

# **BUSINESS PLAN**

## **ISO/TC 195**

### **Building Construction Machinery and Equipment**

#### **EXECUTIVE SUMMARY**

## **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 140 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 195

### 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: For better explication of ISO/TC 195 work an introductory note is necessary.

The scope of ISO/TC 195 encompasses the following kinds of building construction machinery:

#### 1. Machinery and equipment for concrete work

Examples are:

- batching plants,
- concrete mixers,
- concrete pumps and concrete spraying machines,
- internal and external vibrators for concrete,
- floating machines,
- formworks,
- machinery for reinforcement work
- machinery for 3-D printing of buildings and other construction related objects

NOTE: 3-D printing includes

- "Prefab": Printing under controlled conditions in buildings (constant air temperature, humidity, water temperature, etc.)
- "On-site": Outdoor printing, exposed to weather conditions (rain, sunlight, temperature variation throughout the day, season, etc.).

#### 2. Drilling- and foundation equipment

Examples are:

- Mobile drill rigs for civil and geotechnical engineering in soil or soil and rock mixture
- Horizontal directional drilling equipment (HDD)
- Foundation equipment,
- Diaphragm walling equipment,
- Jetting, grouting and injection equipment
- Interchangeable auxiliary equipment

NOTE: Rock drill rigs used in Mining, are dealt with in ISO/TC 82.

#### 3. Tunnel boring machines (TBM) and associated machines and equipment

Examples are:

- Tunnel boring machines (e.g. shielded tunnel boring machines, unshielded tunnel boring machines, telescopic shield machines, reaming machines, micro tunnelling machines, thrust boring machines, auger boring machines except for those used in mining)
- Air locks
- Rescue chambers
- Multi-Service-Vehicles (MSV's)

Excluded: road headers, continuous miners, raise boring machines, shaft boring machines, mining auger boring machines (covered by ISO/TC 82)

#### 4. Road construction machines and maintenance equipment

Examples are:

- Mobile road construction machinery
  - road-milling machines;
  - soil-stabilising machines and recycling machines;
  - compaction machines (excluding rollers);
  - paver-finishers
  - mobile feeders
  - slipform pavers and related machines.
- Mixing plants for road construction materials
  - hot Asphalt mixing plant;
  - cold mixing plant (e.g. for production of cement gravel, cold mix asphalt);
  - mixing plant for bituminous or non-bituminous reclaimed materials;
  - mixing plant for mastic asphalt, also including natural asphalt
- Road surface treatment machines
  - binder sprayer;
  - chipping spreader;
  - binder sprayer chipping spreader
  - mastic asphalt mixer
  - joint sealer
  - micro-surfacing machines/slurry machines
  - demountable equipment

#### 5. Machines and equipment to process building materials

Examples are:

- Core drilling machines on stand
- Masonry and stone cutting-off machines for job site
- Floor cutting-off machines
- Transportable wall saw and wire saw equipment for job site
- Portable, hand-held, internal combustion engine driven cut-off machines

#### 6. Machines and plants for the production of cement, lime, and gypsum, including crushing, screening, sizing and recycling

Examples are:

- single machines and processing plants
- feeding machinery
- crushing and milling machinery
- screening machinery
- cleaning, recycling, sorting and mud treatment machinery

#### 7. Machines and plant for the production of stones, slabs, pipes, prefabricated elements of concrete and calcium-silicate

#### 8. Machines and plants for mining and tooling of natural stone

#### 9. Machines and plants for manufacture of fine, heavy clay and refractory ceramics

#### 10. Machines and plants for the production, treatment and processing of flat, hollow and special glass

#### 11. Electromagnetic compatibility (JWG ISO/TC 82, ISO/TC 127, CEN/TC 151)

12

### 12.1 Road operation machinery

Examples are:

- Winter service machines
- Machines for road surface cleaning
- Highway maintenance machines

### 12.2 Snow grooming equipment

13. Access machinery and equipment (static scaffolds, mobile and hanging scaffolds, cradles)

Mentioned machinery constitutes all resting building construction equipment not covered by other ISO Technical Committees engaged in standardization work of the building construction machinery i.e. by ISO/TC 127 (earth- moving machinery), ISO/TC 96 (cranes) and ISO/TC 214 (working platforms) and ISO/TC 82 (mining).

Meanwhile many machines are designed as multifunctional and or multipurpose machines and can therefore be used in different environments (e.g. underground and above ground) It is therefore necessary to cooperate very closely with ISO/TC 127, CEN/TC 151 and ISO/TC 82, e.g. by joint-working groups.

ISO/TC 195 was established in 1989 and the first years of its activity were devoted to define machinery composing the committee's scope. In this purpose ISO/TR 12603 – “Classification” and ISO 11375: 1998 – “Building construction machinery and equipment – Terms and definitions have been developed.

NOTE: It is intended to revise both documents (ISO 11375 and ISO/TR 12603) and to merge them to a standard series containing of different parts.

In general, ISO/TC 195 aims to develop standards within its scope for:

- nomenclature;
- application;
- classification;
- ratings;
- technical requirements;
- test methods;
- safety requirements.

The committee maintains close co-operation with CEN/TC 151 – “Construction equipment and building machines – Safety”. The European safety standards can be taken as a basis for further development. As far as possible the safety standards shall be developed under the Vienna agreement (EN ISO standards), aiming to be accepted worldwide and harmonized in Europe under the machinery directive (2006/42/EC).

ISO/TC 195 has already developed and published successfully a safety standard under the Vienna agreement for " Building construction machinery and equipment — Portable, hand-held, internal combustion engine-driven abrasive cutting machines — Part 1: Safety requirements for cut-off machines for centre-mounted rotating abrasive wheels" (EN ISO 19432-1).

A second part - EN ISO 19432-2 on " Machines for abrasive chains -- Safety requirements" is under preparation.

In addition, new work items under the Vienna agreement for the development of safety standards on "Mobile road construction machinery" are already started (EN ISO 20500 Parts 1-7).

Similarly to other groups of building construction machinery the equipment constituting a scope of ISO/TC 195 has achieved a certain level of maturity and the changes in machinery design are of evolutionary character. It means that there is continual progression of new technologies into the machinery. It is expressed by: introduction of new materials (lighter, higher strength and wearing resistant), new more efficient hydraulic systems, addition electronic devices and software, better solutions with regard to safety (protection against electric shock, vibration insulation, lesser noise emission and the like risks) and new production methods relative to cheapen products (chipless forming, plastic parts in place of casted or welded ones).

One important future technology in the construction sector is the 3D-printing of buildings and other objects. This relatively new technology requires standardization work in regard to safety-relevant and product-specific aspects of the machine when used on construction sites or possibly in precast plants, especially with regard to a high degree of automation and simultaneous interaction with people/machines (Human-Machine-Interface/HMI) and construction objects.

Technical development of building construction machinery is tightly linked with its market i.e. building industry. Due to reasonable growth of building industry in last time, only the small innovations in building machinery design are observed.

Characteristic feature of the machinery composing the scope of the committee is that is produced in small – and medium – size enterprises.

The majority of the machinery is produced for sale in local or national markets.

Certain part of manufactures of equipment – constituting the scope of the committee – are highly specialized producers which export their products due to their technical advantages as reliability, high efficiency related to automation of working process or special field of use (e.g. pile drivers, concrete batching plants, concrete pumps, mortar feeders, truck mixers, crushers, screens and road building machinery) or competitive by their low prices (e.g. small size tipping drum concrete mixers, cutting-off machines, equipment for finishing works) Basic categories of stakeholders in the market of building construction machinery are: manufacturers, contractors, lending institutions, investors and individual users of small equipment. The standards drafted in ISO/TC 195 are mainly harmonized with European standards elaborated by European Committee for Standardization (CEN), particularly in respect to machine safety.

Export orientation of manufacturers of construction equipment is a great common interest to reach world-wide standards harmonization in order to reduce the technical barriers limiting the international trade.

## **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 195:

The committee has not got quantitative data representing world production composing its scope.

The size of this equipment in global scale may be assessed at 12 billion \$. This date comes from the following calculations:

- The total value of earth-moving machinery is estimated at 60 billion \$ and the value of machinery composing ISO/TC 195 scope goes to make about 20 % of this value;

- Committee for European Construction Equipment (CECE) estimated the value of construction machinery and equipment produced in Europe at 40 billion Euro in 2022. These countries represent 365 millions of habitants, approximately 1200 enterprises with 300.000 employees.

The North American, Chinese, Indian, European and Japanese markets are the largest ones for construction equipment making the scope of ISO/TC 195.

As the construction equipment market is global, a major interest in the need for ISO/TC 195 standards is to obtain global standards. The best quality equipment does not respect national boundaries and is sold all over the world, because construction works are similar each other. Majority of the standards developed in our committee are new ones, published since 2000. They dealt with terminology and classification, which constitute the base for further standardization works.

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

In the first years of ISO/TC 195 activity the major efforts had been put into preparing International Standards dealing with classification, terminology and commercial specifications of machinery that fall within the committee's scope. Classification makes better programming of standardization work. Accepted standardized terminology improves mutual understanding between manufacturers and users. Universal acceptance of unequivocal definitions of machinery and the terms related to it facilitate trade on global scale.

Establishing of universally accepted characteristic values for particular kind of machinery making the scope of the committee contributes to worldwide harmonization and facilitates communication in environment of building construction machinery.

## **4 REPRESENTATION AND PARTICIPATION IN THE ISO/TC 195**

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

Up-to-date membership status in ISO/TC 195 is as follows:

**17 P-member countries:**

AUSTRIA  
CHINA  
FINLAND  
FRANCE  
GERMANY  
INDIA  
ITALY  
JAPAN  
KOREA, REPUBLIC OF  
NETHERLANDS  
POLAND  
RUSSIAN FEDERATION  
SPAIN  
SWEDEN  
SWITZERLAND  
UNITED KINGDOM  
UNITED STATES

**16 O-member countries:**

BELGIUM  
BULGARIA  
BURUNDI  
CHILE  
CUBA  
CZECH REPUBLIC  
DENMARK  
HUNGARY  
IRAN, ISLAMIC REPUBLIC OF  
MOLDOVA, REPUBLIC OF  
PHILIPPINES  
ROMANIA  
SERBIA  
SLOVAKIA  
THAILAND  
TURKEY

***4.2 Analysis of the participation***

The participants of the committee are the national standardization bodies, which represent the manufactures that are interested in removing the barriers to trade worldwide and the bodies interested in watching of standardization progress from the point of view of consumers, to know the state of the art.

The major forces in our committee are the representatives of manufacturers, manufacturers associations and health- and safety institutions. Further representatives are users, research institutes and testing laboratories.

The committee remains in A-Liaison with the following ISO and CEN Technical Committees: ISO/TC 43, ISO/TC 82, ISO/TC 96, ISO/TC 108, ISO/TC 118, ISO/TC 127, ISO/TC 199, ISO/TC 214, CEN/TC 53, CEN/TC 151 and CEN/TC 160.

Between the International Organizations, the Committee is in liaison with the Committee for European Construction Equipment (CECE).

## **5 OBJECTIVES OF THE ISO/TC 195 AND STRATEGIES FOR THEIR ACHIEVEMENT**

### ***5.1 Defined objectives of the ISO/TC 195***

The basic objective of ISO/TC 195 is to provide a package of standards for construction machinery and equipment composing its scope, to support the manufacturers need for global trade.

The mayor importance is given to all groups of machinery in the scope of ISO/TC 195.

The theme on safety of machinery is very important for a trade and a special attention should be given to this subject. There are standards on safety of machinery developed by CEN, which should be adopted as far as possible by ISO under the Vienna agreement.

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

Priority of objectives described in 5.1 depends on the committee members' agreement. Up to the present the priority has been given according to experts discernment or manufacturers needs to have global standards. The corrections are introduced during ISO/TC 195 meetings. The committee frequently uses member bodies' national standards or documents prepared by expert's associations as a starting point for development of ISO standards. During the standards development is given attention to synchronize ISO standards with CEN ones, with the aim to avoid proliferation of definitions, terms and testing methods. Our committee conducts its work by correspondence and physical meetings of Working Groups. In case of necessity it has co-operation with other ISO committees (e.g. ISO/TC 108).

The agreement on standardization projects within Working Group is carried out writing or during meetings. Generally English language is used for correspondence and discussions at meetings.

## **6 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC 195 WORK PROGRAMME**

The only issue that presents a challenge is that the participants who have the necessary expertise are also very busy people in their normal work positions. Thus, the time available to work on the development of ISO standards is sometimes limited, delaying the production of drafts and the review and commenting on new proposals. This will not get any better unless the world economy significantly recovers to a point that reasonable profit is generated from the earth-moving machinery businesses. Government social, fiscal, monetary and taxation policies are major factors in the vitality of the earth-moving machinery industry.

As the technology becomes more advanced, the need for pre-standard research, development and verification will also become more challenging. A significant challenge will be for participants to gain approval for the industry, or government to fund such work in order to produce sound technical standards.

## **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/TCs and any existing subcommittees and information on existing and planned standardization projects, publication of the ISO/TC and its subcommittees.

### ***7.1 Structure of the ISO committee***

See ISO homepage.

### ***7.2 Current projects of the ISO technical committee and its subcommittees***

See ISO homepage.

### ***7.3 Publications of the ISO technical committee and its subcommittees***

See ISO homepage.