



## BUSINESS PLAN

ISO/TC 41

Pulleys and belts (including veebelts)

### EXECUTIVE SUMMARY

Belt drive is one of the main transmission forms in mechanical driving. Classified by use, it can be divided into drive belt and conveyor belt. Drive belt is mainly applied in mechanical industry, automobile industry, agriculture machine, petrochemical machine, home appliances, office equipments, food, textile, printing equipments and so on. Conveyor belt is mainly applied in steel, coal, concrete, port, electricity and other industries. The size of the market in 2010 is estimated at a value of 11.4 billion US \$.

The benefits already realized and/or expected through the availability of the standards:

- Standardization of boundary dimensions and tolerances, thereby ensuring dimensional Interchangeability;
- Reduce cost;
- Eliminate international trade barrier;
- Standardization of measuring principles, thereby ensuring uniform interpretation and evaluation of quality requirements;
- Definition of performance criteria, thereby improving product performance continuously;
- Standardization of vocabulary and designations required to define the product;
- Promote the application fields/industries of belt and also promote scale manufacture.

The main objectives and the priorities in the work of ISO/TC41:

- to continue standardize the boundary dimensions, tolerances, measuring principles for products not yet standardized and new products;
- to improve the performance evaluation methods for drive and conveyor belt;
- to improve the test methods for fatigue life of the belts;
- to continuously complement vocabularies for belts and pulleys.

## 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 ISO/TC41, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

#### 2.1.1 Introduction

Belt drive is one of common and low cost power transmission forms. It is about one third of mechanical transmission forms. In some occasion it can substitute chain and gear drive but

sometimes it can not be substituted. It has the feature of stability, clean (no need lubrication), low noise and shock absorption, overload protection and easy to maintain. As the improvement of tension layer material and performance, it can be used in heavy drive conditions. Its application fields expand continuously. Drive belt is widely applied in mechanical industry, automobile industry, agriculture machine, petrochemical machine, home appliances, office equipments, food, textile, printing equipments and so on. Conveyor belt is widely applied in steel, coal, concrete, port, electricity and other industries.

As the increasing need of the driving belts and conveyor belts, the overall market of drive belts and conveyor belts has been expanded continuously.

Automobile belt is the most popular application filed with huge need and rapid growth.

So far, Asia is the fastest development market. Because of the fast growing market of automobile, agriculture, petrochemical machine, home appliances in China and other emerging market countries, the global market of belt is growing rapidly.

The European and American market is recovering gradually after the financial crisis.

#### 2.1.2 Technological trends

The manufacturing equipments and process has been improved greatly, so the manufacturing precision has been higher and higher.

Work conditions of belt drive has been more and more rigorous, so the requirement of performance must be higher.

The auto belt has been changed from classical V-belt to banded V-belt and Ribbed V-belt.

The tooth profile of synchronous belt has been derived from Trapezoidal tooth to Arc tooth, Curvilinear tooth and Herringbone tooth.

Technological trends of conveyor belt is energy saving, safety, environmental friendly, high tensile strength, high transport capacity, long life conveyor belts.

#### 2.1.3 Marketing trends

Among belt drive market, V-belt is the biggest. Following by flat belt and V-ribbed belt. The synchronous belt has developed fastly since its being invented, with more and more tooth profile and continuous expanded market. It is marketing trends of high precision transmission field.

In the drive belt application field, automobile transmission belt occupies the biggest consumption.

In conveyor belt application field, steel cord conveyor belts for general use occupies the biggest market, following by high-temperature resistance, acid-resistance and alkali-resistance conveyor belt. Flame retardant conveyor belt is widely used in flammable and explosive conditions; its amount has expanded gradually.

#### 2.1.4 Safety & Environmental issues

Environmental protection is very important for belt, especially in some high environmental protection requirement fields such as white home appliance.

The restriction of the content of hazardous materials in raw materials and auxiliary materials which being used largely during manufacturing will be more and more rigorous.

The raw materials of belt can be recycled. In appropriate conditions, recycle the failure belts and extract rubber from it to reuse will reduce influence to the environment greatly.

The requirement for antistatic drive and conveyor belt used in explosive atmosphere has been more and more rigorous.

Hose conveyor belt can prevent dust from diffusing. Green manufacturing(environmental raw materials and manufacturing process) in producing, recycle of belt and reuse of wast gas can achieve environmental protection.

Many large scale of drive belt and conveyor belt enterprises have obtained ISO 14000 certification.

2.1.5 Technical and trade barrier

Anti-dumping from the developed countries to developing ones causes barrier to trade. Developing of international standards can facilitate elimating trade barrier.

2.2 Quantitative Indicators of the Business Environment

2.2.1 Introduction

The following list of quantitative indicators, Tables 1, describes the business environment in order to provide information to support actions of ISO/TC 41.

2.2.2 Complete sales of pulleys and belts

The approximate figures for the world sales of complete drive belt and pulleys (including belt drive system accessories) for the last three years and the split into regions are given in Table 1. The Exchange Rate used for 1 Dollar:

- 0.69 EUR
- 0.64 GBP
- 76.69 JPY

Table 1- Global sales of drive belt and pulleys(including belt drive system accessories)

Unit: Million \$

years	Worldwide	North America	European	Asia	Others
2008	11427	3660	2599	4026	1142
2009	10043	2996	2477	3566	1004
2010	10947	3526	2647	3686	1088

3 BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC41

It has already been explained above that pulleys and belts have been essential for the power transmission and convey goods. As the belts are produced in extremely large numbers and with many of variants, the ISO/TC 41 Standards have been, and remain, indispensable for belts manufacturers and users.

This is valid for all stages in the process from belts manufacturing, storage, sales and distribution. The end user needs the standardized products when selecting and purchasing belts and when designing his product in order to obtain good performance and easy mounting and replacement of belts.

4 REPRESENTATION AND PARTICIPATION IN THE ISO/TC41

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

4.2 Analysis of the participation

In the ISO/TC 41 committee there are 10 P-members and 29 O-members.

Among the P-members, 70 % come from developed countries and 30 % from countries with economies in transition. The reason for the imbalance is that the pulleys and belts industry is based on very specialised, large scale production. The active participants are mainly come from European.

Liaisons with other organizations are with FEM (European Federation of Handling Industries) and ILO (International Labour Organization).

Internal ISO liaisons are with ISO/TC 22, ISO/TC 23, ISO/TC 101, ISO/TC 178.

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

### 5.1 *Defined objectives of the ISO/TC41*

To ensure interchangeability of pulleys and belts;

To continue standardize the boundary dimensions, tolerances, measuring principles for pulleys and belts which are not yet standardized and new products;

To improve the performance evaluation methods for drive and conveyor belts;

To improve the test methods for fatigue life of the belts;

To continuous complement vocabularies for belts and pulleys.

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

With the purpose of assisting the user in the selection, specification and application of correct pulleys and belts products, the strategies of ISO/TC 41 is to ensure interchangeability and the uniformity of the performance of the pulleys and belts, irrespective of origin.

there has been some standards for performance testing, but we need some new proposal to make it more internationally accepted.

ISO/TC 41 is a long standing committee, which was originally established in 1947 by ISO. Therefore the fields in need of standardization are to a large extent covered by today's ISO/TC 41 Standards.

The standardization work is carried out by physical meetings and, where possible, by correspondence via Internet. Since the beginning of 2002 the use of the ISO Livelink system has facilitated the work of committees and project leaders and has resulted in a reduction in the time for producing standards.

English is used at the meetings and the need for translation is normally not required.

Of the ISO deliverables, International Standards dominate and are preferred, but in exceptional cases Technical Reports and Technical Specifications will also suggest to use.

The work within ISO/TC 41 and its subcommittees is mainly based on research results and knowledge from the different pulleys and belts companies and their sub-suppliers and practical experience from belt drive and conveyor belt applications.

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

—Documents of TC/SCs are not regularly up-dating on the ISO/TC sever and didn't distribute in time.

—Some P-members of a technical committee or subcommittee fails to vote on an enquiry draft or final draft international Standard.

## 7 STRUCTURE, CURRENT PROJECTS AND PUBLICATIONS OF THE ISO/TC41

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*