



BUSINESS PLAN

ISO/TC 100

Chains and chain sprockets for power transmission and conveyors

EXECUTIVE SUMMARY

General

ISO/TC 100 was established in 1960 and at present convenes Plenary meetings approximately every two years.

Scope

Standardization in the field of power transmission chains, chains and chain sprockets.

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

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:

a) General

The market for power transmission chains, conveyor chains and chain sprockets is characterised by its huge diversity and application in almost every industry, from primary manufacturers through to state of the art factories producing complex electronic components. This means that the chain products must be highly standardised, capable of operating in environmental extremes and be available in every part of the world to support replacement demand at short notice.

Chain, in all its forms, is a very mature product and standardisation work has been taking place for almost 100 years. Nevertheless, design innovations, improved manufacturing technologies and an increasing demand for solutions by new and developing industries, secure a very full standardization agenda.

The principal aim of ISO/TC 100 is to ensure that chain standards are kept up to date with these changing conditions. This is achieved in a manner that reflects the needs of the industries concerned and give assurance to end users, through the development of meaningful standards, that chain products are safe and easy to use.

b) Total market

Owing to its great diversity, the world market for chain products is very difficult to estimate. Production facilities range from bicycle chain factories supporting millions of users worldwide to thousands of other large chain and sprocket manufacturing units, each employing hundreds of people. This latter type of business will typically produce other drive system products.

The estimated annual value of the chain market is well over US \$1 billion. Sales are well distributed around the world but, as may be expected, with higher concentrations in industrialised countries.

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:

General

The chain market may be conveniently divided as follows :

- a) transmission applications;
- b) force transmitting applications (for example, in lifting applications);
- c) conveying applications.

The requirements for transmission chain are covered by ISO 606 which is based on two historic design standards that had been developed separately in the UK and the USA during the early part of the 20th century.

American standard chain is used primarily in the USA, Canada, Australia, Japan and some Asiatic countries. European standard chain dominates in Europe, Africa and Asia having a strong British historical involvement.

In Europe, around 85 % of the total market uses European standard chain. The remaining 15 % uses American standard chain which is generally found on machinery imported from countries where American standard chain dominates and where machinery manufactured in Europe is under licence from American dominated markets.

Chain based on the requirements of ISO 606 is also manufactured for special purposes. Some examples of these are :

Higher Breaking Load Chain – This chain usually has plates that undergo a special treatment, has thicker side plate material and/or pin diameters that slightly deviate from the standards;

Special Dimensions – Some chain may be a mixture of American and European standard dimensions or the inner width and roller diameters may vary, such as in motorcycle chain;

Special Applications – Special or engineered chain is manufactured for specific applications, examples being stainless steel chain, zinc or nickel plated chain, chain with plastic lubricating bushes, chain with hollow bearing pins and chain that can bend sideways.

Transmission chain is also frequently used for lifting applications but there are also specialised chain products for this purpose, primarily leaf chain for which the greatest world market is fork lift trucks.

Cranked link chain, used mainly in primary industries, is an old but still very popular product.

Conveyor chain is the most difficult to categorise since the diversity is huge. Many chains in this area of application are industry specific, such as escalator chain, chain for the sugar and cement industries and chain for steriliser plants. Others are more general purpose chains, manufactured to international standards but having special attachments fitted or are treated with various mechanical coatings to resist harsh operating environments.

Chain manufacturers with a global presence are headquartered in the USA, Europe and Asia.

Customers

The diversity of the chain market has resulted in thousands of suppliers and millions of customers world-wide, the key players being in the following areas :

- Automotive;

- Bicycle and motorcycle;
- Standard transmission products;
- Chain conveyor and automation line products;
- Cranked link and welded steel products;
- Leaf chain products;
- Agricultural products.

Major factors which may have an impact on market development

The chain market is very mature but the major emerging factor is the increasing pressure on chain users to compete in the global marketplace. This often results in a requirement for chain to run in increasingly higher load regimes, with lower factors of safety than had previously been thought possible.

Consequently, chain manufacturers have spent increasing effort on improving chain performance with the danger that some products covered by a current standard may no longer be suitable if purchased from a supplier who has not made similar improvements.

The understanding of chain performance and providing relevant requirements in the International Standards is therefore a vital issue.

3 BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC

ISO/TC100 is faced with a very large marketplace having diverse needs. One of the difficulties is to be certain that the standards developed are relevant to the requirements of the end user. A key task has been to quantify the range of chains available and set them out in a nomenclature standard. The objectives are to standardise the terminology used in the industry and to give end users a starting point in understanding the range of products that is available.

In recent years, considerable effort has also been made to incorporate fatigue test methods, working load recommendations and selection methods into the standards where, previously, only breaking load tests were specified. This will be of particular benefit to end users in selecting products which will give optimum performance without compromising health and safety, irrespective of the chosen chain supplier. It will also ensure that chain manufacturers conform to more realistic specifications.

The optimum chain selection possibilities will enable smaller design envelopes, lower mass and other related benefits, thus influencing general product design and economics.

4 REPRESENTATION AND PARTICIPATION IN THE ISO/TC

[4.1 Countries/ISO members bodies that are P and O members of the ISO committee](#)

4.2 Analysis of the participation

The constitution of ISO/TC100 includes representatives from the major chain manufacturers in Asia, Europe and the USA, together having more than 60% of the world market and covering all of the key chain types.

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

5.1 *Defined objectives of the ISO/TC*

- 1 To elaborate standards covering the selection, specification and testing of chains and sprockets for power transmission and conveyors in an efficient, timely and cost effective manner;
- 2 To ensure, through a regular programme of review, that the standards already published and available for use are kept up to date and accurately reflect the state of the art at the time of the review;
- 3 To review and adjust the work programme, as necessary, in order to ensure that prevailing and long term market needs are met;
- 4 To promote the use of an internationally recognised standard vocabulary and product definition by the elaboration of a nomenclature standard;
- 5 To introduce maximum working loads, fatigue test methods and selection methodology for chains used in health and safety related applications, i.e. principally transmission and lifting products.

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

In order to prosecute its work programme effectively, ISO/TC100 operates essentially as an administrative committee, appointing as many working groups as necessary for elaboration of the standards. A TC meeting is held once every two years to ratify and set further objectives. This structure has been chosen to enable work to continue between plenary meetings and to allow unhindered collaboration between those committee members who have a direct interest in the development of specific standards.

Although, in certain circumstances, the TC will handle a particular work item, the majority of the work is carried out in the working groups. The Convenor and the members of each working group are selected for their expertise in the subject under consideration. In general, the working groups meet annually, with the work continuing by correspondence throughout the year, as necessary. At the present time, there is no linkage with CEN in connection with the committee's work programme.

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

Although it has not been an issue to date, one of the key risks to the satisfactory completion of the work programme is the withdrawal of, or reduction in, commitment from key players.

To date, key players have always been of the highest technical calibre and have been well supported by their own companies. A critical risk is failure to achieve adequate technical resource in the future to ensure the preparation of relevant 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

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*](#)