



International Organization for Standardization  
Organisation internationale de normalisation  
Международная организация по стандартизации

## **STRATEGIC BUSINESS PLAN – ISO/TC 340**

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### **Executive summary**

The standards helped the safe development of a refuelling infrastructure for CNG and LNG vehicles. Many countries have adopted the 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 benefits expected from the availability 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 the planning, development and adoption of International Standards: [ISO](#) (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of [IEC](#) (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of [ITU](#) (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 164 countries (organizations representing social and economic interests at the 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 are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its [Technical Committees](#) are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also 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, and so 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 the content of the resulting standards:

Natural gas as fuel for vehicles plays an important role in the transition from traditional fuels towards environmentally friendly fuels. The benefit of natural gas as fuel is that it reduces the emissions and improves the local air quality. The NO<sub>x</sub> and Particle emissions which have a bad effect on local air quality and therefore on the health, are more than 90% reduced compared to traditional fuels like diesel. With respect to greenhouse gas emissions natural gas has a benefit of reducing about 20 % of the CO<sub>2</sub> emissions, but when applying biomethane up to 80 % reduction is feasible. The cooperation between industry, research institutes, branch organizations and (local) governments stimulates the growth of NGV's worldwide.

Natural gas for vehicles is already applied for many years and the role of standardization was important to harmonize equipment and improve the safety. Almost everywhere the same refuelling connector is used which improves the operability and standardizing of the production of the equipment.

Also, with respect to certifying components, the standardization has improved the safety and use of NGV's worldwide. A close cooperation with ISO/TC 22/SC41 *Specific aspects for gaseous fuels* have set a high level of test methods and certification methods for components used in NGV fuelling stations.

The update of the standards is important to adapt the standards to new insights and safety procedures. Based on incident reports, the standards can be improved.

For CNG fuelling stations, new applications can be addressed like mother daughter configurations.

While LNG is a relative new fuel for trucks, a lot of developments have taken place in the past years which have led to new insights about safety, design and operation of LNG fueling stations. Therefore, it is important to harmonize procedures (like LNG filling instruction for truck drivers).

### 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 the ISO/TC:

Figures:

The market for CNG and LNG is still growing worldwide. In 2019, the number of CNG and LNG fuelling stations reached 33 383 worldwide:

- 20 275 in Asia-Pacific
- 5 848 in Latin America
- 5 194 in Europe
- 1 856 in North America
- 210 in Africa

More than 4 000 stations are under construction or in project.

In 2019, the number of natural gas vehicles reached 27 million worldwide. The top ten countries are:

China 6 760 000

Iran 4 950 000

India 3 307 466

Pakistan 3 000 000

Brazil 1 859 300

Argentina 1 652 939

Italy 1 134 982

Uzbekistan 815 000

Colombia 579 791

Thailand 474 486

In the European Union, the number on CNG fuelling stations increased from 3 091 in 2016 to 3 642 in 2020. And the number of LNG fuelling stations increased from 80 to 332.

Also in South America, Africa and Asia, the developments for CNG/LNG fuelling stations is increasing.

A large value chain is involved in the CNG and LNG market. Vehicles are depending on a reliable fuelling infrastructure. The same equipment is used in the fuelling stations and vehicles like piping, valves and storage vessels including safety equipment.

Secondly, the use of natural gas as fuel is besides the environmental benefit very interesting for energy companies, one passenger car running on natural gas consumes the same amount of gas as 3 households. While natural gas is currently the cheapest solution as alternative fuel, there is a lot of interest in the automotive industry, aftermarket conversions, fuelling station producers and operators and governments to reduce the emissions. In addition, natural gas can be replaced by biomethane which reduces the CO<sub>2</sub> impact by 80%.

Especially for heavy duty vehicles in the long haul transport, there is currently no other alternative than LNG with respect to range and power and economic feasibility.

Also in remote locations where no infrastructure is available like mining sites or villages, CNG or LNG can be supplied in tank trailers to inject in the local gas grid or to supply a local fuelling station.

This technology is the same for LNG unloading as for fuelling stations and the ISO fuelling standard can be used for this operation as well.

### **3 Benefits expected from the work of the ISO/TC**

Five years after their publication, International standards ISO 16923 and ISO 16924 on Compressed Natural Gas and Liquefied Natural Gas fuelling stations should be updated. As natural gas as a transport fuel offers important benefits to consumers, the environment and the economy, it is indeed expected its use will continue to increase in the coming years (see figures below about the number of CNG/LNG fuelling stations and the number of natural gas vehicles). Updated and market relevant ISO standards on CNG and LNG are therefore needed.

Natural gas provides a quick and cost-effective way to decarbonize road transport and improve air quality in cities. It is an immediately available alternative to oil, with lower GHG emissions than any other hydrocarbon fuel and emitting virtually none of the pollutants (particulate matter and nitrogen oxides or NOx) that increasingly contaminate the air in areas with dense traffic. Vehicles fuelled by natural gas are quieter compared to Diesel and offer a lower total cost of ownership compared to conventional fuels. The technology used in natural gas vehicles is mature and safe. Gas as a vehicle fuel is available as compressed natural gas (CNG) and liquefied natural gas (LNG). It can be used for cars, vans, buses and trucks, with many different models on the market today from established manufactures.

Natural gas also offers important synergies with biomethane from waste and biomass or synthetic gas produced using wind and solar energy. When using renewable gas, a quasi-carbon-neutral mobility is achieved without any impact on the infrastructure and vehicle technology.

Industry will benefit from the revisions: fuelling stations designers and manufacturers but also fuelling stations operators and users. The same harmonized specifications can be used worldwide which is one of the key benefits of this standard.

Authorities will benefit as the revised standards will help to authorize new or modified fuelling stations.

The revised standards will address:

- SDG 7 clean and affordable energy
- SDG 9 industries, innovation and infrastructure
- SDG 13 climate actions

## **4 Representation and participation in the ISO/TC**

### **4.1 Membership**

<https://www.iso.org/committee/9078367.html?view=participation>

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

Natural gas fuelling stations are present in all regions and most countries, developed or developing. The participation of the countries with the highest number of stations will be encouraged.

The TC will liaise with the regional (NGVA Europe, Asia Pacific Natural Gas Vehicles Association, NGV America) associations to attract more participants. The TC will also liaise with ISO/TC 22/SC 41 covering natural gas vehicles equipment. Liaison with IEC/TC 31 Equipment for explosive atmospheres will be established. It is intended, as in current version of ISO 16923 and ISO 16924, to refer to IEC standards on explosives atmospheres developed under the responsibility of IEC/TC 31. Cooperation will also be useful with TCs covering stations for other fuels, as ISO/TC 197 for hydrogen. Cooperation will also be made with ISO/TC 193 natural gas quality.

A second focus is on the alignment of safety distances in multi fuel energy stations. Currently each standard is focusing on the own safety procedures and separation distances, It is needed to align those procedures of different fuels at a fuelling station. Because the “new” fuels are introduced at existing fuelling stations and therefore needed to be adapted.

Cooperation with CEN/TC 326 Natural gas vehicles - Fuelling and operation will be sought regarding their work on operational aspects, unloading procedures and unloading connector for fueling stations.

Since the TC will cover design, construction and operation of natural gas fuelling stations, participants should represent engineering companies designing the stations, manufacturers of equipment or stations and stations operators.

## **5 Objectives of the ISO/TC and strategies for their achievement**

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

The TC will use the work done by ISO/PC 252 and revise the 2 standards published in 2016: ISO 16923, Natural gas fuelling stations — CNG stations for fuelling vehicles, and ISO 16924, Natural gas fuelling stations — LNG stations for fuelling vehicles.

The overall objective is to update the standards to include the technical developments and experience gained since 2016. The objective is to have the 2 standards published within 3 years.

The TC will also investigate the need for additional standards in the field of natural gas fuelling stations, taking into account the work done in other TCs like ISO/TC 22/SC41.

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

The work programme will contain 2 projects: the revision of ISO 16923 and ISO 16924.

They will be developed in WG1 “CNG fuelling stations” and WG2 “LNG fuelling stations”. As in ISO/PC 252, the TC will ensure that the 2 documents keep the same structure.

CEN-CENELEC Guide 38 “Guide for multifuel stations” could also be used for covering compatibility issues with other fuels.

## **6 Factors affecting completion and implementation of the ISO/TC work programme**

The number of CNG and LNG refuelling stations is still increasing in many regions and expected to continue growing.

The TC will have to ensure taking into account new trends and technologies arising in different regions.

Regulations are also evolving in countries or regions where the market is starting or growing. These changes will also have to be taken into account.

## 7 Structure, current projects and publications of the ISO/TC

### Information on ISO online

The link below is to the TC's page on ISO's website:

<https://www.iso.org/committee/9078367.html>

Click on the tabs and links on this page to find the following information:

- About (Secretariat, Committee Manager, Chair, Date of creation, Scope, etc.)
- Contact details
- Structure (Subcommittees and working groups)
- Liaisons
- Meetings
- Tools
- Work programme (published standards and standards under development)

The TC will start with 2 projects in the work programme: revision of ISO 16923 and revision of ISO 16924.

The TC will create WG1 “CNG fuelling stations” to revise EN 16923 and WG2 “LNG fuelling stations” to revise ISO 16924. Some stakeholders will participate in both WGs but some will only participate in one.

Both revisions are expected to take 3 years to publication.

### Reference information

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

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