



BUSINESS PLAN

ISO/TC 112 Vacuum Technology

EXECUTIVE SUMMARY

The major product categories of the Vacuum Technology are:

- Vacuum Pumps
- Vacuum Instrumentation (e.g. pressure gauges, leak detectors, mass spectrometers)
- Vacuum Hardware (e.g. Valves, Flanges and Fittings, chambers, feedthroughs)

The manufactures of these vacuum components serve the following markets (customers) with its products:

VACUUM MARKET SEGMENTATION

<i>Rough Vacuum</i>	<i>Process Vacuum</i>	<i>Industrial Vacuum</i>	<i>Semiconductor Process Vacuum</i>	<i>Thin-Film Deposition (non-Semiconductor)</i>	<i>Instrumentation Manufacturers</i>	<i>R & D</i>
<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>	<u>Markets</u>
Packaging (except Food)	Chemical	Vacuum Metallurgy	Silicon Semiconductor	Glass/Web/Optical Coating	Mass Spectrometers	Universities
Central Vacuum	Petrochemical	Vacuum Heat Treatment	Compound Semiconductor	Data storage (CD, DVD, ..)	Electron Microscopes	Government Labs
Printing and Paper handling	Pharmaceutical	Laser Technology	TFT-LCD Displays	Thin Film Heads	Leak Detectors	Scientific Research Laboratories
Pick-up and Conveying	Plastics	Electron Tubes	MEMS	Surface Coating (wear protection, decorative, ..)	Surface Analysis	Space Simulation
Medical	Food	TV Tubes	Process Equipment	Display Coatings (OLED, FED, FDP..)	Gas Analysis	
	Beverage	Lamps and Bulbs	Manufacturers and End Users for PVD, CVD, Etching, Ion Implantation, MBE, Crystal Pulling, etc	Solar (Photovoltaics, Thermal)	Metrology/ Inspection/ Defect Review systems for Semiconductor	
	Textile	Industrial leak detection			Focused Ion Beam systems	
	Paper	Refrigeration and Air Conditioning			Electron Beam systems	
	Ceramics	Automotive (Dehydration Charging and Test)			X-Ray Analysis	
	Freeze drying				MRJ and NMR	
	Power					
Typical Operating Pressure (mbar)						
> 1	> 10 ⁻²	10 ⁻² - 10 ⁻⁶	1 - 10 ⁻⁸	10 ⁻³ - 10 ⁻⁸	10 ⁻⁶ - 10 ⁻¹⁰	10 ⁻² - 10 ⁻¹¹

CD:	Compact Disk	MRI:	Magnetic Resonance Imaging
CVD:	Chemical Vapour Deposition	NMR:	Nuclear Magnetic Resonance
DVD:	Digital Video Disk	OLED:	Organic Light Emitting Diode(or OLED: Organic Electro Luminescent Display)
FED:	Field Emission Display	PDP:	Plasma Display Panel
MBE:	Molecular Beam Epitaxy	PVD:	Physical Vapour Deposition
MEMS:	Micro Electro Mechanical Systems	TFT-LCD:	Thin-Film Transistor Liquid Crystal Display

This Vacuum Market Segmentation Chart was developed by the Working Group of the International Statistics on Vacuum Technology Program, and is published with their permission. Organisations that participate in the program are the Association of Vacuum Equipment Manufacturers International (AVEM), the Japan Vacuum Industry Association (JVIA), the European Vacuum Technology Association (EVTA), and the Semiconductor Equipment and Materials International (SEMI).

None of which would be possible without Vacuum Technology and specially designed vacuum components.

The mayor goal is a quick development of market relevant 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 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 112

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:

Today our standard of living is heavily dependent on Vacuum Technology and on the products that it has spawned.

Without it many of the familiar items of modern everyday life would be unknown, such as:

- compact discs
- powerful computers
- TV-screens
- light bulbs
- coated eyeglass lenses
- coated glasses for the building industry
- mobile telephones
- trustworthy food packaging
- x-ray machines
- electron microscopes
- thermos jugs

Vacuum technology frequently makes it possible to replace processes that harm the environment with others that protect the environment. This is true of vacuum pumps and other vacuum components such as measuring devices and leak detectors, which are involved in many industrial applications including, among others,

- vacuum packaging of food
- evacuation and environment-friendly charging of refrigerators and air conditioners
- production of ultrapure high-strength metals
- evacuation of lamps and CRT's
- manufacture of flat-panel displays.
- Coating

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 112:

The following information was given by the Working Group of the International Statistic Program on Vacuum Technology (ISVT).

The largest vacuum component market segment is semiconductor process vacuum with nearly 40 %, followed by industrial vacuum at 14 %, process vacuum at 11 %, thin-film deposition (non-semiconductor) vacuum at 10 % and instrumentation manufacturers at 7 %. The vacuum components market includes pumps and pumping packages, instrumentation, hardware including valves and couplings and after-sales including spare parts and service.

2006 Global Vacuum Components and Equipment Sub-systems*		
Segment	US\$ Billions	Percentage (%)
Semiconductor Process Vacuum	1.68	40
Industrial Vacuum	0.50	14
Process Vacuum	0.46	11
Instrumentation Manufacturers	0.29	7
Thin-film Deposition (non-semiconductor) Vacuum	0.42	10
Others	0.84	20

Total	4.2	100%
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The statistics are based on a quarterly member data collection program, in which suppliers report actual sales of components by segment and region. The reporting companies represent approximately 80 percent of the global supply basis for vacuum components and equipment sub-systems.

The overall sales on Vacuum Technology over the last 3 years is expected to 12 Billion US\$. 100 companies worldwide are participating on the statistical program.

3 BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC 112

The Vacuum Technology itself is a quite small industry sector worldwide but serving huge industries with its products (detailed description page 1). Due to that, it makes sense to concentrate the standardisation work on the international level (ISO). The growth of industry throughout the world creates always new opportunities for the Industry of Vacuum Technology and its products. Therefore the Standardisation has to fulfill the needs of the Industry and its customers in due time.

The focus on standardisation is in the fields of:

- Performance characteristics
- Test methods
- Dimensions
- Accident prevention

4 REPRESENTATION AND PARTICIPATION IN THE ISO/TC 112

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

4.2 *Analysis of the participation*

The mayor number of manufacturers of Vacuum Technology components (Pumps, Hardware, Instrumentation) are located in Europe, Japan and North America. All relevant countries are members (P or O) of the ISO/TC 112. Also countries like China, South Korea, Iran and India are members. Furthermore also the most "user" countries are involved in the work of ISO/TC 112.

Nevertheless, some member organisations (P and O-members) could join the work within ISO/TC 112 more actively.

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

5.1 *Defined objectives of the ISO/TC 112*

The mayor goal is a quick development of market relevant standards and the development of standards determined by the needs of end-users and the elimination of technical barriers to trade.

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

- ISO/TC 112 will develop market relevant Standards.
- ISO/TC 112 has downsized its structure in order to work more effectively.

- ISO/TC 112 has regular meetings in different countries.
- ISO/TC 112 will use the ISOTC-Server and email for its work.
- ISO/TC 112 will develop more Technical Specifications, if a Standard can not be developed in due time.

6 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC 112 WORK PROGRAMME

ISO/TC 112 has to concentrate its work on the needs of the Vacuum Technology Industry and its customers. The closer a standard on the needs of the Industry is, the better is the acceptance and the more industry delegates will join the meetings.

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