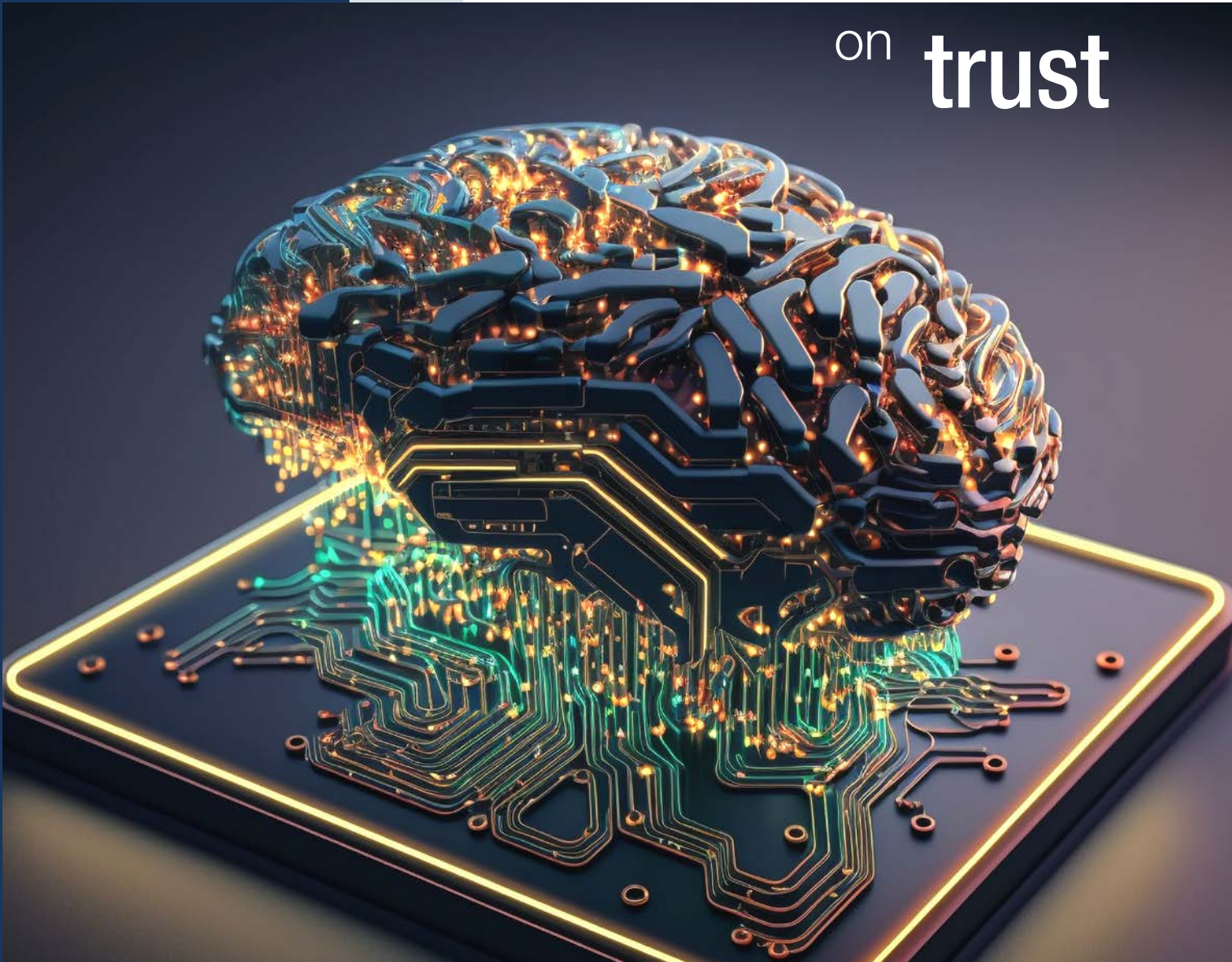




International
Electrotechnical
Commission

Leading

on **trust**



Annual Report 2022

Leading on trust: reflecting on our journey in 2022



Behind the excellent results in 2022 is the dedication of the entire IEC Community – supported by my staff in the IEC Secretariat – and their commitment to driving progress and helping to build a more sustainable future. As the IEC Secretary-General and CEO, I am pleased to reflect on the achievements and milestones of the organization in 2022, with a particular emphasis on the theme of trust. Trust is the foundation upon which the IEC builds its credibility. It permeates every aspect of our work in international standards and conformity assessment.

Empowerment and inclusion

One of the significant highlights of 2022 was the adoption and implementation of the new IEC Statutes and Rules of Procedure. This marked a transformative moment for the organization, as it led to enhanced empowerment and involvement of our members. We believe that the new governance system is essential for our long-term relevance and success.

Seizing opportunities amid challenges

The strong operational track record of the IEC, even during the challenging times of the pandemic, further bolsters our resolve to excel. The “new normal” environment gave rise to a unique set of challenges, which the IEC Community embraced as opportunities for growth. We tackled difficult challenges, such as the adoption and operationalization of the new IEC Strategy, which revolves

around the pillars of digital transformation and sustainability, in addition to trust. Furthermore, we pursued a stronger integration of conformity assessment and standardization, sought a sustainable new business model, launched the Global Impact Fund and engaged in collaborative projects with ISO, including SMART standardization and conformity assessment. We also explored CO₂ measurement and certification tools, addressing the most pressing global concerns.

Expanding partnerships and influence

Building trust does not happen in isolation. Recognizing this, the IEC intensified its collaborations with its sister organizations ISO and ITU, through the World Standards Coordination (WSC). Additionally, we engaged proactively with global governance organizations, including the WTO, G20 and UNFCCC (for COP),

among others. These partnerships provide fertile ground for raising the profile of international standards and conformity assessment and amplifying their impact. We also extended our outreach to other stakeholders in crucial areas like renewable energy and artificial intelligence, ensuring our work aligns with the broader needs of society. The international conference *AI with Trust* that we co-organized in Geneva together with the Swiss Federal Department of Foreign Affairs is a case in point here.

Internal enhancements

The IEC Secretariat underwent a series of organizational changes and enhancements in 2022. Our focus on staff management and development resulted in more precise staff rules, a competency model and new training opportunities. To bolster operational excellence, we introduced a modern enterprise resource planning system that serves as the digital backbone for financial and core processes within the Secretariat. These improvements allow us to provide automated and timely data to IEC Members, empowering them with the information needed to make informed decisions.

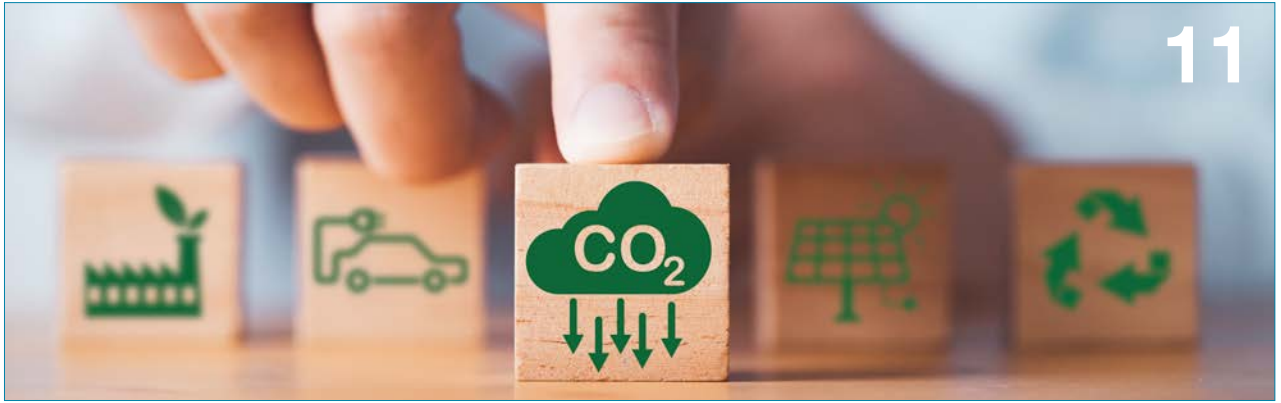
Leading the way forward

As I reflect on the achievements of the IEC in 2022, the theme of trust emerges as a guiding principle in all our endeavours. Trust in IEC Standards, conformity assessment and governance is paramount. Through empowerment, inclusion and the pursuit of excellence, the IEC continues to lead the way, setting global benchmarks and shaping the future of electrotechnical standardization. As we look ahead, the IEC is strengthening its commitment to trust, embracing emerging technologies, addressing evolving challenges and fostering collaboration with key stakeholders. Together, we will continue to lead on trust, ensuring that the IEC remains at the forefront of shaping a safer, more sustainable and technologically advanced world for all.

Philippe Metzger

IEC Secretary-General & CEO





6

Highlights

12

Transitioning to green energy

19

Ensuring safety and performance

30

Embracing members and affiliates

34

Leadership

8

Advancing a sustainable future

15

A framework for digital transformation

26

Fostering collaboration

33

Awards

37

Financial highlights



Table of contents



Highlights

IEC Standards and the four Conformity Assessment Systems performed well in 2022 despite the unstable global economic and geopolitical context. Highlights included not only the publication of a number of essential standards but also groundbreaking conformity assessment schemes.

A new standard for low voltage direct current (LVDC) published in 2022 is already helping to bring clean, affordable electricity to some of the world's poorest people to improve their lives. Another standard that is making a significant impact is the revised and updated [ISO/IEC 27001](#) for the cyber security of information systems.

New publications for artificial intelligence address important issues such as governance, ethics and trustworthiness. The international conference *AI with Trust* complemented the work being carried out in the joint IEC and ISO Technical Committee ([JTC 1/SC 42](#)) by bringing a wide range of stakeholders together to discuss the interaction between standards, conformity assessment and regulation.

In 2022, IEC conformity assessment experts developed a carbon footprint verification scheme. It provides independent verification that companies use the correct process, methodology and registers to calculate the carbon footprint of a given product.

[IECEX](#) applied their expertise to green hydrogen in 2022. IECEX now certifies ISO standardization, covering equipment, components and systems associated with the production, distribution, dispensing and use of hydrogen.

2022 also saw the launch of the [Global Impact Fund](#), an important new initiative that advances the IEC vision for a safer and more efficient world by supporting projects that address many of today's social, economic and environmental challenges using IEC International Standards and conformity assessment.

With an eye to the future, IEC began work with ISO on so-called SMART standards and conformity assessment. The project is focusing on enhancing the digital capability of both organizations to provide tailored and up-to-date content at the right time to standards users, whether they are humans, computers, complex machines, or small intelligent devices.

Supporting the first theme of the IEC Strategic Plan, the Standardization Management Board ([SMB](#)) has provided a comprehensive understanding of the concept of an All Electric and Connected Society (AECS). The relevance of AECS to IEC, potential challenges and needs for additional standardization activities have been articulated by *ad hoc* Group 95. This will allow the SMB to operationalize the vision of an AECS across all IEC technical activities to create a net zero environment through the combination of sustainable electrical energy and cutting-edge digital technologies.



214
committees



1 783
active projects



652
publications in 2022

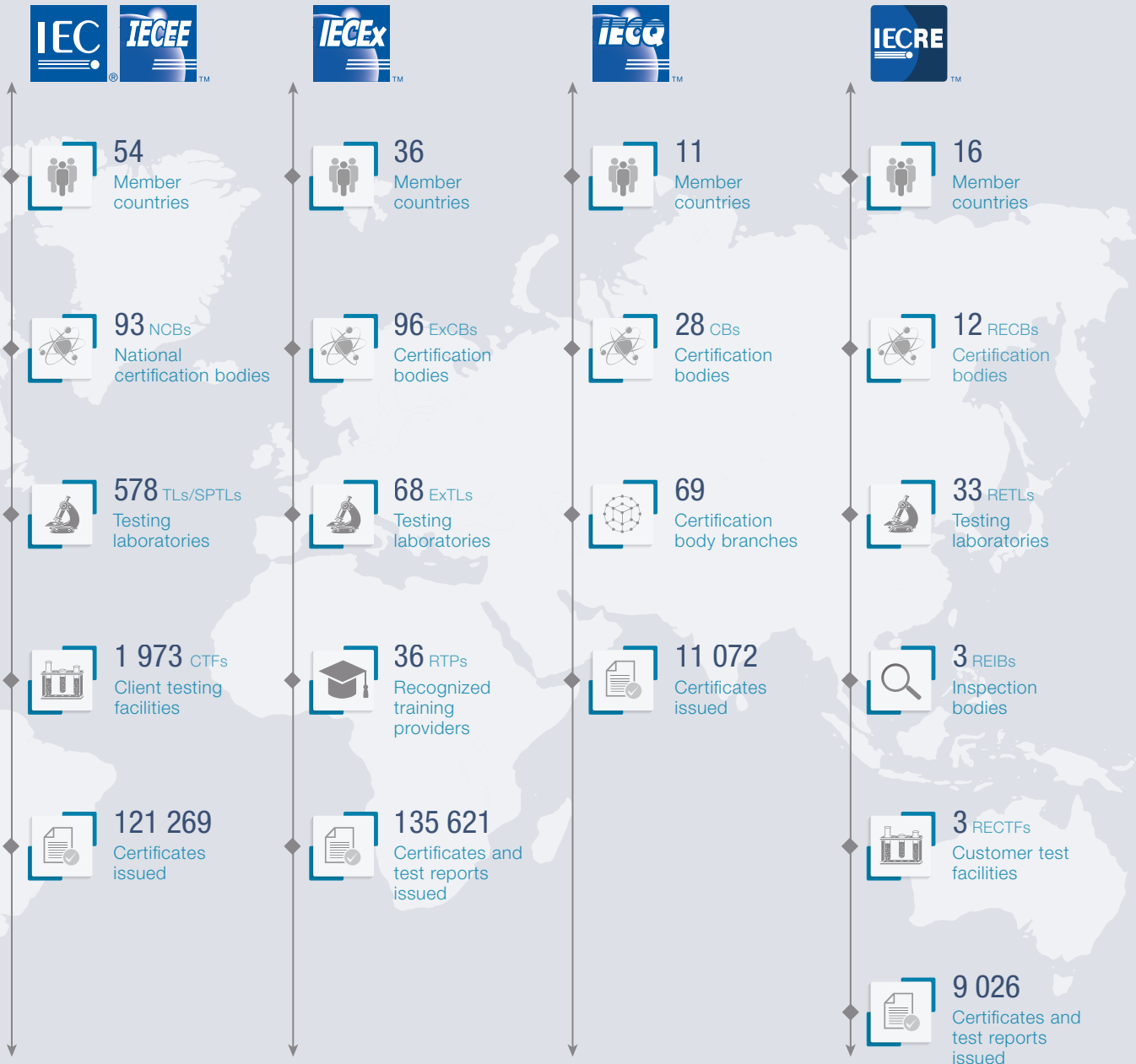


11 448
publications in library



4
CA Systems

CA Systems



Advancing a sustainable future

IEC Global Impact Fund launch

Electrical, electronic and information technologies, which are core to IEC work, have the potential to positively impact environmental, societal and governance (ESG) challenges. Harnessing IEC technical solutions and best practices can help address some of the most urgent, global issues such as climate change, energy access and waste management.

In this context, the IEC launched the IEC Global Impact Fund (GIF) in October 2022. It provides grants to help solve specific environmental, social or governance challenges using IEC International Standards and IEC Conformity Assessment Systems.

The fund is initially supported through a three-year annual contribution of 1% of the IEC Capital & Reserves over the 2022-2025 pilot phase. This seed funding will build a global partnership aligned with the IEC values and mission.



IEC GIF: First project

The first project of the IEC Global Impact Fund focuses on promoting sustainable battery e-waste management in Africa. In November, the fund issued the first formal documents as part of the project entitled *Catalyzing innovation for circular models in Africa – turning battery e-waste into e-resources*.



IEC and the SDGs

Throughout the year, major training and communication efforts were made to increase awareness and understanding of IEC work for the United Nations Sustainable Development Goals (SDGs). New standardization proposals as well as existing publications undergoing maintenance have been identified according to their impact on SDGs. The [IEC website](#) provides an overview of IEC publications linked to each of the SDGs.

The SDGs were also central to the communication efforts around the G20 and COP27.

The Conformity Assessment Board (CAB) Taskforce on SDGs continued its work identifying the link between the IEC Conformity Assessment Systems and relevant SDGs.

Two Young Professionals were accepted as members of the [IEC Board \(IB\) Taskforce on SDGs](#), which provides a strategic framework to enable relevant work for SDGs and leading change across the IEC community. The aim is to encourage the development of standards, conformity assessment programmes and other services integrating the SDGs so as to enable countries to reach their SDG goals.

World Standards Day and SDGs

As part of a multi-year campaign, World Standards Day (WSD) promotes the contributions of international standards to the SDGs. In 2022, the focus was on sustainable environment. The [WSD website](#) provides tools and resources for the IEC, ISO and ITU members to promote WSD. The aim is to increase broad awareness about the important role of standards in achieving the SDGs.



UN SDGs International Roundtable in San Francisco

During the IEC General Meeting, a high-level panel of global experts discussed the relationship between business and SDGs, and the importance of standards and conformity assessment in addressing SDGs for everyone. A video of this event is available [here](#).



IEC UN SDGs International Roundtable

2 November 2022 – San Francisco
09:00 – 12:00 (local time)

[#IECforSDGs](#)

Energy access

Beyond the basics

The IEC published [IEC 63318](#), the first standard developed by the [Low Voltage Direct Current \(LVDC\) Systems Committee](#). It adopts the World Bank's Multi-Tier Framework (MTF) for measuring energy access beyond a simple “connected or not connected” binary measure.

The MTF defines different tiers of access, starting with limited access (Tier 1) for basic electricity needs like lighting and phone charging provided by small solar systems. Higher tiers allow for more capacity and longer supply durations, enabling the use of larger appliances such as refrigerators, washing machines and air conditioning. IEC 63318 addresses levels 2 and 3 of the World Bank classification and tackles technology challenges related to integrating direct current (DC) systems with an alternating current (AC) grid.

Rural electrification

Collective electrification systems, based on solar PV, small wind turbines or micro hydropower can supply electricity to isolated sites far from the next electric grid. The [IEC TS 62257](#) series provides recommendations for renewable energy and hybrid systems for rural electrification. The new technical specification [IEC TS 62257-7-2](#) provides recommendations for the implementation of off-grid wind turbines.



Climate action

During COP27 in Sharm-el-Sheikh, the IEC delegation actively participated in sessions related to its area of expertise. It effectively engaged with regulators, representatives from academia, industry associations, international organizations and management consultancies. Additionally, the IEC took part in various events organized by ISO, [the Economist](#), IAEA, IEA, IRENA, [SEforALL](#), [WBCSD](#), [World Bank](#) and others, and conducted several productive bilateral meetings.

One notable invitation was for the IEC to serve as a panellist during the Energy Day organized by the Egyptian Presidency, with a specific focus on energy efficiency.

Before the COP event, the IEC gathered case studies from 35 countries, showcasing the implementation of IEC International Standards to achieve policy objectives. These [resources](#), along with a downloadable [briefing paper](#), can be found on the IEC website. These materials demonstrate how policymakers leverage IEC International Standards to effectively accomplish their policy goals.

This [video](#) helped raise awareness about IEC climate action initiatives.



COP27
SHARM EL-SHEIKH
EGYPT 2022

Combatting greenwashing

IECQ green approach

The increasing pressure to adopt environmentally friendly practices and attract consumers has sometimes resulted in companies and organizations making claims that lack scientific grounding and standardized approaches. Terms like “sustainable”, “green”, “eco-friendly”, “good for the planet” and “better for the environment” may not withstand scrutiny, leading to suspicions of greenwashing.

To address this issue, [IECQ](#) provides an independent assessment of environmental claims made by companies.

[IECQ HSPM](#) is a management systems approach that focuses on implementing and maintaining products and production processes free from hazardous substances based on technical principles.

Eco-design aims to minimize negative environmental impacts and promotes sustainability throughout a product's entire life cycle, from raw material extraction to end-of-life management. IECQ relies on [IEC 62430](#), a standard developed by [IEC Technical Committee 111](#), to provide an eco-design service as part of its approved process (AP) scheme.

Reducing emissions by data centres

Data centres are vital for our IT-driven societies and the digital transformation of our economies. These facilities, known as

“data farms”, have high electricity demands and generate significant heat. They require substantial energy not only for operation but also for cooling systems.

To measure the CO₂ emissions caused by data centres' energy consumption, key performance indicators (KPIs) are crucial. ISO/IEC JTC 1/SC 39: Sustainability, IT and data centres, has developed standards for this purpose. [ISO/IEC 30134-1](#) defines common requirements for a comprehensive set of KPIs focussed on data centre resource efficiency. The recently published [ISO/IEC 30134-8](#) provides specific guidelines for the carbon usage effectiveness (CUE) metric, including its theoretical and mathematical aspects.

MSB CO₂ Emission certificate programme

In 2022, the Market Strategy Board ([MSB](#)) identified a potential new product/revenue stream for an IEC Carbon product footprint certificate. The MSB recommendation was for the Standardization Management Board ([SMB](#)) and [CAB](#) to explore the possibility of setting up such a programme and to explore its feasibility.

SMB guidelines on carbon footprint for the electrotechnical sector

Following the [COP26](#) climate summit in Glasgow in November 2021, the IEC started to address data collection related to the carbon footprint of products (CFP) in the electrotechnical sector. By focusing on the CFP, governments, industry and consumers have access to a tool that can be used to compare products and take environmentally informed decisions.



Transitioning to green energy

Advancing marine energy

Educational programmes in the field of marine energy

The Interreg [ENCORE](#) project, launched in 2020, aims to accelerate technological development in marine energy. Its main goal is to bring future innovations to market faster and through its education programme to train and prepare talent for the industry. The project collaborated with [IECRE](#) and [IEC TC 114](#), which sets standards for marine energy. The education package developed in collaboration with various stakeholders and the [IEC Academy](#) covers topics such as conformity assessment and the use of international standards.

Ocean energy systems: key role of IEC TC 114

The Ocean Energy Systems Technology Collaboration Programme (OES) is an intergovernmental collaboration established in 2001 under the framework of the International Energy Agency (IEA) in Paris. In collaboration with IEC TC 114, OES released a joint document titled *Supporting Ocean Energy Technology Development and Commercialisation*. This document aims to raise awareness among technology developers and investors in the ocean energy sector about the valuable guidance tools developed by IEC TC 114. It highlights the importance of standards and the role of conformity assessment (IECRE) in ensuring the success of marine energy projects from initiation to commercialization.

Geothermal energy

Geothermal energy is a clean, reliable and abundant source of renewable electricity that is available year-round and possesses inherent storage capabilities. It harnesses the continuous heat flow from the Earth's interior to its surface.

To ensure safe and efficient geothermal energy production, [IEC TC 5](#) published [IEC 60953](#), which sets the benchmarks for rating and testing steam turbines.

Solar energy

Most of the products we use daily are sourced globally and transported by ships, trucks, trains and sometimes by air. During transportation and storage, products can be affected by mechanical stresses, including shocks, vibrations, humidity or heat. The same goes for photovoltaic modules which necessitate careful handling to ensure safe and efficient delivery.

[IEC 62759-1](#) provides guidance on how to simulate road transportation and shipping of the complete package system of modules through random vibration and various shock tests. The aim is to assess the modules' ability to withstand transport stress while retaining their electrical properties.



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Green hydrogen

Fuel cells for trains

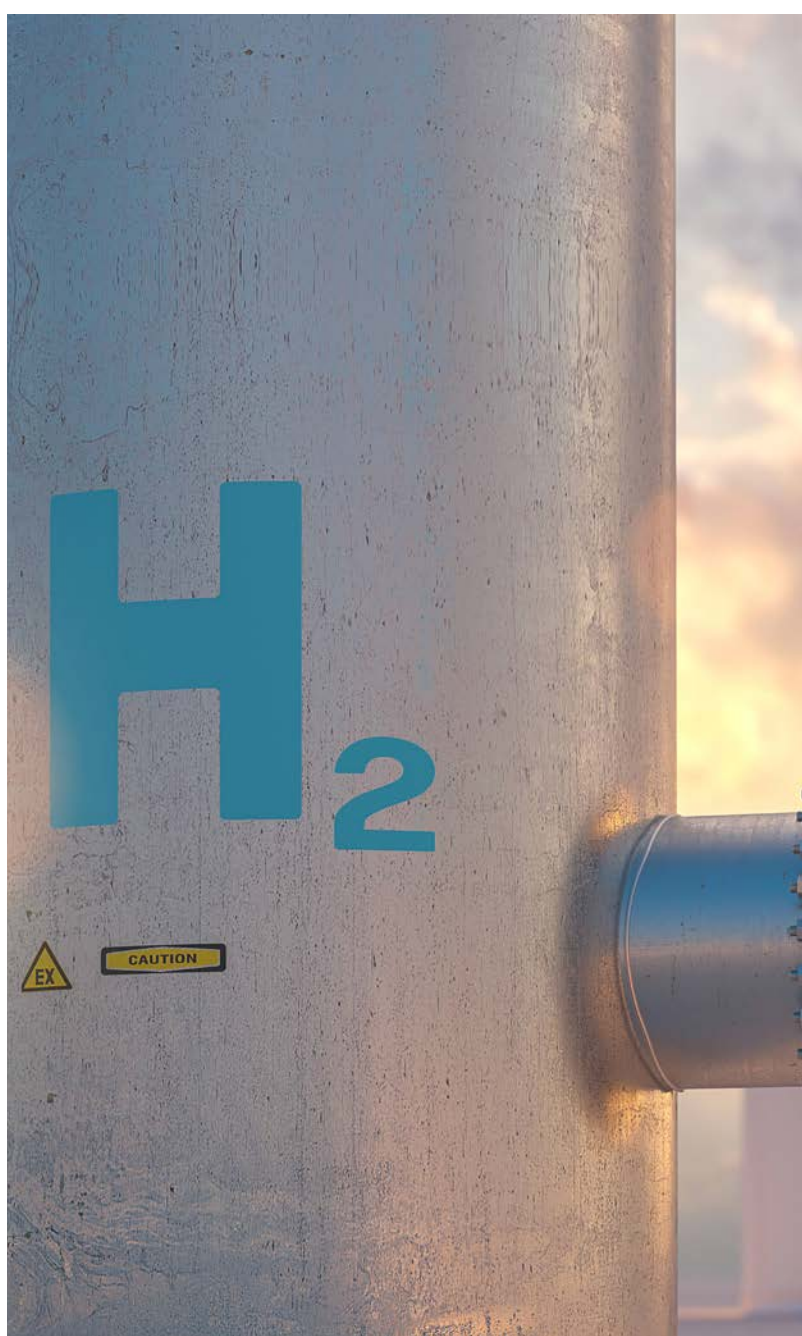
Hydrogen-propelled trains are becoming a reality in various countries around the world and are already part of the fleet of a regional state in Germany.

The IEC is currently working on two new standards (IEC 63341-1 and IEC 63341-2) to accelerate the integration of fuel cells into railway systems for traction.

IECEX green hydrogen certification of equipment and personnel

Hydrogen is a highly flammable gas which requires special precautions during manufacturing, distribution, storage and use. It can be produced from a range of resources, including fossil fuels, nuclear energy, biomass and renewable energies. Carbon neutral hydrogen, often called *green hydrogen*, is generated from solar or wind energy sources, as well as nuclear.

IECEX has over 25 years' experience in the testing and certification of explosive (Ex) environments, including for areas where hydrogen may be present. To ensure the safety of populations and personnel working in the hydrogen industry, as well as hydrogen installations, the IECEX programme provides the certification of equipment, components, and systems associated with the production, distribution, dispensing and use of hydrogen. This also includes gaseous hydrogen dispensing equipment, components and systems for light and heavy-duty vehicles. In addition to certifying objects and installations, IECEX also assesses and certifies individuals working in potentially hazardous areas, to address hydrogen safety.





A framework for digital transformation

Artificial intelligence

AI with Trust conference

Building trust in artificial intelligence (AI) is a major concern for various stakeholders, including industry, academia, lawmakers, standards developers and compliance assessors. While 60% of adults worldwide expect AI-powered products and services to simplify their lives, only 50% trust companies that use AI as much as those that don't (Ipsos survey for WEF).

To address this issue, the IEC, along with the [Swiss Federal Department of Foreign Affairs](#), ISO and ITU, organized the international conference *AI with Trust* in May 2022. The conference aimed to explore the relationship between legislation, standardization and conformity assessment, and the need for international harmonization in AI efforts. Over 500 participants attended both in-person and online.

International standards play a crucial role in enhancing trust in AI. They support decision-making in the public and private sectors, thanks to the involvement of stakeholders from around the globe. This inclusive approach ensures widespread global acceptance and strikes the right balance between rapid technology deployment and addressing ethical concerns.



Ethical and societal concerns

The IEC and ISO have released [ISO/IEC TR 24368](#), a technical report that offers guidance on addressing ethical and societal issues related to artificial intelligence. This report takes an objective and practical approach, using real-world scenarios. It is designed for technologists, regulators and society.

The authors highlight various ethical and societal considerations such as accountability, professional responsibility, privacy, safety and security, community involvement and development, and adherence to the rule of law and fair labour practices.

AI concepts and terminology

The use of consistent terminology is important to avoid confusion and misunderstanding. Consistent terminology ensures that everyone is on the same page and that there is no room for ambiguity or error.

[ISO/IEC 22989](#) provides over 100 commonly used terms in AI and describes concepts related to AI systems for a wide range of technologies. It is designed to improve the effectiveness of information exchange through the consistent use of terminology. Additionally, this new publication outlines key concepts which can be used by experts developing interoperable and coherent applications, systems, standards and/or usage guidelines for the application of AI.

Machine learning

Machine learning (ML) is a branch of AI. It utilizes computational techniques to enable devices to learn from data and experiences, improving task performance and predictive accuracy. [ISO/IEC 23053](#) provides a framework that outlines the components and functions of the ML system within the AI ecosystem. Together with [ISO/IEC 22989](#), it establishes common terminology and concepts for ML systems.

The standard ensures a clear understanding of system engineering and usage considerations and applies to organizations of all sizes, including public and private companies, government entities and non-profit organizations, that implement or use AI systems.

Understanding AI algorithms

AI is revolutionizing the smart manufacturing sector by leveraging real-time data collection and analysis using sophisticated algorithms to drive higher efficiencies. This includes deploying predictive maintenance, reducing equipment failure, increasing reliability, and improving asset performance. Additionally, smart sensors are transforming home and security applications.

IEC and ISO has published the new technical report, [ISO/IEC TR 24372](#), which assists users in understanding the sophisticated algorithms these applications rely on. The report provides an overview of the latest computational approaches for AI systems, covering their main characteristics and referencing use cases found in [ISO/IEC TR 24030](#).

Teaching machines to learn

Machine learning models require regular evaluation to improve performance. For example, an email spam filter classifies incoming messages as either spam or not spam. To perform this task effectively, the classifier needs examples of both types of emails to learn and recognize patterns and to improve over time. The joint IEC and ISO committee on AI, [SC 42](#), has developed the new technical specification [ISO/IEC TS 4213](#) which specifies methodologies for measuring the classification performance of ML models, systems and algorithms. It covers binary classification as well as multi-class and [multi-label classification](#) use cases.

[ISO/IEC TS 4213](#) provides consistent approaches and methods to facilitate efficient result comparisons across different evaluation regimes. It builds upon the foundational concepts of [ISO/IEC 22989](#), which covers AI concepts and terminology.

AI governance

Establishing a governance framework for AI is essential for any organization that uses AI in its daily business. It is a boardroom-level responsibility, limited not only to ensuring the effective use of AI, but also encompassing risk management, regulatory compliance and ethical usage.

The new international standard, [ISO/IEC 38507](#), provides guidance specifically for governing bodies of organizations in adapting their existing governance and organizational policies to incorporate AI. It helps to define responsibilities and accountability within the context of AI usage. The standard is relevant to CEOs and senior executives, as well as legal experts, accountants and regulators.



Managing data analytics

Big data enables transformative insights beyond the capabilities of traditional analytic tools. To harness its benefits, organizations need a process management framework that aligns functional groups, processes and outcomes. The new international standard, [ISO/IEC 24668](#) on process management framework for big data analytics, offers practical guidance based on best practices. It covers data acquisition, description, storage and processing, regardless of industry. This standard helps organizations develop an efficient framework for leveraging big data analytics across all functions.



Digital twins and the energy sector

Digital twins in the energy sector are virtual – and often real-time – representations of physical grid assets. They offer numerous benefits such as improved planning, operational efficiency and personnel training. They enable stress-testing for various scenarios, including severe weather events.

IEC TC 57 has standardized communication means and machine-level semantics for interoperating digital twins as part of the IEC 61850 and IEC 61970 common information model (CIM) series of standards, which are essential for smart grid implementation.

The COVID-19 pandemic accelerated the adoption of digital technology in the electricity network, including the use of digital twins for testing activities. While not replacing on-site testing entirely, digital twins significantly reduce physical testing, lowering costs and enhancing the quality of the protection system.

IEC Systems Committee (SyC) Smart Energy and ISO/IEC JTC 1/SC 41 established a joint working group to develop information and communications technology (ICT) standards for energy applications. Additionally, IEC TC 57 and ISO/IEC JTC 1/SC 41 formed a joint working group to explore IoT applications in the distribution grid, with smart energy and smart grids being key focus areas.

Multimedia advances

Imitating touch

Haptics involve transmitting and interpreting information through touch. Haptic technology is utilized in various electrical appliances such as computer interfaces, automobiles and entertainment devices, e.g. haptic vests or joysticks.

IEC TC 100, specializing in audio, video and multimedia systems, released IEC TR 63344. The document provides guidance on haptic technology and its applications. It outlines numerous use cases and haptic technologies, including ultrasound-based haptic systems which employ ultrasound waves instead of vibrations to generate tactile sensations.

Internet of Things

ISO/IEC JTC 1/SC 41 focuses on standardizing IoT and digital twin. It publishes key standards for industrial IoT systems compatibility (ISO/IEC 30162) and IoT applications for electronic label systems (ISO/IEC 30169). Both cater to the Industrial Internet of Things (IIoT) domain.

The IEC has also released standards for underwater sensors (ISO/IEC 30142-2 and ISO/IEC 30171-1) destined for resource exploration and environmental monitoring or the detection of underwater pipeline leakages.

Emmy Awards

The ISO/IEC Moving Picture Experts Group (MPEG) was a double winner at the Technology and Engineering Emmy Awards in the United States. The National Academy of Television Arts and Sciences (NATAS) awarded the Emmys to MPEG for the standardization of both open font technology for web and television devices, and HTTP encapsulated protocols (MPEG DASH).

MPEG and its sister Joint Photographic Experts Group (JPEG) have won a string of Emmys in recent years for their transformative contributions to the global audio-visual industry. These Technology and Engineering Emmy Awards recognized development work and standardization by ISO/IEC JTC 1/SC 29, which significantly improved or replaced existing technologies or methodologies.

Looking to the future

SMART standards

The IEC and ISO are closely collaborating on SMART, to lead the digital evolution of international standards to meet the current and future global needs of industry, regulators, individuals, societies and economies.

As an extension of existing deliverables such as paper or PDF, SMART will open the way for the IEC and ISO to digitalize knowledge. SMART encompasses the formats, processes and tools necessary for users (humans and machines) to interact with standards over the entire dynamic lifecycle.

Bio-digital convergence

Bio-digital convergence is a vast, multidisciplinary field, covering everything from biomaterials to human augmentation.

With researchers being able to add microchips and sensors even to small insects, cyborg cockroaches fitted with video cameras could soon be first responders sent to locate survivors trapped under the rubble of collapsed buildings.

The IEC established a standardization evaluation group (SEG), SEG 12, to investigate current research and technology activities, identify critical challenges and to propose a roadmap for future standardization. SEG 12 is also carrying out important work on terminology, which will help to facilitate the exchange of information and to serve as a basis for future standardization activities.

Metaverse

The industrial metaverse represents an exciting new frontier for innovation and collaboration in industries across the globe. International standards can help ensure that it delivers benefits ranging from improved efficiency to greater sustainability.

The SMB set up SEG 15 to explore the needs of the metaverse. It will develop a common understanding and definition of the metaverse, investigate the need for standardization and provide recommendations for an initial roadmap. It will engage with technical committees in the IEC, as well as ISO and all other relevant organizations.

Online standards development

First standard for committee review

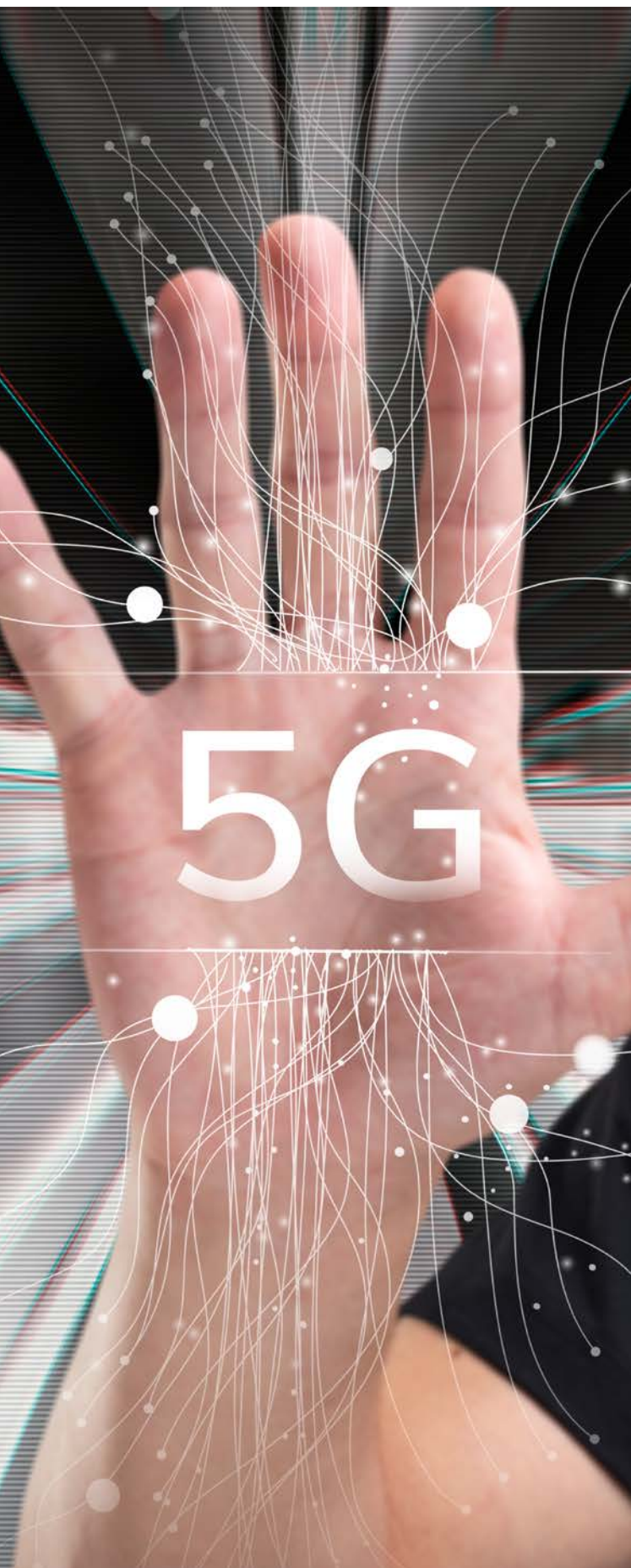
The online standards development (OSD) platform is a joint development between the IEC and ISO to provide standards developers with digital tools to streamline the process for drafting and editing international standards. According to Peter Fischer, the Project Leader for IEC 60512-28-100 ED3, “The platform is still in the early stages, but it is a very helpful tool to improve collaboration between experts by adding content and resolving comments.”

The OSD platform reached an important milestone with the first draft standard IEC 60512-28-100 ED3 submitted for its initial review by the members of IEC Subcommittee 48B on electrical connectors. This was the first draft standard prepared using the OSD editing tools to reach the committee stage.

Member commenting

Also in 2022, an updated version of the OSD platform was launched. This new version enables IEC National Committees to use the platform for the collection, consolidation and submission of their comments to draft standards. The new version also offers enhancements to the user interface.

The OSD member commenting simplifies the process for IEC Members to collect and provide feedback during the standards development commenting stages. It aims to enhance collaborative work and consensus building while also increasing efficiency.



Ensuring safety and performance

5G technology

Ultra-high frequency

5G mmWave (or millimetre wave) is an ultra-high frequency band in the millimetre wave range promising transmission speeds 100x faster than 4G LTE. This new cellular technology is one of the key elements of the 5G technology mix, benefiting mobile Wi-Fi, cellular backhaul and home internet service. In cities, public transport hubs and sports stadiums, 5G mmWave technology helps deliver on the full promise of 5G.

A joint effort by the IEC and the IEEE Standards Association has resulted in the publication of two international standards ([IEC/IEEE 63195-1](#) and [IEC/IEEE 63195-2](#)). These standards are used to assess the exposure to mmWave power density, when a 5G mobile device is pressed against the head or body. The aim is to verify that exposure limits for power density are in line with the specifications issued by national and global health agencies and help consumers feel confident that 5G technology is safe.

Young Professionals test 5G

During a workshop at the IEC General Meeting in San Francisco, Young Professionals (YPs) were invited to look at the innovative future of 5G applications, beaming live into the 5G Innovation Centre on Australia's Gold Coast. The aim was to showcase real-world applications of 5G including immersive learning with firefighting haptic VR suits, robotics, a connected 5G bike helmet, shark attack search tools and rescue drones from Bondi Beach.

Given it was Halloween, the YPs built and tested a 5G pumpkin connected to mmWave which delivered multi-gigabit per second download speeds.

Keeping with the Halloween theme, the YPs transformed a hotel meeting room into a special test lab to debunk 5G conspiracy theories regarding radio frequency safety. In this context, they performed live testing of everyday devices to demonstrate the exposure levels encountered in a highly connected society.

Household appliances

Protecting users against hazards

Household appliances from refrigerators and washing machines to toasters and irons have developed into an immense and fast-growing industry. The IEC provides a series of standards to protect users against electrical, mechanical, thermal, fire and radiation hazards during normal use, as well as electromagnetic phenomena that can affect safe device operation. Known as the [60335 series](#), it addresses general safety requirements for all appliances and for specific device types.

Refrigerants for ACs

With the increase in heat waves across the world, the demand for air conditioners is on the rise. [According to the IEA](#), the number of air conditioners in use will grow from 2 billion today to 5,6 billion in 2050. To reduce the impact of air conditioning on the environment and satisfy the Kigali Amendment of the Montreal Agreement, manufacturers were calling for a standard that enables the safe use of refrigerants with a low global warming potential.

The long-awaited publication of [IEC 60335-2-40](#), *Household and similar electrical appliances – Safety – Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers*, helps address the special safety requirements of these refrigerants. The new edition helps limit leaks and provides measures to increase the circulation of airflow to dilute the concentration of the refrigerant to reduce its flammability.

Standards map for safety and performance

The IEC has published a [map](#) for standards on the safety and performance of household appliances. It was developed by a joint ad hoc group, [JAHG 20](#), which brought together experts from [IEC TC 59](#) and [IEC TC 61](#).

The new map provides an overview as well as links to safety and performance standards for household and commercial devices based on their usage and function type (i.e. heating and cooling, cleaning, well-being, etc.).

Technical experts can use the map to better visualize how their activities fit into the bigger picture, while standards users get access to an overview of all standards in this area and their relationship to each other.



Alarm systems in industry

Alarm systems help ensure process safety, reduce downtime, and prevent hazardous incidents such as fires or explosions. They indicate abnormal process conditions or equipment malfunctions to operators and personnel before a problem occurs.

Given the essential role of alarm systems, the IEC has published a new edition of its standard [IEC 62682](#), *Management of alarm systems for the process industries*. This standard covers all types of alarms, from basic process control systems to safety instrumented systems.



Batteries for industrial use

To ensure the safety and performance of batteries used in industrial applications, the IEC has published a new edition of [IEC 62619](#). This standard specifies requirements and tests for the safe production of secondary lithium cells and batteries used in industrial applications. It covers batteries used for stationary applications, such as uninterruptible power supplies (UPS), electrical energy storage system, as well as those that are used to produce motion, such as forklift trucks, automated guided vehicle (AGV) and railway and marine vehicles.

Transport

Eliminating blind spots

During manoeuvres, drivers typically rely on different monitor systems for parking assistance, displaying blind spots at intersections, and obtaining a bird's-eye view. However, switching between these systems can be cumbersome and make it difficult to assess the car's accurate position. The same challenge applies to commercial vehicles, such as trucks, buses, construction machinery, and agricultural machinery.

By using a surround view system, drivers can quickly and easily determine the vehicle's correct positioning in various driving situations.

IEC TC 100/TA 17 published [IEC 63033-1](#) which defines the model for generating a visual image that provides drivers with a comprehensive view of the car's surroundings. It combines audio-visual monitoring and recording features, which are part of the car's multimedia equipment.



Data protection

Security in cyber space

A new edition of [ISO/IEC 27001](#) provides updated guidance on protecting the confidentiality, integrity and availability of data. This revised international standard addresses the rising tide of cyber attacks and security breaches amidst the ongoing digital transformation.

ISO/IEC 27001 is a widely recognized and trusted framework for information security management systems (ISMS). It is an industry-standard that follows best practices and is based on a consensus-based approach.

The standard takes a cyber risk management-oriented approach to managing people, processes, services and technology. It provides guidance on designing “controls” to protect sensitive data like personally identifiable information (PII), intellectual property or credit card numbers.

The 2022 version of ISO/IEC 27001 is now part of an approved process scheme that ensures independent assessment and the issuance of an international IECQ certificate of conformity.

Managing IT risks

[ISO/IEC 27002](#) expands on the information security controls outlined in ISO/IEC 27001 to establish and sustain an effective ISMS. It is designed to assist organizations of all sizes and industries in effectively managing their IT risks.

ISO/IEC 27002 provides detailed guidelines for implementing numerous information security controls. These controls cover a wide range of areas, including identifying information assets, assigning protection responsibilities, and maintaining an accurate and consistent inventory that aligns with other organizational inventories.

ISMS: consistent proof of compliance

Businesses face vulnerabilities like email risks, weak credentials, poor password management, unrestricted access, lack of training, outdated software and insecure devices. Security encompasses all aspects, starting at the building’s entry point.



To address these concerns, implementing a ISMS is crucial. It safeguards assets, prevents data loss, and ensures protection.

An ISMS includes policies, procedures, and controls for data integrity, confidentiality and accessibility. It encompasses processes, technology and behaviour, becoming part of the company's culture.

The growing requirement for organizations to demonstrate ISO/IEC 27001 compliance for their ISMS has led the industry to seek a solution. As a result, industry stakeholders have requested IECQ certification bodies (CBs) to handle assessment and certification in a unified and harmonized manner. This addresses the previous inconsistency caused by various certification bodies offering their own certificates and interpretations of ISO/IEC 27001.

All certificates are available on the [IECQ website](#).



Protecting privacy and information

Protecting privacy and PII is a crucial concern in certain IoT systems. When an IoT system deals with PII, there are usually applicable laws and regulations governing its acquisition, storage and processing.

Even in the absence of regulations, handling PII in an IoT system remains a matter of reputation and trust for organizations. Breaches or misuse of PII can cause harm to individuals, making it a significant concern.

To address these challenges, [ISO/IEC 27400](#) offers guidelines for securing interconnected devices across networks. It focuses on IoT-related risks, security and privacy principles, and control measures.

Safeguarding supply chains

To combat the rising cyber attacks on supply chains, the IEC has released a significant addition to the [ISO/IEC 27036](#) series. This addition, [ISO/IEC 27036-2](#), outlines essential information security requirements to help organizations mitigate risks associated with supplier relationships.

Applicable to organizations of all sizes and types, [ISO/IEC 27036-2](#) covers various aspects of procurement and supply, including manufacturing, business processes, software and hardware components, knowledge processes, build-operate-transfer and cloud computing services.

The standard highlights that cyber security risks arise from mutual access to each party's assets, differing business objectives and information security approaches. It emphasizes the need for organizations along the supply chain to manage these risks effectively.

ISO/IEC 27036-2 identifies information security requirements for establishing, implementing, monitoring, reviewing, maintaining and enhancing supplier and acquirer relationships. It promotes mutual understanding of information security approaches and risk tolerance while recognizing the complexity of managing risks within supplier and acquirer relationships that may impact information security.

Keeping biometric information safe

Biometric security has been gaining traction as falling costs have been matched by a corresponding increase in reliability. Fingerprints, voice, iris patterns and facial recognition are now considered trustworthy methods of authentication.

[ISO/IEC 24745](#) emphasizes the importance of implementing appropriate countermeasures to safeguard the security and privacy of a biometric systems and data subjects. It provides guidance on safeguarding biometric information under various requirements for confidentiality, integrity and renewability/revocability during storage and transfer.

The standard also addresses the secure and privacy-compliant management of biometric information. It covers topics such as analyzing threats and countermeasures related to biometrics, security requirements for securely binding biometric references (BR) and identity references (IR); different application models for storing and comparing BRs; and guidance on preserving an individual's privacy during biometric information processing.

Encryption

Encryption plays a vital role in safeguarding mobile phone calls, messaging and online banking. It utilizes complex mathematical algorithms to protect information from hackers, spies and cybercriminals. Without encryption, online confidentiality and security would be compromised, rendering many essential operations infeasible.

Public key encryption, the prevailing system, provides users with two keys: a public key shared with everyone and a private key. These keys, comprising large numbers, form part of an intricate





algorithm that encrypts messages. Senders use the recipient's public key to encrypt a message, ensuring only the intended recipient can decrypt it with their private key. The size of the numbers involved makes it extremely difficult to reverse the encryption process with only the public key.

One widely adopted and efficient form of public key encryption is elliptic curve cryptography (ECC), based on the algebraic structure of elliptic curves. In response to growing interest in ECC, [ISO/IEC JTC 1/SC 27](#) is updating the international standard [ISO/IEC 15946-5](#). This updated edition covers elliptic curve generation methods for key management, encryption and digital signatures based on elliptic curves.

Certifying cyber security

An increasing number of organizations are adopting [IEC 62443](#), a globally recognized series of industrial cyber security standards, to enhance their protection against threats and vulnerabilities and mitigate the impact of cyber attacks. To validate compliance with IEC 62443 requirements, many organizations are seeking [IECEE](#) certification.

IECEE offers an assessment framework aligned with IEC 62443, which covers both technical (security mechanisms) and process-related (human procedures) security capabilities. Two evaluations can be conducted: one to assess an applicant's ability to provide IEC 62443 compliant security capabilities, and another to verify the application of IEC 62443 compliant security capabilities to specific products, automation solutions or industrial automation control systems.

Successful applicants are awarded the IECEE industrial cyber security capability certificate of conformity, demonstrating their adherence to IEC 62443 standards.

Fostering collaboration

World Standards Cooperation

G20

The IEC, ISO and ITU issued a [Call to Action](#) at the official G20 side event – the International Standards Summit – in Bali. The three organizations urged world leaders to recognize, support and adopt international standards to meet the G20 goals defined under the theme *Recover together, recover stronger*. The event was hosted by the National Standardization Agency of Indonesia (BSN) with the participation of the World Trade Organization (WTO).



The three main pillars of the 2022 G20 meeting were global health architecture, digital transformation and sustainable energy transition. The IEC/ISO/ITU declaration underlines how international standards and conformity assessment can contribute to building a greener and more sustainable future. In addition, the declaration notes that the three international standards bodies provide an institutional framework with the participation of a broad range of stakeholders from around the world.

Standardization representatives from the G20 countries endorsed the declaration.

Joint Smart Cities Task Force

In 2022, the [SyC Smart Cities](#) initiative was actively developing a reference architecture model and standards mapping tool for smart cities. This tool is based on the [IEC SRD 63233](#) series of standards, which includes [IEC SRD 63233-1](#), [IEC SRD 63233-2](#) and [IEC SRD 63233-4](#). These standards provide a methodology for creating an inventory of smart city standards and mapping them accordingly. Additionally, they offer guidance on standards inventory and mapping specifically for public health emergencies. While [IEC SRD 63233-1](#) has been published in June 2022, part 2 has been published in June 2023, and part 4 is currently in the development phase.

World Standards Day

Every year on 14 October, the three leading global standards developing organizations – IEC, ISO and ITU – celebrate World Standards Day. It is an opportunity to increase awareness about the importance of standardization and recognize the commitment of the thousands of experts who contribute to international standardization.

In 2022, the theme was *A Shared Vision for a Better World*. It focused on the important contribution of international standards to help achieve the United Nations' Sustainable Development Goals (SDGs).



Working with international organizations

Quality infrastructure

Quality Infrastructure for Sustainable Development (QI4SD) Index: The Story Behind the Data is an event which took place on 17 June, and brought together the IEC, ISO, UNIDO, OIML, BIPM, IAF, all of which took part in the development of the Quality Infrastructure for Sustainable Development (QI4SD) Index.

The [QI4SD Index](#) is a way to measure quality infrastructure in a country and its preparedness to tackle the UN SDGs.

Information on the fitness of quality infrastructure to meet sustainable development needs will serve as a useful input to support policy processes and national implementation plans for achieving the SDGs, as well as the coordination of technical cooperation programmes, not just by UNIDO but also other implementing partners and development agencies worldwide.

IRENA workshop on hydrogen

The [IECEX](#) Executive Secretary participated in a panel during which he addressed the initiatives relating to a quality infrastructure (QI) for green hydrogen at the IEC.

Green hydrogen is hydrogen produced from renewable electricity. The use of green hydrogen is now recognized as an important way to address the decarbonization of large energy consumers, such as industry and transport. As a result, an increasing number of countries across the globe are defining ambitious plans and strategies for the production, trade and use of green hydrogen. According to [IRENA](#), for a successful implementation of national and international strategies relating to green hydrogen, it is of paramount importance to ensure that the technology and infrastructure used to produce and transport green hydrogen can be monitored, measured and validated that they perform as required; and that green hydrogen can be traded on a global scale, while ensuring the sustainability and safety of its production and its derivatives.

IRENA is developing a roadmap for the development of the QI to ensure the quality, sustainability and safety in green hydrogen production and trade.



Gender responsive standards

The IEC participated in a ten-day event organized by the United Nations Economic Commission for Europe ([UNECE](#)) Working Party on Regulatory Cooperation and Standardization Policies ([WP.6](#)) on gender-responsive standards. The event commenced with a conference focused on integrating standards for sustainable development and gender equality into the work of standards development bodies.

A significant topic of discussion was the outcomes of the three-year project conducted within WP.6, called “Enhancing usage and uptake of standards for sustainable development, gender equality and the empowerment of women”. This project highlighted various aspects, including the UN SDG portal that mapped thousands of standards from multiple international organizations, e-learning modules on relevant topics, the Gender-Responsive Standards Initiative (GSRI) of WP.6, training webinars for standards development organizations, and videos from standards developing organizations.

The event also addressed potential challenges and outlined future steps. As part of its commitment, the IEC joined the [UNECE Gender Responsive Standards Initiative](#) and is collaborating with ISO to ensure that the standards of both organizations better incorporate gender considerations.

New agreements with AFSEC

During the IEC General Meeting in San Francisco, the IEC and the African Electrotechnical Standardization Commission (AFSEC) signed two new agreements to further strengthen their relationship. The Regional Adoption Agreement and the Statement of Cooperation replace the previous agreements signed in 2009.

With the Regional Adoption Agreement and the Statement of Cooperation, the IEC and AFSEC further strengthen their relationship. These agreements will allow the two organizations to more easily exchange technical information and facilitate regional adoption of IEC International Standards.

As part of the Statement of Cooperation, the IEC and AFSEC have agreed to promote the use of IEC International Standards and IEC Conformity Assessment Services in Africa as well as to increase the involvement of African experts and leaders in the various IEC committees. The Regional Adoption Agreement calls for the development and harmonization of African regional standards based on existing IEC publications under the auspices of AFSEC with the assistance of the IEC.

Standardization Programme Coordination Group

The Standardization Programme Coordination Group (SPCG), which gathers representatives from IEC/SMB, ISO/TMB and ITU/TSAG, has continued its technical coordination work throughout 2022. As per December 2022, the SPCG had reviewed 52 proposals for new fields of technical activity originating from one of the three organizations, among which 27 proposals were assessed to be relevant to at least one of the other organizations. This assessment work resulted in 14 recommendations developed by the SPCG and submitted to IEC/SMB, ISO/TMB or ITU/TSAG. One key achievement in 2022 was the recommendation to establish a Joint Standardization Evaluation Group (JSEG) on metaverse between IEC and ISO, and liaise it to the ITU-T Focus Group on metaverse to foster collaboration between the three organizations in this strategic area. This recommendation has been implemented by the three technical boards.





Embracing members and affiliates

IEC Members

IEC National Committees (NCs) provide the management and technical expertise that comprise the IEC standardization and conformity assessment community at the global level. The IEC offers a neutral and independent forum where different stakeholders can find consensus for solutions to broad technical challenges.

Each IEC NC represents the national interests of its stakeholders – comprising industry, government, academia, national standards bodies and user groups, etc. – involved in the field of electrotechnology and has a single vote in the IEC.

In 2022, the IEC had a total of 88 members.

Albania · Algeria · Argentina · Australia · Austria · Bahrain · Bangladesh · Belarus · Belgium · Bosnia & Herzegovina · Brazil · Bulgaria · Canada · Chile · China · Colombia · Côte D'Ivoire · Croatia · Cyprus · Czech Republic · Democratic People's Republic of Korea · Denmark · Egypt · Estonia · Ethiopia · Finland · France · Georgia · Germany · Ghana · Greece · Hungary · Iceland · India · Indonesia · Iran · Iraq · Ireland · Israel · Italy · Japan · Jordan · Kazakhstan · Kenya · Korea, Rep. of · Kuwait · Latvia · Lithuania · Luxembourg · Malaysia · Malta · Mexico · Moldova, Rep. of · Montenegro · Morocco · Netherlands · New Zealand · Nigeria · North Macedonia · Norway · Oman · Pakistan · Peru · Philippines, Rep. of the · Poland · Portugal · Qatar · Romania · Russian Federation · Saudi Arabia · Serbia · Singapore · Slovakia · Slovenia · South Africa · Spain · Sri Lanka · Sweden · Switzerland · Thailand · Tunisia · Türkiye · Uganda · Ukraine · United Arab Emirates · United Kingdom · United States of America · Vietnam

Affiliate Country Programme

The IEC Affiliate Country Programme assists developing and newly industrialized countries to enhance their knowledge and competencies in the areas of international standardization and conformity assessment and encourages their active participation in the IEC community, without the financial burden of membership.

Participants benefit from a quota of free IEC International Standards, online learning materials, webinars, training, capacity building events, mentoring arrangements, as well as personalized support from the IEC. Over 10 000 IEC International Standards have been adopted nationally by affiliate countries.

In 2022, Timor Leste joined the IEC Affiliate Country Programme, bringing the number of affiliates to 86 countries.

Afghanistan · Angola · Antigua and Barbuda · Armenia · Azerbaijan · Bahamas · Barbados · Belize · Benin · Bhutan · Bolivia · Botswana · Brunei Darussalam · Burkina Faso · Burundi · Cabo Verde · Cambodia · Cameroon · Central African Republic · Chad · Comoros · Congo · Congo, Dem. Rep. of · Costa Rica · Djibouti, Rep. of · Dominica · Dominican Republic · Ecuador · El Salvador · Eritrea · Eswatini, Kingdom of · Fiji · Gabon · Gambia · Grenada · Guatemala · Guinea · Guinea Bissau · Guyana · Haiti · Honduras · Jamaica · Kyrgyzstan · Lao, People's Democratic Republic · Lebanon · Lesotho · Liberia · Madagascar · Malawi · Mali · Mauritania · Mauritius · Mongolia · Mozambique · Myanmar · Namibia · Nepal · Nicaragua · Niger · Palestine · Panama · Papua New Guinea · Paraguay · Rwanda · Saint Kitts and Nevis · Saint Lucia · Saint Vincent and the Grenadines · Sao Tome and Principe · Senegal · Seychelles · Sierra Leone · Somalia · South Sudan, Rep. of · Sudan · Suriname · Syrian Arab Republic · Tanzania · Timor Leste · Togo · Trinidad and Tobago · Turkmenistan · Uruguay · Uzbekistan · Yemen · Zambia · Zimbabwe

Improving gender diversity

The IEC is committed to help raise awareness of the value of gender diversity with its stakeholders. It seeks to meet the objectives of [UN SDG 5](#), which is to achieve gender equality and empower all women and girls.

As part of this effort, the IEC has joined the UNECE Gender-Responsive Standards (GRS) Initiative and issued a gender and diversity statement. Together with ISO, the IEC co-convenes the Joint Strategic Advisory Group ([JSAG](#)) to develop guidance to help technical committees ensure they are developing gender-responsive standards.

In 2022, the JSAG published a first joint guidance document which was sent to every IEC and ISO Technical Committee, to help them include gender considerations in the standard development process. As part of the guidance, an optional GRS assessment form was sent to standard developers to be filled when embarking on new work items or revising existing standards. A letter signed by IEC Secretary-General & CEO Philippe Metzger and ISO Secretary-General Sergio Mujica was sent out to the various stakeholders at the same time as the document, urging standard developers to read the guide and fill in the form.

The JSAG also committed to providing training together with UNECE on how to use the document over the next 18 months. The guidance is intended to be the first in a series of joint IEC and ISO communications, training and technical policy products on GRS.

Outreach & learning

Academy and capacity building

The IEC designs, develops, delivers and deploys continuous learning and capacity building in partnership with the IEC community. It provides webinars, training seminars and workshops to train experts and attract new players in coordination with IEC National Committees, IEC Conformity Assessment Systems and other stakeholders.

During 2022, the Academy team continued to deliver a variety of trainings and events. At the IEC General Meeting, the Academy facilitated both the *IEC Standard in a Day Bootcamp* and a new

Conformity Assessment Bootcamp as part of the IEC Young Professionals Programme. Course materials for both bootcamps are now available for national and regional adoption/use via the Trainers Network.



Young Professionals Programme

The [IEC Young Professionals Programme](#) serves as a gateway for professionals from all over the world to learn more about the IEC, become involved in its standardization and conformity assessment work, and help shape the future of the organization. Each year, a new cohort joins the programme during the IEC YP workshop held alongside the IEC General Meeting. In 2022, the IEC YP workshop took place as a face-to-face meeting in San Francisco. Following the workshop, YPs are encouraged to continue their engagement in standardization and conformity assessment at the national and/or international levels.

IEC YP Programme participation since 2010

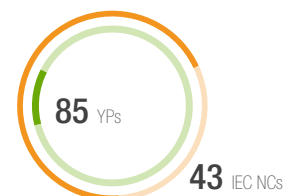
831 participants

61 IEC National Committees

29% active roles in the IEC, with many more active at the national level

2022 YP participation

IEC YP workshop:



Awards

Lord Kelvin Award



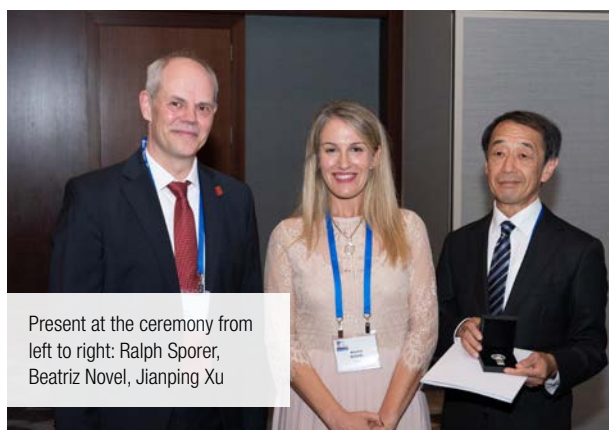
Mr Vimal Mahendru has been honoured with the prestigious 2022 Lord Kelvin Award for his vital involvement in standardization efforts to expand electricity access in rural areas.

This award acknowledges his significant contribution to the safe and reliable development of low voltage direct current (LVDC) technology. Today, the new LVDC standard is driving the growth of rural cottage industries, facilitating communication, and enabling access to basic education and knowledge.

Mr Mahendru, the 38th recipient of the Lord Kelvin Award and the first Indian to receive this honour, has been recognized by the IEC for his unwavering dedication and invaluable contributions aligned with the organization's values. His remarkable efforts have played a major role in helping the IEC develop solutions to extend electricity access to hundreds of millions of people worldwide.

The prestigious [IEC Lord Kelvin Award](#) is the highest honour in the global electrotechnology industry. The award takes its name from the first IEC President, who was a distinguished scientist and prolific inventor. Lord Kelvin contributed significantly to the advancement of modern physics and the practical applications of electrotechnology. Today, the Lord Kelvin Award honours the vision and drive to understand and improve the practical applications of the millions of electrical and electronic devices and systems that are part of our daily lives.

Thomas A. Edison Award



In 2022, the IEC presented its Thomas A. Edison Award to six individuals who made outstanding contributions to the IEC.

- Valérie Demassieux
- Wenxiu Huang
- Beatriz Novel
- Frank Ormel
- Yoshi Shibahara
- Jianping Xu

Created in 2010, the [Thomas A. Edison Award](#) recognizes exceptional achievement, dedicated service and significant contributions to the IEC by officers in IEC technical committees and subcommittees as well as officers of the conformity assessment systems.

Leadership



China

Yinbiao Shu

President

Dr Shu became IEC President on 1 January 2020, for a three-year term, having served as President-Elect since 1 January 2019.



Belgium

Jo Cops

President-elect and Treasurer

Mr Cops became IEC Treasurer on 1 January 2018. He was elected to serve as the next IEC President as of 1 January 2023.



Canada

Shawn Paulsen

Vice-President

Chair of the Conformity Assessment Board (CAB)

Mr Paulsen became Chair of the Conformity Assessment Board (CAB) and IEC Vice-President on 1 January 2018. He began his second three-year term on 1 January 2021.



Japan

Kazuhiko Tsutsumi

Vice-President

Chair of the Market Strategy Board (MSB)

Dr Tsutsumi became Chair of the Market Strategy Board (MSB) and IEC Vice-President on 1 January 2019. He began his second three-year term on 1 January 2022.



Germany

Ralph Sporer

Vice-President

Chair of the Standardization Management Board (SMB)

Dr Sporer became Chair of the Standardization Management Board (SMB) and IEC Vice-President on 1 January 2017. He began his second three-year term on 1 January 2020.



Switzerland

Philippe Metzger

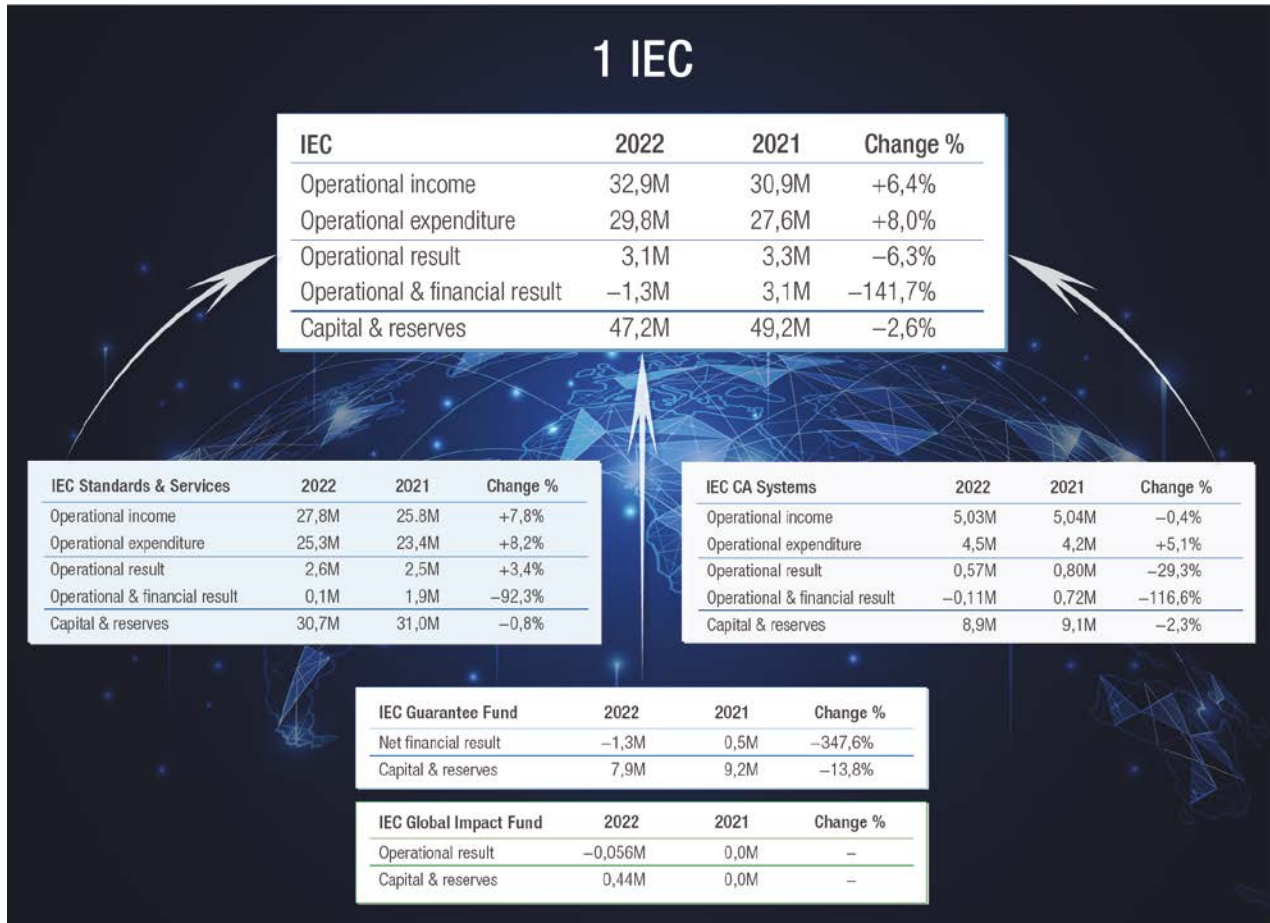
Secretary-General & CEO

Mr Metzger became IEC Secretary-General & CEO as of 1 February 2020.





Financial highlights



The IEC is financed by a combination of membership dues and revenues from the sales of its publications, certificates, and conformity assessment services. In the 2022 IEC statutory accounts, total membership dues amounted to CHF 13,21 million (CHF 11,28 million for IEC Standards & Services and CHF 1,93 million for IEC CA Systems). Net revenues from sales and royalties together came to CHF 16,53 million, again the best year ever on record for IEC.

This – along with IEC Conformity Assessment (CA) Systems and other income – resulted in a total net operational income of CHF 32,86 million, the highest ever. With total operational expenditure for the year at CHF 29,79 million, the IEC produced an operational result for 2022 of CHF 3,08 million. Taking into

account depreciation of CHF (0,92) million and negative net financial revenue of CHF (3,45) million due to the lackluster performance of financial markets all through 2022, totaling CHF (4,37), an overall allocation of CHF 1,3 million was assigned from Capital & Reserves: CHF 0,14 million for IEC Standards & Services, CHF (0,11) million for IEC CA Systems and CHF (1,27) million for the Guarantee Fund. This fund is a monetary investment reserve set up to ensure that at all times throughout the financial year, the IEC Secretariat (SEC) is able to meet its debts and liabilities. Compared to world financial markets, IEC investments and the Guarantee Fund still performed relatively well in a very poor environment

Balance sheet as at 31 st December 2022	2022	2021
	CHF	CHF
Assets		
Current assets	53 948 720	55 052 810
Cash & cash equivalents	14 488 533	12 222 273
Securities	30 209 460	34 257 844
Securities (IEC pool investment)	22 679 482	25 843 200
Securities (Guarantee fund)	7 529 978	8 414 644
Accounts receivable	3 516 878	3 380 107
Publications and royalties	2 233 827	1 941 986
Membership dues (all years)	434 186	785 055
CA products receivable	775 159	653 066
Pension fund	73 706	0
Other receivables	244 900	125 734
Prepaid expenses and accrued income	5 488 950	5 066 852
Long term assets	2 835 334	3 609 676
Rental guarantee	136 570	136 570
Trademarks	1 314 478	1 407 758
Tangible fixed assets, net	43 688	54 452
Intangible assets	1 340 598	2 010 896
Total assets	56 784 054	58 662 485
Liabilities, capital & reserves		
Current liabilities	8 852 355	9 435 120
Short-term liabilities	5 858 969	7 846 632
Suppliers	273 757	618 882
Royalties to be paid	4 987 191	6 315 316
Corporate accounts (note + revenue recognition)	0	235 835
Current account with pension fund	0	203 324
Social charges and insurances to be paid	7 478	45 065
Accrued liabilities	590 543	428 210
Deferred income	1 637 489	352 400
Membership dues received in advance	1 242 631	352 400
Publications income received in advance	394 858	0
Provisions	1 355 897	1 236 088
Provision for untaken holiday	354 677	343 409
Provision for extraordinary expense	131 848	23 307
Provision for IECEx & IECQ	869 372	869 372
Capital & reserves	47 931 699	49 227 366
Free capital	15 513 525	16 120 781
Guarantee fund	7 894 579	9 162 973
Designated funds	24 523 595	23 943 612
Reserve for operational & financial risk	2 903 871	2 903 871
Reserve for fluctuation of investment portfolio	1 300 000	1 300 000
Reserve for equipment depreciation & renewal	1 719 400	1 768 351
Reserve for standards development & business platform	1 340 598	2 010 896
Reserve for general meeting	800 000	800 000
Reserve for strategy/masterplan	5 110 148	5 110 148
Reserve for innovation & digitalization	8 613 790	7 750 346
IECEE development and implementation of new services	1 000 000	1 000 000
IECEE development and support of IECEE infrastructure	1 000 000	1 000 000
IECEx reserve for innovation & promotion	300 000	300 000
Global Impact Fund	435 788	0
Total liabilities, capital & reserves	56 784 054	58 662 486

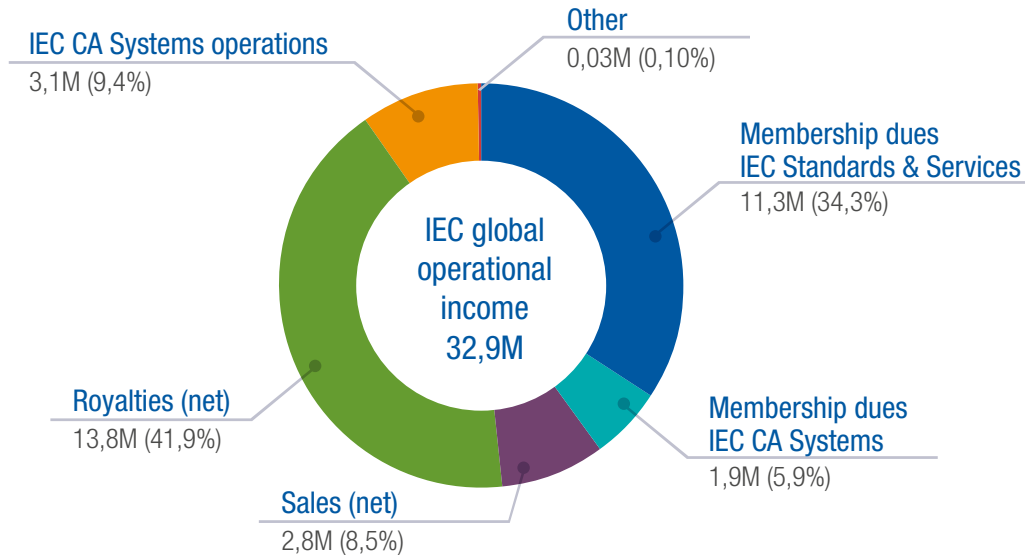
Due to rounding, numbers presented throughout this document may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures.

Statement of income & expenditure as at 31 st December 2022	2022	2021
	CHF	CHF
Income		
Membership dues	13 205 474	13 110 022
Net sales	2 777 343	2 813 732
Gross sales	6 344 088	6 572 779
Commission & other expenses	(123 333)	(164 418)
Royalties to NCs	(3 443 412)	(3 594 629)
Net royalties	13 755 983	11 629 272
Gross royalties	21 455 538	17 598 511
Royalties to NCs	(7 699 556)	(5 969 239)
IEC CA Systems operations	3 094 138	3 200 237
Participation fees	353 500	384 577
Certificates	1 953 362	1 940 101
Assessment fees	391 102	440 901
TRF forms	258 440	308 848
Training	56 000	65 400
Other	81 134	60 410
Other income	31 923	123 784
Total operational income	32 864 861	30 877 047
Expenditure		
Personnel expenses	21 557 809	21 462 639
Corporate services & business planning	6 712 536	6 428 071
Standards development	6 322 640	6 233 190
Promotion	1 863 585	2 232 932
IT	3 573 302	3 597 751
Conformity assessment	3 085 746	2 970 695
Rent & maintenance	1 082 150	1 004 921
Office & administration	5 125 108	4 207 677
IT	2 249 709	1 731 383
Legal & audit	206 508	212 251
White papers	96 422	80 670
Other office & administration	2 572 469	2 183 373
Communications & printing	412 604	517 349
Communications	350 608	444 861
Printing	61 996	72 487
Meetings & travel expenses	1 612 177	402 182
Meeting	377 730	154 106
Travel	1 234 447	248 077
Total operational expenditure	29 789 848	27 594 769
Operational result	3 075 012	3 282 279
Depreciation	(922 453)	(925 962)
Net financial revenue	(3 448 226)	747 972
Operational & financial result	(1 295 667)	3 104 289

Operational & financial result before allocations	(1 295 667)	3 104 289
IEC Standards & Services	144 195	1 876 628
IECEE	(228 831)	383 168
IECEX	70 795	192 329
IECQ	5 482	80 719
IECRE	37 570	59 195
Guarantee fund	(1 268 393)	512 250
	(56 485)	0
Allocations		
Allocations (to)/from capital & reserves	1 295 667	(3 104 289)
Capital fund IEC Standards & Services	0	0
Capital fund IEC Standards & Services for GIF	400 194	0
Capital fund IECEE	228 831	1 616 832
Capital fund IECEE for GIF	61 189	0
Capital fund IECEX	(70 795)	(192 328)
Capital fund IECEX for GIF	25 660	0
Capital fund IECQ	(5 482)	(80 719)
Capital fund IECQ for GIF	5 230	0
Capital fund IECRE	(37 570)	(59 195)
Guarantee fund	1 268 393	(512 250)
Designated funds		
Reserve for standards development & business platform	670 298	670 298
Reserve for equipment depreciation & renewal	48 951	79 452
Reserve for innovation & digitalization	(863 444)	(1 000 000)
Reserve for operational & financial risk	0	(626 378)
Reserve for strategy/masterplan	0	(1 000 000)
IECEE development and implementation of new services	0	(1 000 000)
IECEE development and support of IECEE infrastructure	0	(1 000 000)
Global Impact Fund	(492 273)	0
Global Impact Fund	56 485	0
Annual position after allocations	0	0

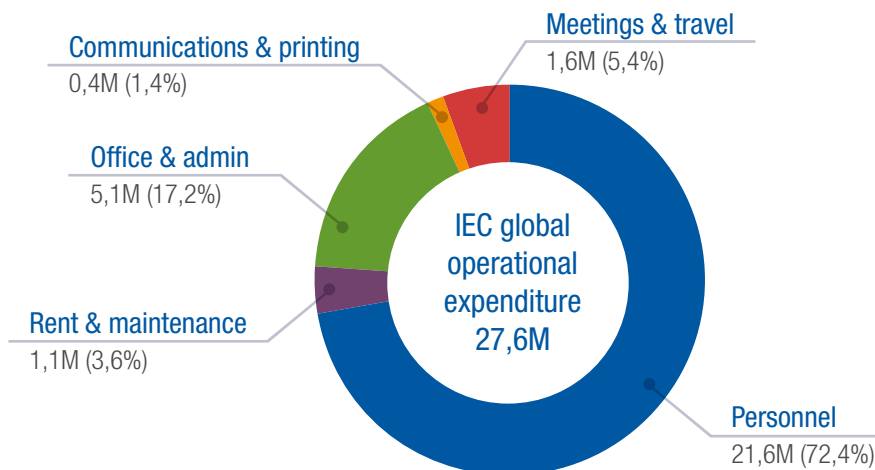
IEC – Global operational income

IEC Standards & Services contribute 84,7% of IEC global income, comprising membership dues, net sales & royalties, and other income. Sales & royalties (net) are 50,4% of the IEC total. Income from IEC CA Systems for membership dues and operations represents 15,3% of IEC global revenue.



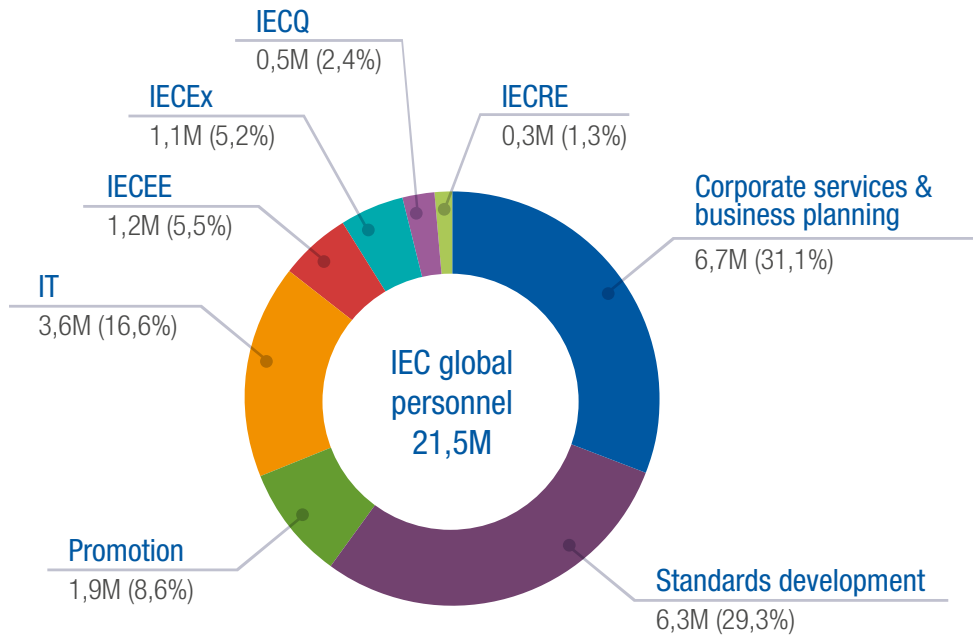
IEC – Global operational expenditure

As a service organization dealing almost exclusively in intellectual know-how, personnel accounts for the majority of IEC global expenditure. Note reduced Covid-19 effect in the increased expenditure on meetings & travel, even if not back to pre-pandemic levels.



IEC – Global personnel

A breakdown of personnel costs shows that the largest concentration of effort and expenditure is focused on corporate services & business planning, the development of standards, and IT services.



In a move to increase transparency, comprehension and comparability of its financial data, the IEC transitioned to Swiss GAAP accounting standards in 2018. Swiss GAAP was adopted to give management, members and the community a better overall insight into the operations of the IEC, thus facilitating communication, understanding, planning and decision-making.

Further information

For further information, please visit the IEC website at www.iec.ch. In the “Who we are” section, you can contact your local IEC National Committee directly. Alternatively, please contact the IEC Secretariat in Geneva, Switzerland or the nearest IEC Regional Centre.

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