. Standards of ISO/TC 161 will make reference to material and electrical requirements of, e.g., IEC/TC 72 standards.

Members have gained experience with the ISO/TC 161 standards during the process of adoption as national and regional standards (adapting these standards to local conditions or without modifications via e.g. ISO 23553-1 Vienna Agreement).

ISO/TC 161 is reviewing their standards on a regular basis, revise them if needed and strive for further harmonization by eliminating regional aspects. Also new knowledge is being included if applicable.

### ***5.2 Identified strategies to achieve the ISO/TC's defined objectives***

The strategy to achieve its objectives is:

- Use of available national or regional standards (such as CEN standards via the Vienna Agreement) as source documents on which International Standards are to be based including recent state of knowledge
- The way in which the ISO committees work will be conducted by correspondence, physical meetings, web-based meetings, e-mail.

## **6 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC WORK PROGRAMME**

A limiting factor is that the technical content of the standards is produced by the experts from industry and, more often than not, the work in their companies takes priority over the commitment that the expert might undertake to fulfil their role in the standards committee.

Limitations to hold physical meetings may slow down the work especially when different positions have to be harmonized / consensus have to be found.

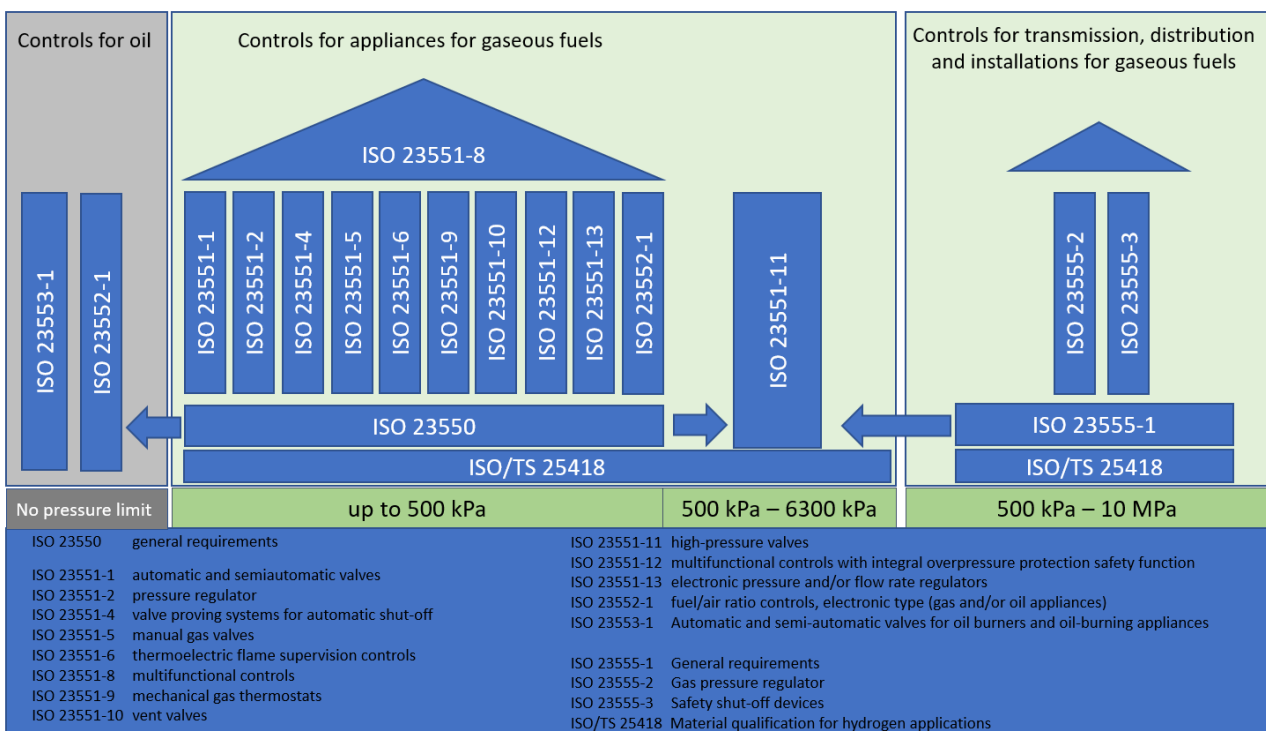
## 7 STRUCTURE, CURRENT PROJECTS AND PUBLICATIONS OF THE ISO/TC

This section gives an overview of the ISO/TC's structure, scopes of the ISO/TC's and any existing subcommittees as well as information on existing and planned standardization projects and publications of the ISO/TC and its subcommittees.

### 7.1 [Structure of the ISO committee](#)

### 7.2 [Current projects of the ISO technical committee and its subcommittees](#)

### 7.3 [Publications of the ISO technical committee and its subcommittees](#)



## Reference information

[Glossary of terms and abbreviations used in ISO/TC Business Plans](#)

[General information on the principles of ISO's technical work](#)





**Annex A – Scopes of the ISO/TC 161 advisory group and working groups**

	ISO/TC 161/AG 1	ISO/TC 161/WG 3	ISO/TC 161/WG 4	ISO/TC 161/WG 5
Title	Alternative fuels	Controls	Multifunctional controls	Transmission and distribution controls
<b>Scope</b>	<p>Assisting the chair, secretariat and working groups in tasks concerning coordination, planning and steering of the alternative fuels topic related to controls of an advisory nature</p> <p>Exchange international activities related to alternative fuels such as hydrogen in order to determine influences on controls of ISO/TC161. Determination of requirements which have to be considered and implemented in ISO/TC161 standards</p>	<p>Produce and maintain documents that specify the safety, construction and performance requirements and testing for controls for use with burners and appliances burning one or more gaseous fuels with declared maximum inlet pressures not greater than 500 kPa (5 bar) or liquid fuels with an exception for automatic and semi-automatic valves with declared maximum inlet pressures greater than 500 kPa (5 bar).</p> <p>Considering the standard of IEC/TC 72 for generic requirements in order to avoid potential overlaps and conflicts between the</p>	<p>Development of a multifunctional control device (MFC) standard and separate control function standards that include all relevant requirements as they relate to each specific function. Where a separate standard is not practical, develop an Annex to the MFC device standard, as needed, to address that function.</p> <p>Excluded are generic requirements, gas valves, liquid fuel valves, valve proving systems, vent valves and electronic fuel air ratio systems that are covered by ISO/TC 161/WG 3.</p>	<p>Development of a standard series (featuring a generic and product standard structure) that specify the safety, construction and performance requirements and testing for controls with inlet pressure greater than 500 kPa (5 bar) for use with fuel gases in gas transmission and distribution grids.</p> <p>Excluded are automatic and semi-automatic valves with declared maximum inlet pressures less than 500 kPa (5 bar) that are covered by ISO/TC 161/WG 3.</p>

		standards of ISO/TC 161 and IEC/TC 72.  Excluded are multifunctional controls that are covered in ISO/TC 161/WG 4 and liquid fuel controls that are covered in WG 6.		
<b>Standards and projects</b>		<ul style="list-style-type: none"> <li>• ISO 23550</li> <li>• ISO 23551-1</li> <li>• ISO 23551-4</li> <li>• ISO 23551-10</li> <li>• ISO 23551-11</li> <li>• ISO 23552-1</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 23551-2</li> <li>• ISO 23551-5</li> <li>• ISO 23551-6</li> <li>• ISO 23551-8</li> <li>• ISO 23551-9</li> <li>• ISO 23551-12</li> <li>• ISO 23551-13</li> <li>• ISO 23551-xx Filters</li> </ul>	<ul style="list-style-type: none"> <li>• ISO 23555-1</li> <li>• ISO 23555-2</li> <li>• ISO 23555-3</li> <li>• ISO/TS 25418</li> </ul>

Note: Following the disbanding of ISO/TC 161/WG 6, ISO 23553-1 is under the direct responsibility of ISO/TC 161.