

STRATEGIC BUSINESS PLAN

ISO/TC 86

EXECUTIVE SUMMARY

ISO/TC 86 has the objective of developing International Standards in the fields of refrigeration and air-conditioning, including common terminology, mechanical safety, methods of test, ratings, characterization of the performance including energy contribution of equipment, measurement of sound levels, refrigerant and refrigeration lubricant chemistry.

Also included is the development of standards on design, construction, testing, installation, operation, maintenance and repair of the relevant components. An additional objective is to limit the impact of refrigerating and air-conditioning systems on safety, health, and environment. The limitation of refrigerant emissions is included in this objective.

Political awareness of environmental aspects and energy consumption, which varies by region and country, has led to the introduction of new or broadened legislation affecting the refrigeration and air-conditioning markets. The worldwide effort toward the rational use of natural resources will increase the market for energy-efficient building mechanical equipment.

New refrigerants, efforts to limit refrigerant release and efforts to improve energy efficiency all contribute to the optimization of system operations. The development of new products and technologies, such as multi-split air-conditioners and heat pumps and improved compressor technology, require new and/or revised standards.

Standardization of performance, efficiency and safety criteria will assist in the harmonization of the requirements embodied in such regulations, resulting in the facilitation of trade and the elimination or reduction of trade barriers. Through ISO standards development, co-operation between standards developing organizations will contribute to technical, rather than political-based standards.

The TC will adhere to the ISO Global Relevance Policy in developing its standards and other ISO work products. The ISO Global Relevance Policy states, in part, that the required characteristic of an International Standard is to be used or implemented as broadly as possible by affected industries and other stakeholders in markets around the world. Subcommittees and Working groups under TC 86 will develop globally relevant ISO standards that either present one unique international solution in all of its provisions, if possible, or contain options in specific provisions to accommodate existing and legitimate market differences if justification exists. As a globally relevant standard, each ISO document shall sustain fair competition, represent the latest technical developments where possible, and effectively support regulations in the global marketplace.

Recently, it has become necessary to consider the mechanical equipment as part of the building sub-systems and systems in order to reflect its contribution to the Energy Performance of Buildings reflected in the various efforts in all regions to quantify, calculate and provide the data for any and all building labeling directives. This will be

reflected in adding the necessary effort of providing energy and performance data in a consistent manner that can be used by all entities involved in the buildings industry to characterize the equipment's contribution to the whole. Additionally, it may be necessary to re-structure the entire TC to better reflect this effort in a more cohesive manner.

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.

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:

2.1A General description - Refrigeration and air-conditioning systems are produced in sizes ranging from small household appliances to large industrial systems for varying applications. They are mass-produced as complete factory-assembled systems or assembled and installed on-site. They are marketed worldwide.

2.1B Economic – The refrigeration and air-conditioning industry has a direct relationship to the building construction industry. The primary production regions are the Americas, Europe and Japan. The largest increases in sales are projected for the Asia/Pacific region, particularly China; suppliers will benefit in this region because of its ongoing industrialization, capital investment growth and rising personal incomes. Cooling equipment is expected to outpace heating, reflecting the lower penetration rates of air conditioners.

2.1C Political - Political awareness of environmental aspects and energy consumption, which varies by region and country, has led to the introduction of new or broadened legislation affecting the refrigeration and air-conditioning markets. See 'Regulatory/Legal', below.

2.1D Energy – The building sector likely holds the greatest prospects for energy saving than any other through the increased efficiency of mechanical equipment. The resulting decrease in energy costs is a major influence in the adoption of new technology.

2.1E Environment – The environment has had a significant impact on refrigeration and air-conditioning technology and will continue to impact the industry well into the future. A world-wide effort toward the rational use of natural resources will increase the market for energy-efficient building mechanical equipment.

2.1F Social – Society is pushing to minimize possible hazards to persons, property and the environment from refrigerating systems, specifically the hazards presented by refrigerants and their emissions. Additionally, the acoustic power of these systems is becoming more important to consumers. There is also a growing worldwide demand for improved indoor comfort.

2.1G Technical – New refrigerants, efforts to limit refrigerant release and efforts to improve energy efficiency all contribute to the optimization of system operations. The development of new products and technologies, such as multi-split air-conditioners and heat pumps and improved compressor technology, require new and/or revised standards.

2.1H Regulatory/Legal – The adoption of voluntary equipment standards has increased. Particularly, the European Union directives relating to machinery safety, electrical equipment, pressure equipment and building energy performance have affected the refrigeration and air-conditioning markets. Also, many household refrigeration products are subject to energy labeling schemes.

The Kyoto Protocol to the United Nations Framework Convention on Climate Change commits certain countries to legally binding targets to limit or reduce greenhouse emissions.

If voluntary standards are to be used to implement this protocol, ISO/TC 86 has a direct interest.

On the basis of the Montreal Protocol on Substances That Deplete the Ozone Layer (United Nations Environment Programme, depositary), refrigerants with high Ozone Depletion Potential (ODP) are no longer permitted. Differing national and regional legislation and standards covering refrigerants require harmonization. The established products used in refrigeration and air-conditioning systems for many decades are undergoing a radical change. Chlorofluorocarbons (CFCs) and Hydrochlorofluorocarbons (HCFCs) are being phased out and will eventually have to be substituted by Hydrofluorocarbons (HFCs) or an alternative. Although most HFCs have a lower Global Warming Potential (GWP) than the fluids they are supposed to replace, some countries do not consider HFCs as the final solution because concerns about global warming have intensified. As a result consideration is being given to non-tariff barriers to slow or ban the use of HFCs. The use of CFCs in developing nations and the illegal imports of CFCs into developed countries are also a concern. Both Europe and the US are experiencing rapid growth in the use of natural refrigerants such as ammonia and carbon dioxide. As the market changes, ISO/TC 86 needs to respond to this. This could have an impact on the time-scales of the standards currently under production and could mean a necessary revision to existing international standards.

Many national and regional authorities also govern energy performance levels for air-conditioning and refrigeration systems. The industry has often been subjected to mandatory increases in energy efficiency ratings.

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:

2.2A Total international trade – The heating, ventilation, air-conditioning and refrigeration (HVACR) industry has estimated annual sales of USD \$100 billion and an annual growth rate of approximately 5% per year in recent years.

2.2B Total employment in this sector – Although difficult to quantify, it is estimated that over 500,000 persons are directly employed in this sector.

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

3.1 Harmonization of requirements – Most countries and/or regions require systems to be designed and installed in accordance with mandatory building regulations. Standardization of performance, efficiency and safety criteria will assist in the harmonization of the requirements embodied in such regulations, resulting in the facilitation of trade and the elimination or reduction of trade barriers. Through ISO standards development, co-operation between standards developing organizations will contribute to technical, rather than political-based standards. The International Standards under development by ISO/TC 86 will be suitable for adoption by national and regional standardization bodies. It is expected that extensive adoption of International Standards authored by ISO/TC 86 will assist the markets in developing countries and assist sustainable development in developed countries. It is imperative that these standards be developed under the ISO Global Relevance Policy.

3.2 Energy efficiency and reduction of CO₂ emissions – Development of standards to quantify, control and improve the energy performance of products and systems can minimize the environmental

impact of their growing use and reduce the peaks of electrical consumption. Emissions of CO₂ and other pollutants to the atmosphere could be significantly reduced through the application of international standards relating to the energy-efficient design of building mechanical equipment and the resulting reduction in fossil fuel consumption. For example, new non-CFC chillers are 40 % more efficient than the CFC units installed 20 years ago. The US Environmental Protection Agency statistics show that in the year 2000, 44% of the CFC chillers that existed in the early 1990's had been replaced or converted with a result in energy savings of 7 billion-kilowatt hours/year and the avoidance of 4 million tons of CO₂.

4. REPRESENTATION AND PARTICIPATION IN THE ISO/TC

4.1 Membership

Countries/ISO member bodies that are P and O members of the ISO committee –
<http://isotc.iso.org/livelink/livelink?func=Committees.memberslist&objid=8910770>

4.2 Analysis of the participation

4.2 Analysis of the participation

21 P-member countries are represented on ISO/TC 86 with a diverse geographic representation. As expected by its scope, ISO/TC 86 is dominated by developed nations centered among the three primary markets. There is no particular geographic voting bloc.

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

5.1 Defined objectives of the ISO/TC

ISO/TC 86 has the objective of developing International Standards in the fields of refrigeration and air-conditioning, including common terminology, mechanical safety, methods of testing, rating, and characterizing the performance including energy contribution of equipment, measurement of sound levels, refrigerant and refrigeration lubricant chemistry.

Also included is the development of standards on design, construction, testing, installation, operation, maintenance and repair of the relevant components.

A new objective is to develop methodologies to provide a consistent set of performance criteria to insure this data can be used in the calculation of building energy performance for building labeling.

An additional objective is to limit the safety, health and environmental impacts of refrigerating and air-conditioning systems. The limitation of refrigerant emissions is included in this objective.

ISO/TC 86 will work by electronic correspondence to be as efficient as possible. The working groups organize their work and the necessary meetings themselves. The subcommittees meet as needed, with support from the Secretariat. The TC has delegated the vast majority of the TC work to the SCs. However, in light of the additional new direction some full TC meetings may be necessary.

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

Refrigeration and air-conditioning systems cover a broad and deep technical field. For this reason subcommittees and working groups have been created to address specific products and components. Each SC and WG has identified particular areas of focus for standards development.

National viewpoints communicated by delegations are taken into consideration in the development of working drafts, but national exceptions are to be avoided wherever possible.

ISO/TC 86 will implement the Vienna Agreement parallel procedure, when and where possible, so as not to duplicate standardization work in this area.

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

ISO/TC 86 is responsible for standards covering safety & environment and product testing & characterization. Product characterization is the description of the product inputs and outputs in order to facilitate system modeling. Recent developments in the regulation of product and system energy efficiency will result in a significant increase in the workload handled by some of the TC86 subcommittees, particularly those involved in energy performance standards. The stakeholders of ISO/TC 86 must realize the necessity and benefits of international standardization of refrigeration and air-conditioning and be committed to the implementation of such standardization.

Many existing national and regional standards form part of national legislation. Therefore, harmonization is critical because some stakeholders cannot support the international standards if they are not compatible.

Also of concern to ISO/TC 86 is that it does not overlap its activities with those of existing ISO and other regional technical committees. Close liaison with other ISO and CEN technical committees covering similar equipment is crucial. Again, adherence to the ISO Global Relevance Policy is essential as outlined in the Executive Summary above.

Differing national regulations and technical experience are hampering the determination of an acceptable risk for the use of flammable refrigerants. This must be addressed by TC 86/SC 1 and TC 86/SC 8.

Lack of representation from countries outside the major centers of production is limiting the amount of work produced by some of the SC's. Some national bodies do not have extensive resources or experts available for ISO work, particularly if they are devoted to national or regional standardization activities. Additional experts must be recruited to advance the established work programme.

It is clear that ISO does not have TCs to cover all of the building mechanical equipment types and technologies that are necessary to handle the range of standards required for building system performance evaluation. In addition, the current level of standards being moved through the CEN-ISO process cannot be supported with the present organization of TC 86. Harmonization between regions is a vital part of the ISO mission so a re-organization of TC 86 to facilitate this additional work will be proposed.

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:

<http://isotc.iso.org/livelink/livelink/open/tc86>

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

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

Reference information

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

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