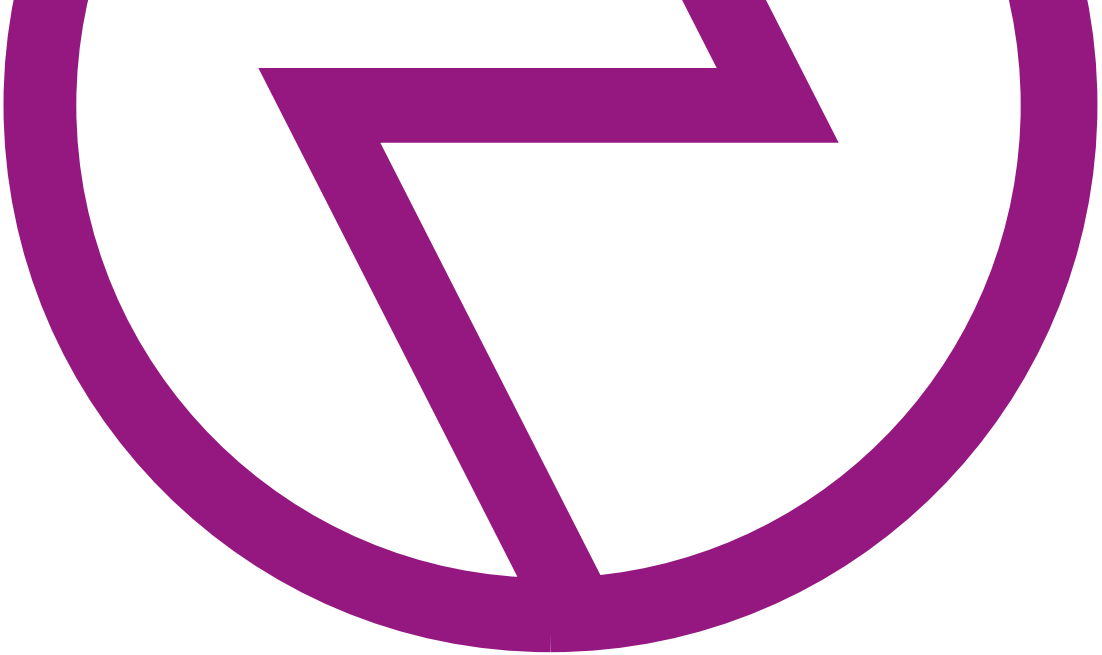


ISO and energy

Great things happen **when the world agrees.**

We are ISO, the International Organization for Standardization

We are an independent, non-governmental organization.

We are a global network of national standards bodies with one member per country.

Our job is to make International Standards.

We are coordinated by a Central Secretariat in Geneva, Switzerland.

We are not for profit : selling our standards allows us to finance their development in a neutral environment, to maintain them and to make new ones.

ISO provides a platform for developing practical tools through common understanding and cooperation with all stakeholders.

161* members

22 000* International Standards

100 new standards each month

245* technical committees

* July 2018

Why do we need ISO standards for energy?

Over 1.2 billion people around the world do not have access to electricity, yet world energy production is at its highest ever and is expected to increase by up to 30 % by 2030*. What's more, the earth is warming at unprecedented rates, largely due to man-made greenhouse gases that are causing havoc to our climate. Increasing energy efficiency and the use of renewables is key to meeting the world's energy demands while contributing to global targets to reduce carbon emissions.

* United Nations 2018: **www.un.org/sustainabledevelopment/energy**

ISO works through its network of national members to bring together the foremost international expertise on energy issues.

ISO standards represent consensus on concrete solutions and best practice for energy efficiency and renewables.

ISO standards help organizations reduce their energy consumption and adopt renewable energy technologies. They also ensure interoperability, which encourages the transition to renewable energy sources, opening up markets for innovations that address the global energy challenge.

ISO standards for energy help us move towards "affordable and clean energy for all", one of the United Nations Sustainable Development Goals, the new global roadmap to improve people's lives by 2030.

Energy is the major contributor to climate change, making up

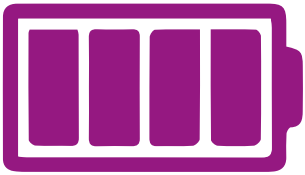
60 %

of total greenhouse gas emissions*.

* United Nations 2018

Who benefits from ISO standards for energy?

Industry



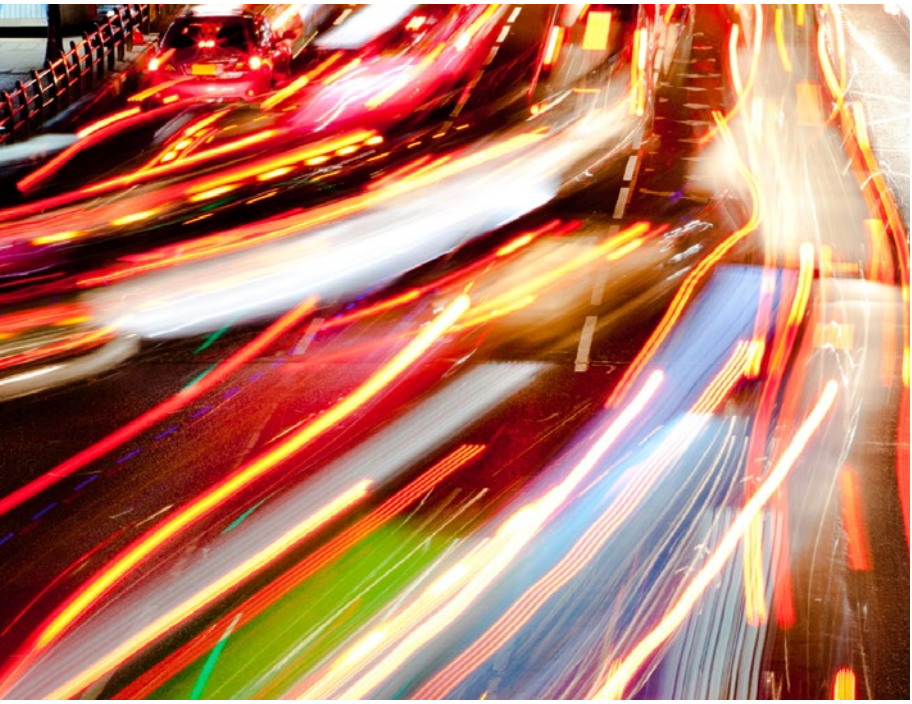
ISO standards can help organizations, large or small, to save energy and costs, while actively committing to sustainability. This gives them a competitive advantage through products and processes that are more energy-efficient and environmentally friendly.

Regulators

Regulators can rely on ISO standards for internationally harmonized solutions that are continually reviewed and improved. These provide a solid technical base that governments can use to achieve their national and international energy objectives and commitments.

Consumers

ISO standards help make government schemes more effective and improve the efficiency of electrical appliances and other energy sources. They also help consumers reduce their energy consumption and costs while contributing to global energy efficiency goals.



What energy sectors does ISO cover?

- Construction
- Renewable energy
- IT and household appliances
- Transport
- Industrial products and processes
- Power generation
- Wind power
- Hydrogen

What standards does ISO have for energy?

Out of a total of over 22 000 International Standards, ISO has more than 200 related to energy efficiency and renewables, with many more in development.

Below is a selection of ISO's standards for energy:

Carbon capture and storage

ISO has published a number of standards that facilitate the use of this innovative technology, which consists of extracting carbon dioxide (CO_2) emissions from large stationary sources and injecting them into a geologic storage formation for safe and secure disposal.

- **ISO/TC 265,** ***Carbon dioxide capture, transportation, and geological storage***

Energy management

In addition to ISO 50001 on energy management systems (see Box overleaf), our most widely used energy-related standard, ISO has developed standards on energy performance indicators, the measurement, analysis and verification of energy performance, as well as methodologies for the calculation of energy savings in projects, organizations and regions.

- **ISO/TC 301,** ***Energy management and energy savings***

Who develops ISO standards?

ISO standards are developed by groups of experts within technical committees (TCs). TCs are made up of representatives from industry, non-governmental organizations, governments and other stakeholders who are put forward by ISO's members. Each TC deals with a different subject; in the energy sector, for example, there are committees focused on measuring CO_2 emissions, energy management and building design, as detailed in this brochure.

Environmental management

Alongside ISO 14001 for environmental management, ISO 14064 on the quantification and reporting of greenhouse gases and ISO 14025 on environmental labels and declarations are just some of the many standards that help organizations reduce their environmental impact through smarter energy usage.

- **ISO/TC 207**, *Environmental management*

ISO 50001 for energy management

ISO 50001:2018, *Energy management systems – Requirements with guidance for use*, is one of ISO's most widely used standards, with over 20 000 certifications issued in 2016 alone (up 70 % from 2015), not to mention the organizations that use it without getting certified. It provides organizations with a recognized framework for developing an effective energy management system. Like other ISO management system standards, ISO 50001 follows the Plan-Do-Check-Act process for continual improvement.

Many companies, big and small, have reported benefits from using ISO 50001; examples can be found in the dedicated ISO 50001 brochure.

Buildings

Energy consumption in buildings accounts for over 20 % of total primary energy use worldwide[1], and up to 40 % in developed economies such as the United States and the EU[2], and it is on the rise.
ISO has a number of standards that help make buildings more energy-efficient, covering everything from the design of the whole building to its individual parts. This includes the ISO 52000 family of standards, which takes a holistic approach to improving the energy performance of buildings. It contains a comprehensive method of assessing energy performance as the total primary energy used for heating, cooling, lighting, ventilation and domestic hot water of buildings, thus supporting new technologies and approaches to building design and management.

- **ISO/TC 163,** ***Thermal performance and energy use in the built environment***
- **ISO/TC 205,** ***Building environment design***

1) **www.eia.gov/outlooks/ieo/pdf/0484(2017).pdf**

2) **www.sciencedirect.com/science/article/pii/S0378778816305783**

Information technology

Standards that address the performance of information and communication technology (ICT) and household appliances are key players in reducing energy consumption. The new ISO/IEC 30134 series of standards, developed in conjunction with the International Electrotechnical Commission (IEC), aims to make ICT products more energy-efficient.

- **ISO/IEC JTC 1/SC 39**, ***Sustainability for and by information technology***

Transport

New technology is making inroads in reducing the energy consumption and polluting emissions of vehicles, but there is still a long way to go. ISO standards help pave the way for these technologies by providing useful tools to support their development. These include standards such as ISO 16923 and ISO 16924 for the design and operation of stations dispensing compressed and liquefied natural gas to vehicles, ISO 8714 for measuring the reference energy consumption of electric passenger cars, and ISO 23274 for measuring exhaust emissions and fuel consumption in hybrid vehicles. Other related documents feature ISO/TS 19880, a technical specification that recommends the minimum safety characteristics for hydrogen fuelling stations. In addition, the ISO 6469 series provides safety specifications for rechargeable energy storage systems for electric cars.

- **ISO/TC 22/SC 37,** ***Electrically propelled vehicles***
- **ISO/TC 197,** ***Hydrogen technologies***

Industrial products and processes

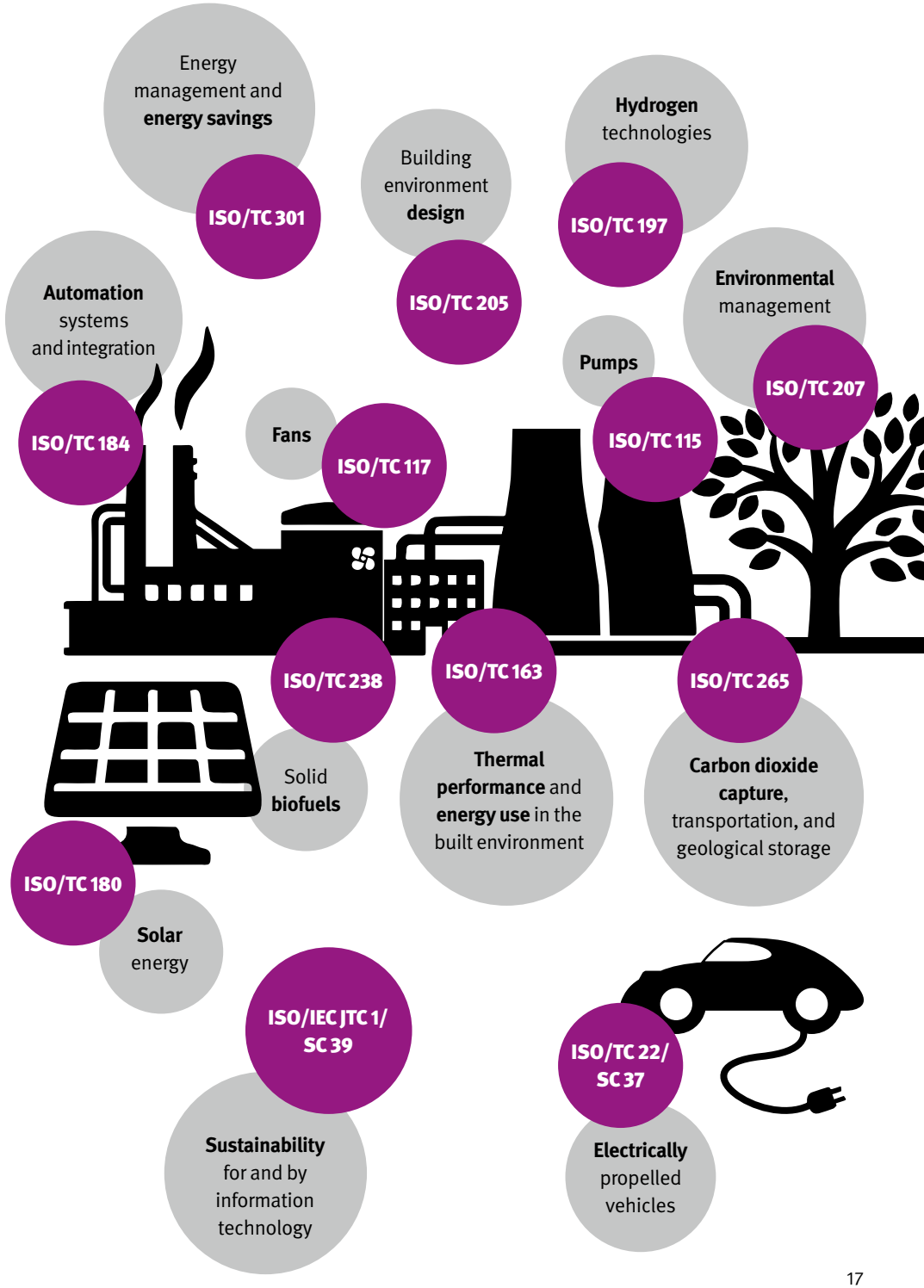
ISO has standards to increase the performance and effectiveness of machines and equipment, including refrigeration and air-conditioning systems, automation systems, industrial fans, air and gas cleaning equipment and more.

- **ISO/TC 115**, *Pumps*
- **ISO/TC 117**, *Fans*
- **ISO/TC 184**, *Automation systems and integration*

Renewables

ISO has published over 50 standards for solar energy systems and biofuels, namely standards for performance ratings and test methods, solar heating, solar panels and solid biofuels. Future technical work will cover solar thermal collectors and the safety of solid biofuel pellets.

- **ISO/TC 180**, *Solar energy*
- **ISO/TC 238**, *Solid biofuels*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Building environment **design**
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Electrically propelled vehicles

More information ?

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The symbol on the cover comes from the International Standard **ISO 7000, *Graphical symbols for use on equipment – Registered symbols***. It is used to identify the control or the indicator for electric energy, or to identify equipment that is operated by electric energy.

Available on our Online Browsing Platform at: **gotoi.so/isosymbols**.