



STRATEGIC BUSINESS PLAN

ISO/TC 131

EXECUTIVE SUMMARY

Fluid power is the science and technology that deals with the transmission and control of energy and motion by means of a fluid (a liquid in hydraulics and a gas in pneumatics) under pressure within a circuit. Fluid power is used in a wide variety of applications, from earth-moving machinery to packaging machinery, from aerospace to mining. Fluid power is used to raise drawbridges and to perform delicate pick-and-place functions in pharmaceutical production and food processing. In 2021, global consumption of fluid power products was more than US \$54 billion.

ISO/TC 131 is the ISO technical committee for fluid power. Its scope is as follows: “Standardization in the field of fluid power systems and components, comprising terminology, construction, principal dimensions, safety requirements and testing and inspection methods. To include such components as: accumulators, conductors (rigid and flexible), cylinders, electro-hydraulic and electro-pneumatic components and systems, connectors, hose fittings and assemblies, filters and separators, fluids, hydraulic pumps, motors, moving-part fluid- controls, pneumatic lubricators, regulators, quick-action couplings, reservoirs, sealing devices, valves.”

ISO/TC 131 is a mature technical committee of ISO with a large number of standards in its portfolio. Because of the widespread application of fluid power technology in a large number of applications, ISO/TC 131 faces challenges in developing International Standards that address the needs of all stakeholders (see 2.1 for more details). As a result, ISO/TC 131, in addition to the existing 235+ standards developed through 9 subcommittees and multiple working groups, monitors and contributes to the work of other ISO technical committees that develop standards for the major industries that use fluid power. Also, the technical committee continues to deal with changes resulting from the use of electrical and electronic control of hydraulics and pneumatics, a greater awareness of the potential environmental impact of the use of fluid power and the globalization of the industry.

Benefits expected from the work of ISO/TC 131 include: easier and better design and integration of fluid power systems, improved equipment safety and reliability, energy efficiency, reduced costs, better environmental protection, better communication between suppliers and users, reduction or elimination of leakage, and harmonization of national and regional standards. For more details, see clause 3.

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 165 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.

BUSINESS ENVIRONMENT OF THE ISO/TC

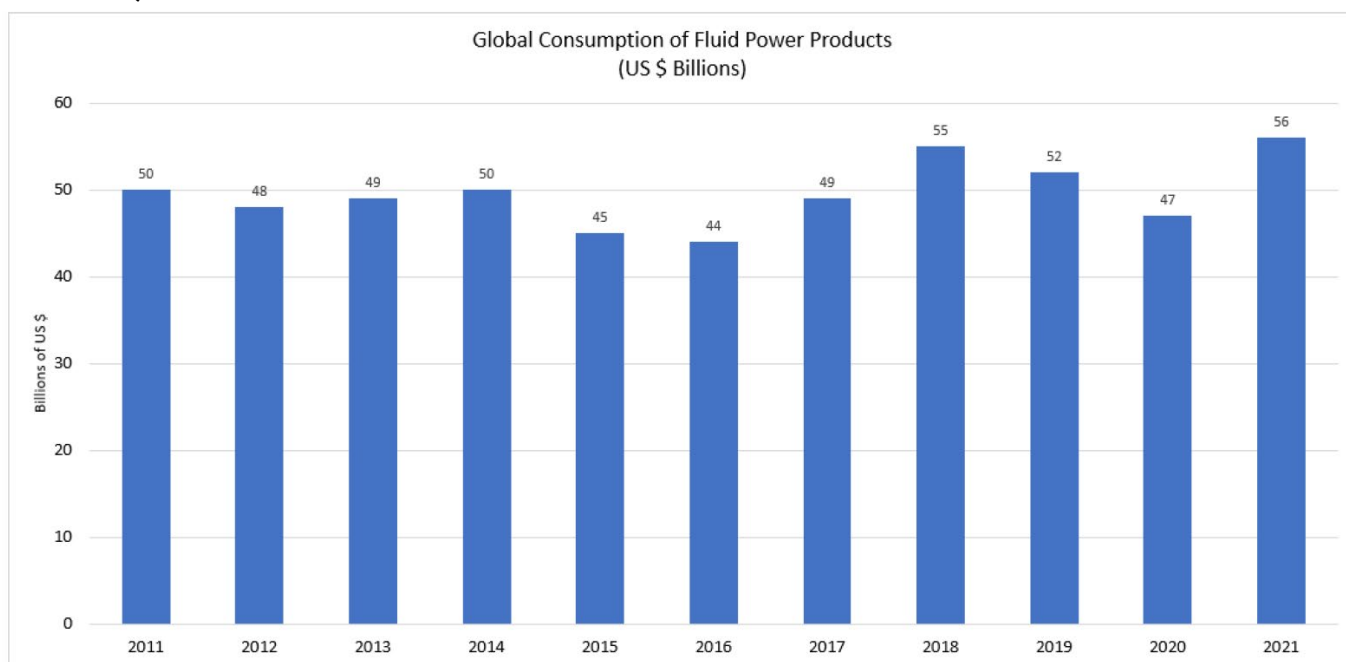
2.1 *Description of the Business Environment*

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:

- Fluid power is the science and technology that deals with the transmission and control of energy and motion by means of a fluid (a liquid in hydraulics and a gas in pneumatics) under pressure within a circuit. Fluid power is used in a wide variety of applications, from earth-moving machinery to packaging machinery, from aerospace to mining. Fluid power is used to raise drawbridges and to perform delicate pick-and-place functions in pharmaceutical production and food processing.
- Expected major innovations and technological changes will come in the areas of: 1) the use of electrical and electronic control with both hydraulics and pneumatics, and 2) greater awareness of the potential environmental impact of the use of fluid power, leading to even greater emphasis on leakage prevention and the use of bio-friendly fluids in hydraulic systems and on systems that are compact, reliable, energy efficient and easy to maintain.
- Global expansion is expected as developing nations undertake to manufacture fluid power products as basic machine components to support their industrial growth.
- Stakeholders in the work of ISO/TC 131 who are concerned with safe, reliable, easily maintainable, efficient, ecologically friendly and cost-effective products include but are not limited to the following:
 - manufacturers of fluid power components and systems;
 - integrators of fluid power systems, who are concerned with the ability of fluid power products from different manufacturers to work together in a system;
 - companies that incorporate fluid power systems in the machines they use to build other products (for example, automotive companies), that keep their production going;
 - companies that incorporate fluid power systems in the products they manufacture (for example, earth-moving and agricultural equipment);
 - governmental agencies (for example, military, environmental and safety agencies);
 - those in the general public who use equipment that contains a fluid power system;
 - employees of companies that manufacture and/or use fluid power systems;
 - shareholders of these companies, who want to invest in companies to derive a reasonable profit;
 - companies that distribute, sell and service fluid power equipment, often together with electrical and mechanical components;
 - academic institutions, independent laboratories and publishers of technical literature.

- Organizations and other ISO technical committees also develop standards for the fluid power components and systems used in their industries, for example, agricultural machinery, earth-moving machinery and aerospace. ISO/TC 131 works to stay abreast of any work that affects the use and application of fluid power.
- Technical barriers to trade related to the scope of ISO/TC 131 generally do not exist, except perhaps for national and/or regional standards and technical regulations that relate to the safety aspects of fluid power components and systems.
- Key competition in major markets is from electrical and electromechanical technologies.

2.2 Quantitative Indicators of the Business Environment



These numbers represent US, Europe, China, Japan, and Taiwan

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

- International Standards ISO 4413 and ISO 4414, which relate to general rules and safety requirements of, respectively, hydraulic, and pneumatic systems, were revised in 2011 in response to changes and innovations in fluid power technology and were confirmed under systematic review in 2021.
- Standards for energy efficiency, reliability, noise and pressure rating are expected to address safety, health and environmental concerns and to harmonize national and regional standards.
- Work on standards for electrical connectors used with fluid power components are expected to improve equipment safety and help to reduce cost.
- Work on component cleanliness standards and revisions to hydraulic fluid cleanliness measurement standards respond to expressed needs of equipment users and major machinery manufacturers addressing safety, reliability and environmental protection concerns.

- Standards for graphical symbols, circuit diagrams, vocabulary and product properties. Improve safety and reliability by facilitating accurate and complete communication and information for use.
- Work on many standards for connectors and conductors are expected to address safety, health and environmental concerns by providing feasible means to reduce hydraulic system leakage. Continuing work on standards for seals, sealing devices and sealing surface specifications will also address this major objective. All of this work is also expected to help harmonize national and regional standards and practices. Collaboration with CEN, under the Vienna Agreement, is expected to help harmonize safety provisions on a global scale.
- Standards to enhance business competitiveness due to internationally available components and systems.

4. REPRESENTATION AND PARTICIPATION IN THE ISO/TC

4.1 Membership

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

4.2 Analysis of the participation

As of 2023-07, ISO/TC 131 has the following balance of participation, based on degree of economic development:

	Developed countries	Developing countries	Total
P-members	12	4	16
O-members	15	6	19

As of 2023 -07, ISO/TC 131 has the following balance of participation, based on regions:

	Asia/Pacific	Europe	Americas	Other	Total
P-members	4	10	2	0	16
O-members	1	14	1	3	19

Lack of participation from countries known to have significant business, trade or experience in the field addressed by the scope of the ISO committee is most commonly a problem of countries with economies in transition. We continue to attribute the lack of participation mostly to a lack of resources to spend on the development of International Standards and expect that participation will increase with the addition of virtual meetings as these countries' economies improve in the future. Unfortunately, as of today, we cannot see this change.

Types of international organizations in liaison with ISO/TC 131 include CETOP (an association of European national trade associations for fluid power).

ISO/TC 131 also experiences relatively low participation by representatives from the companies and industries that use fluid power. We attribute the lack of participation to a significant decrease in the number of people and resources these companies dedicate to standards development.

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

5.1 Defined objectives of the ISO/TC

- As environmental and economic factors drive the need for greater energy efficiency, ISO/TC 131 will work on developing standards helping to improve energy efficiency at the system level, e.g. by energy efficient sizing of components.
- ISO/TC 131 will refine existing and develop new standards for assessing reliability (i.e., durability) for pneumatic fluid power components and systems. Such standards provide necessary data for use in designing systems and especially in the safety-related parts of control systems in machinery.
- ISO/TC 131 will give high priority to standards that have a significant impact on safety and environmental issues, such as a standard method to measure the noise and pollution removal characteristics of pneumatic mufflers; defining the properties of hydraulic fluids that enhance the energy efficiency of a system; developing recommended practices that detail how to safely power-down systems with large amounts of stored energy.
- ISO/TC 131 will develop recommended practices for helping end users and machine operators perform required maintenance on fluid power systems.
- ISO/TC 131 will cooperate with other TCs to develop standards that can be used for “smart” components and systems.
- ISO/TC 131 will develop dimensional standards for interchangeable installation features such as mounting flanges, cylinder rod ends, seals, and valve mounting surfaces, if needed and not provided in the package International Standards already accomplished. It will expand and improve those existing standards as found appropriate in the systematic review process. Where appropriate, dimensional standards should focus on reducing the size of fluid power components and systems.
- ISO/TC 131 will exclude from its standards product features that would, if standardized, impede product improvement through innovation or competition in product performance.
- ISO/TC 131 will elaborate International Standards defining performance parameters for fluid power equipment and test methods for common measurement of those parameters but will avoid standards for specifying performance levels, which could impede innovation and competition. Such standards allow for benchmarking of product improvement and comparison with other technologies.
- ISO/TC 131 will develop standards that will address energy storage capabilities of fluid power systems.
- Insofar as consistent with concerns for safety, health and environmental protection, ISO/TC 131 will promote voluntary compliance standards and self-certification by suppliers and users, rather than compliance mandated by regulation or mandatory third-party certification.
- Insofar as feasible, ISO/TC 131 will seek to elaborate all International Standards on fluid power. However, recognizing the legitimate interests of other TCs and organizations serving industries that use fluid power, including but not limited to industrial machinery, earthmoving machinery, agricultural machinery, cranes and construction machinery, ISO/TC 131 will support the elaboration of specialized fluid power systems standards and others in those committees and organizations and will help promote the implementation of such standards.
- The overarching objective of ISO/TC 131 is to assure the standardization needs of the global fluid power industry, its customers and general society are satisfied.

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

- Maintain active liaison with TCs serving industries that use fluid power equipment.
- Monitor activities in “horizontal” committees developing International Standards for management systems standards, guides for safety provisions and the like. Assess the likely impact of such initiatives on the global fluid power industry and provide timely input as appropriate.
- Give first priority to achieving real consensus on all standards. Two possible ways to accomplish this: 1) to increase the level of approval needed on a new work item proposal; 2) to require a working group review and endorsement before a new work item proposal is circulated for ballot.
- Ensure that each sub-committee, in consultation with its working groups as necessary, organizes all its projects in priority order.
- Ensure that responsibilities for project development and management are clearly defined and assigned at the beginning of each project, to allow for better planning and allocation of secretariat and industry resources.
- Support and promote training provided by national member bodies for delegates, experts, project leaders, conveners and chairs.
- Use the ISO TC server to improve efficiency and effectiveness of communication among secretariats, committees and the ISO Central Secretariat.
- Benchmark other committees and organizations for any procedural changes that can help maintain project schedules. For example: schedule all committee draft ballots to close on three specific dates coordinated with national committee meetings.
- Involve users of fluid power equipment in the work of ISO/TC 131.
- Use other ISO deliverables (for example, Technical Specifications) and to ask sub-committees and working groups to consider these for each project they undertake.
- Review this business plan periodically to assure consistency with TMB and ISO master plans, to adjust for changes in the business environment, and to keep a long-term strategic focus on getting the structure correct, rather than on short-term metrics.
- Utilize methods of holding meetings, through the use of virtual meetings coupled with document viewing and sharing.
- Explore utilizing the ISO Online Browsing Platform (OBP), <https://www.iso.org/>, to assist project leaders and experts in revising projects and referring to other technical committee documents.

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

- Resource limitations in our secretariat offices – and failure to consider those limitations in planning our work programme – account for most delays in completing and implementing ISO/TC 131 projects on schedule. The workload at any point in time tends to concentrate in a few sub-committees, either as a large number of projects or as a disproportionate amount of secretariat work required by a few projects. Recent peaks have occurred, for example, in ISO/TC 131, SC 4 and SC 6, all managed effectively but with some important project schedules slipping. Our secretariat offices are exceptionally capable, but they cannot realistically staff for peak periods. The impact on those offices and the committees and working group members must be considered in reviewing new work item proposals, particularly in regard to completion schedules, with frank advice from the secretariats themselves provided and accepted. It may be necessary to postpone some important new projects or to delay some existing ones.
- On the other hand, virtual meetings have limits when issues are complex or controverse and different time zones are also challenging when scheduling online meetings. Therefore in-person-meetings are often a good choice for completion of ISO/TC work continuing to encourage the exchange of data electronically and encouraging more frequent and focused working group virtual meetings for specific projects has helped reduce the development time in working group meetings.

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:

[ISO TC 131 on ISO Online](#)

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](#)