2024 IECEx International Hydrogen Conference - 29 May 2024

Mr Chris AGIUS
Executive Secretary
IECQ + IECEx

IEC Facilitates the Standard of Living that you enjoy today!

By:

Making Electrotechnology an integral part of your every-day life worldwide:-

- Home
- Transport
- Food
- Clothing
- Entertainment
- Education
- Medical + Many others

Plus – Role in Protecting the environment for our future generations

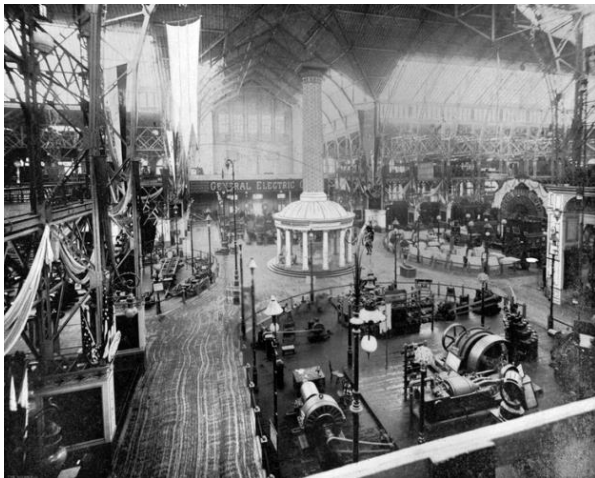# IEC: the beginning………
St. Louis 1904: palace of electricity

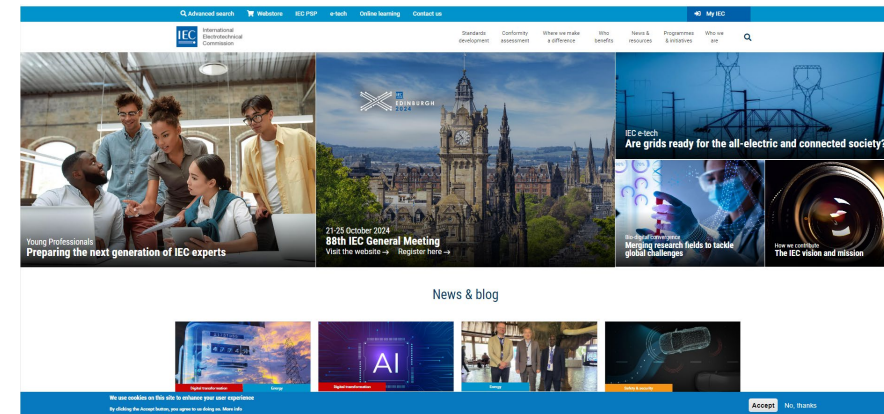Lord Kelvin – 1st IEC President

Jo Cops – Current IEC President

- **International Electrotechnical Commission** (IEC)
  – Swiss incorporated Not For profit Company

- Officially formed in 1906 – *Lord Kelvin* the first IEC President

- Formed to serve needs of industry

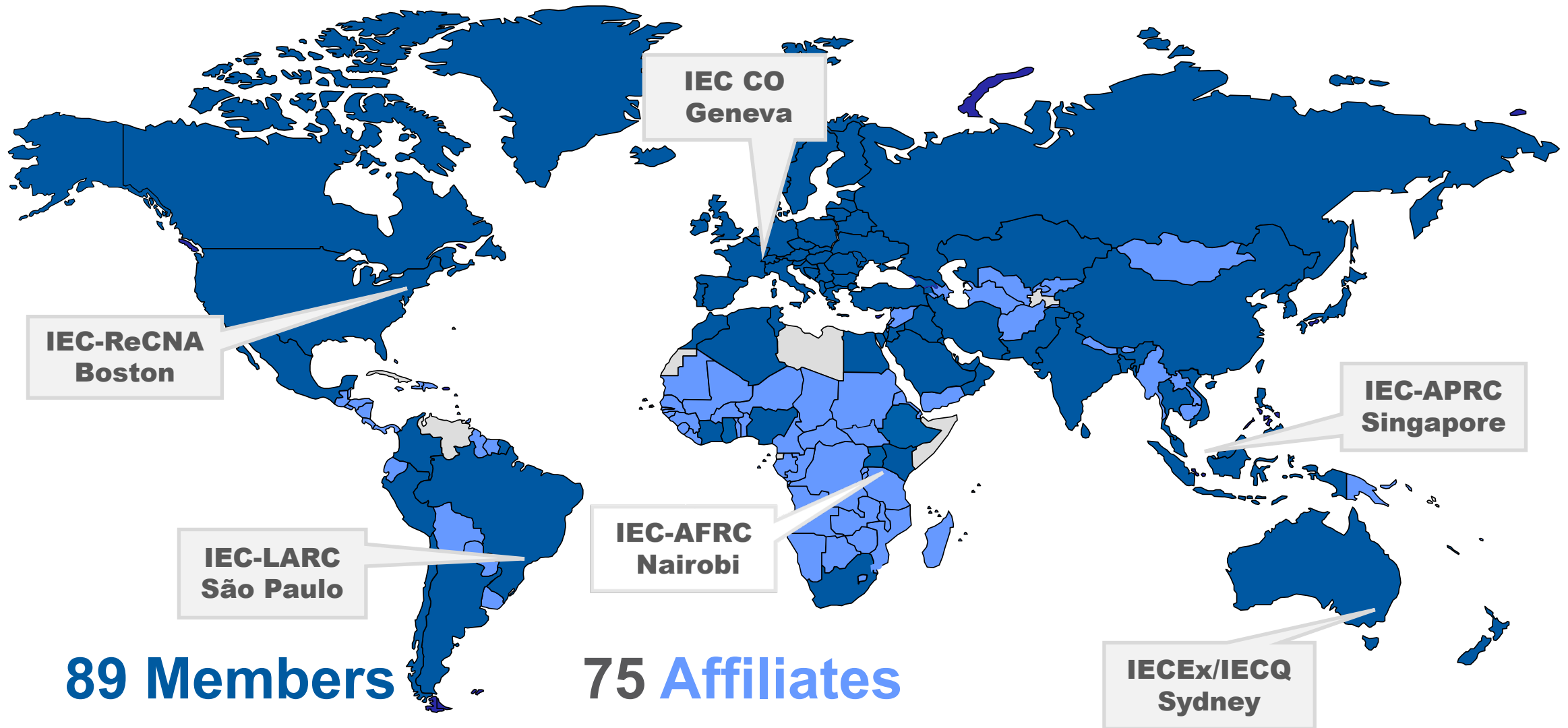- Continues to evolve to the needs of industry

During the 1904 Convention of Scientists, it was felt that a need exists to "*Standardise on Terminology*" when discussing Electrotechnology, thereby planting the seed for IEC. In **1906** IEC was formed with TC 1 "Terminology" the first Committee of IEC and still exists today.

www.iec.ch

IEC's Global reach: 164 countries

IEC CO
Geneva

IEC-ReCNA
Boston

IEC-APRC
Singapore

IEC-LARC
São Paulo

IEC-AFRC
Nairobi

89 Members   75 Affiliates

IECEx/IECQ
Sydney

The **IEC – Strategic Business Plan**

Vision — IEC everywhere for a safer, more efficient world.

Mission — Our mission is to achieve worldwide use of IEC
International Standards *and Conformity Assessment Systems* to ensure
the safety, efficiency, reliability and interoperability of electrical, electronic
and information technologies, to enhance international trade, facilitate
broad electricity access and enable a more sustainable world.
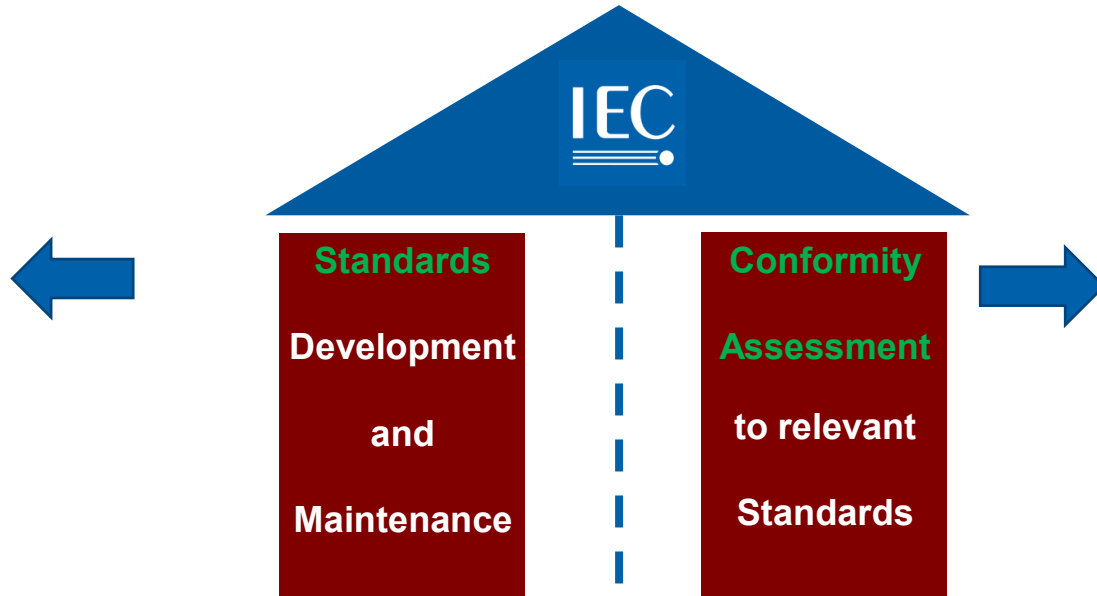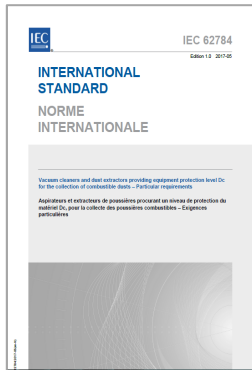
3 Strategic Themes supported by 9 Strategic Goals
- *Enabling a digital and all-electric society*
- *Fostering a sustainable world*
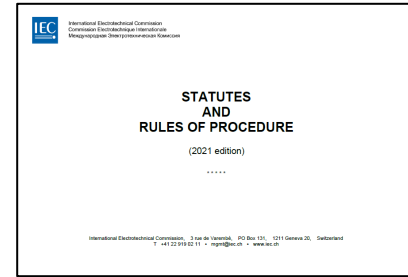- *Leading on Trust, inclusion and collaboration*

https://www.iec.ch/strategic-plan

IEC: A Standardization Organization
With 2 sides to the IEC house

Over 100 years

210 Committees

20,000+ Experts

IEC

Standards	Conformity
Development	Assessment
and	to relevant
Maintenance	Standards

E.g.,
IEC TC 31
IEC TC 105, 107

E.g.
IECEx
IECQ

IEC Standards set out "**Standardised Requirements**"

IEC CA Systems set out **Standardised way of doing testing, certification and inspection**

**The 2 Sides to the House of IEC:
Standards Development +
Conformity Assessment**

"CONFORMITY ASSESSMENT"

-Accreditation

-Certification

-Testing

-Audit

-Attestation

-Inspection

-Approval

-Declaration

-Surveillance

- First Party Conformity Assessment

-Second Party Conformity Assessment

-Third Party Conformity Assessment

-Peer Assessment

-Others

INTERNATIONAL STANDARD **ISO/IEC 17000**

NORME INTERNATIONALE

First edition
Première édition
Первое издание
2004-11-01

МЕЖДУНАРОДНЫЙ СТАНДАРТ

Conformity assessment — Vocabulary and general principles

Évaluation de la conformité — Vocabulaire et principes généraux

Оценка соответствия. Словарь и общие принципы

SUSTAINABLE DEVELOPMENT GOALS

adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership

CAB Decision 52/16 — *Report from TF SDGs*
The CAB, noting the report in document CAB/2268A/R, the comments received in CAB/2268B/CC, the verbal update by the convenors, Mr Rajeev Vagdia and Mr Pierre Selva, and the discussion during the meeting, endorsed the report and approved the generic statement given in recommendation A.1. to be used by IEC during events, conferences etc. CAB further requested that this generic statement (as below) be given to the IEC Comms department for appropriate use.

"*The IEC Conformity Assessment Board conducted a thorough analysis of the four IEC Conformity Assessment Systems and concluded that all 17 UN SDGs are supported by way of the IEC Conformity Assessment principles, the development, structure, and operation of the Systems, with each System having differing levels of impact on the UN SDGs.*"
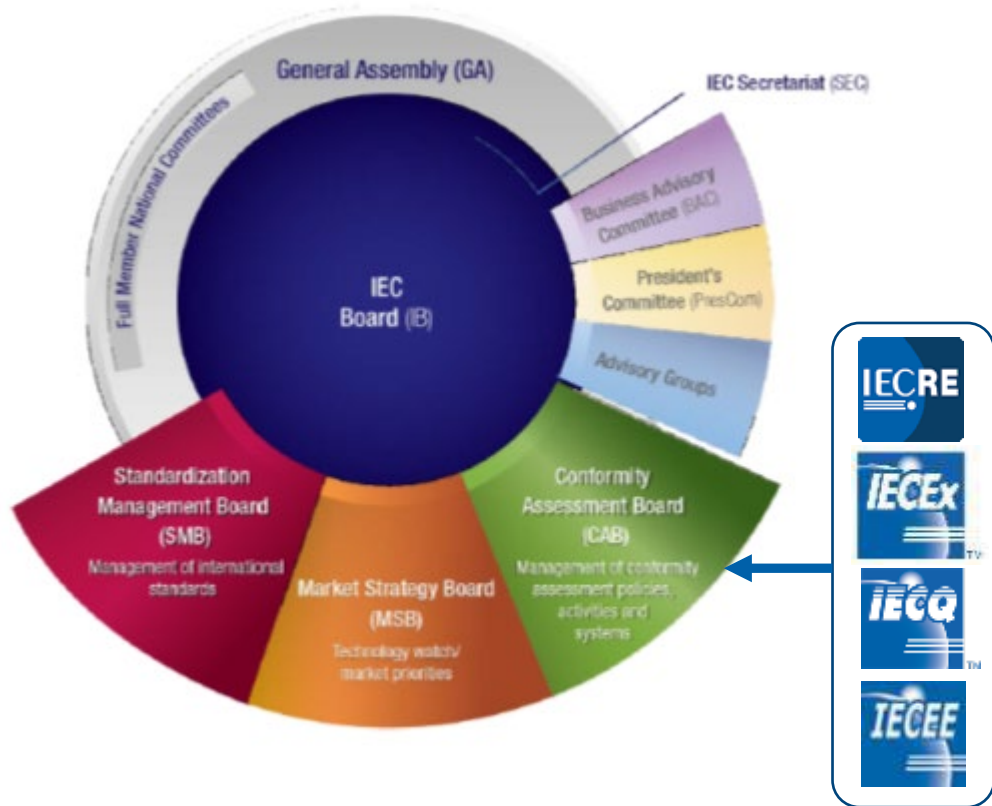
IEC – Conformity Assessment Systems https://www.iec.ch/conformity-assessment/ca-systems

IEC's Standards + Conformity Assessment Services - Governance

Over 100 years

210 Committees

20,000 Experts

General Assembly (GA)
IEC Secretariat (SEC)
IEC Board (IB)
Business Advisory Committee (BAC)
President's Committee (PresCom)
Advisory Groups
Standardization Management Board (SMB) — Management of international standards
Market Strategy Board (MSB) — Technology watch/ market priorities
Conformity Assessment Board (CAB) — Management of conformity assessment policies, activities and systems
Full Member National Committees

IECRE
IECEx
IECQ
IECEE

40+ years Operating

More than 1 Million Certificates issued

Electrical + Mechanical Products

Electrical + Mechanical Components

Electronic Components and assemblies

Process Certification

Personal Competence

Sector Specific, e.g. Avionics

Self Financed – sets annual budgets

Standards used for IEC CA Activities

IEC

ISO

Others:
- Regulations
- Specifications

IEC CA Systems work closely with Standards Technical Committees, eg
- **IECEx** ➡ **IEC TC 31, IEC TC 105, ISO TC 197**
- **IECQ** ➡ **IEC TC 107, IEC TC 111**
- **IECRE** ➡ **IEC TC 82, IEC TC 88, IEC TC 114**

The 4 IEC Conformity Assessment Systems

IECEE in brief

- **23** product categories ranging from Information Technology and electronic equipment, household, medical equipment, lighting to EMC, and Photovoltaics but 60% of activity is concentrated in these three areas:

  - Household appliances
  - Office & IT equipment
  - Electronics / entertainment

Electrical Safety

EMC

Energy efficiency

Performance

Cybersecurity

Functional Safety

IEC's System for Certification to Standards relating to Equipment for use in Explosive atmospheres, IECEx

www.iecex.com

IECEx Value Proposition – 1 of the IEC CA Systems

Provides Assurance to Industry, Commerce, Regulators and Consumers that operations and activities involving flammable and combustible materials can continue safely and reliably, by providing an Internationally Standardized Approach to Testing and Certification, regardless which IECEx Approved Certification Body is used.

Industries that use flammable/combustible materials include:
- Production, Storage, Dispensing and use of flammable liquids and Gases, such as **Hydrogen, including GH2**
- Transport, eg cars / plans / ships / trucks (Passenger + Freight)
- Fueling stations and storage facilities
- Oil and gas exploration and processing
- Coal mining
- Food manufacture and processing
- Grain handling/storage/transportation
- Pharmaceutical manufacturing
- Textiles, fabrics and clothing
- Paint and surface coatings
- Medical applications, eg hospitals
- Furniture manufacturing
- Sewerage treatment plants
- Underground car parks
- Others

What is the IECRE?

IECRE is the abbreviation for IEC System for Certification to Standards Relating to Equipment for Use in Renewable Energy Applications - "IECRE System"

- **IECRE operates a single, global certification system addressing 3 sectors**
  - ❖ **Solar photovoltaic (PV) power**
  - ❖ **Wind power**
  - ❖ **Marine energy**

23

IEC's Quality Assessment System, IECQ

www.iecq.org

12

IEC Quality Assessment System, IECQ:
Covering: Environmental Claims Ecodesign, Carbon Footprint Verification
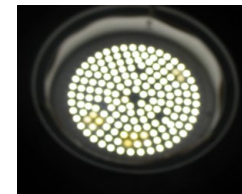Electronic Component supply chains

Currently 26 IECQ Certification Bodies offer IECQ Certification

IECQ Value Proposition
IECQ instils trust by providing confidence of Environmental and Technical Claims made by Organizations

Originally formed in 1970s to cover *Electronic Component supply chain*

2023 Expanded to provide Environmental CA Services to be offered as a Horizontal Service Offering to all industries.

IEC Quality Assessment System, IECQ

(**IEC Quality Assessment System**) a worldwide approval, certification and **verification** system providing an Internationally harmonized approach to:

- **Environmental services to support a circular economy** *(Available to all industries)*;

  - **Hazardous Substances** (existing HSPM Scheme)

  - **Ecodesign certification** to IEC 62430

  - **Carbon Footprint Verification** according to ISO 14067

- **Quality assessment of electronic components, assemblies and related materials and processes** *(Electronic Component Supply Chain Services)*

  - Approved Component Schemes, eg Traditional, Avionics, Automotive

  - Approved Process Schemes, eg Nuclear Supply Chain, Information Security Management Systems

IECQ WG 14 – Green Approach "Dedicated Group of World Experts"

Terms of Reference - IECQ WG 14:

To investigate and develop necessary documentation for the integration of the Green Approach within the IECQ Schemes and Programmes and to act as a <mark>coordination role for IEC Conformity Assessment Matters and link with TCs related to the Green Approach</mark>, as requested by CAB.

Marie-Elisabeth dOrnano – CONVENOR, IECQ Immediate Past Chair
MC, CAB Member
Alfred AU – GB, IECQ Chair
Peter Lee – AU, CAB Member
Pierre Selva – FR, CAB Member
Shawn Paulsen – IEC VP, CAB Chair
Thorsten Arnhold – DE, CAB Member
Nickolay Fayzrakhmanov – RU, CAB Member, IECQ expert
Christophe Garnier – FR, IEC TC 111 Chair
Miyuki Takenaka – JP, IEC TC 111 expert and Vice Chair
Andrea Legnani – IT, TC 111 expert
Cherisse Craig – GB, IECQ expert, BSI
Chris Allabush – GB, IECQ expert, Rolls Royce
Dave Ryan – GB, IECQ expert, Rolls Royce
Eliz. L.N. Lee – Chinese Taipei, CTECCB, IECQ
Hai-Yen Wang - Chinese Taipei, IECQ Expert, TUV Nord
Jaehak Jung – KR, IEC TC 111 expert
Jing Wang – CN, IECQ expert, CEPREI

Jo Vann – GB, IECQ expert, GE Aviation
Jérôme Reysson – FR, IECQ expert, LCIE
Ki-Seuk Lee – KR, IECQ expert, KTL
Kiyoshi Saito – JP, IEC TC 111 expert
Liang Zhan – CN, IEC TC 111 expert
Marco Angelo Intalan – UAE, IECQ expert
Moro Chen – CN, IECQ expert, SGS
Nick Lin – Chinese Taipei, IECQ expert, TUV Rheinland
Sean Luan - Chinese Taipei, IECQ expert, TUV Nord Asia
Takako Hiruta – JP, IEC TC 111 expert
Tamash Mezossy – RU, IECQ expert, Certification Russian Register
Tim Lee – CN, IECQ expert, Intertek
Walter Jager – CA, IEC TC 111 expert
Yoshiaki Ichikawa – JP, IEC TC 111 expert
Yun Teng – CN, IEC TC 111 expert
Chris Agius – IECQ Executive Secretary
Steve Allan – IECQ Business Manager
Mike Roy – IECQ/IECEx Special Projects

CA Services 2 sides to IECQ: Environmental /Traditional

Environmental Services supporting a Circular Economy

Hazardous Substances
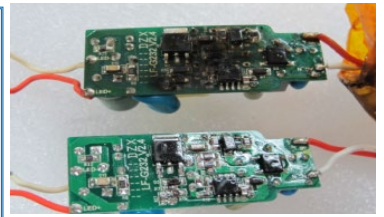
Ecodesign IEC 62430

Carbon Footprint Verification

IECQ Environmental CA Services being offered to **All Industries** not just electronic components.

Services to the Electronic Component Industries

- CA Services supporting supply chain management
- CA services supporting electronic component manufacture

Components

Process

Avionics ADHP

Other IECQ CA Services to the electronic component industries

- Electronic Component Distributors,
- Automotive + Railway Sectors
- Nuclear Industry supply chain – ISO 19443
- Testing Laboratory Qualification
- IECQ CB Auditor Training and Qualification
- Others

IEC's Environmental CA Services: *IECQ Hazardous Substances Certification* – An example of direct use of IEC Conformity Assessment for Regulations - RoHS (**Hazardous Substances**)

Certifies that Regulations covering Hazardous Substances are being met

IEC QUALITY ASSESSMENT SYSTEM (IECQ)
covering Electronic Components,
Assemblies, Related Materials and Processes
For rules and details of the IECQ visit www.iecq.org

IECQ Certificate of Conformity

Hazardous Substance Process Management

IECQ Certificate No.:	IECQ-H BSI 11.0005	Issue No.: 5	Status:	Current
Supersedes:	IECQ-H BSI 11.0005 Issue 4	Issue Date: 2020/01/07	Org. Issue:	2011/02/18
CB Reference No.:	H566747 IECQ	Expiration: 2023/02/17		

Applicable to:
- European Directive 2011/65/EU ("RoHS – Restriction of the use Of certain Hazardous Substances") in electrical and electronic equipment. Including all published amendments
- China – RoHS 2 2016-01-21 (Management Methods for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products)

Carven Technology (Wuxi) Co., Ltd
No. 28, Donghong Road, GuanLin Town
Yixing, Wuxi
214251, Jiangsu
China

The organization has developed and implemented Hazardous Substances Process Management procedures and related processes which have been assessed and found to comply with the applicable requirements for IECQ HSPM organization approval which is in accordance with the Basic Rules IECQ 01 and Rules of Procedure IECQ 03-5 "IECQ Hazardous Substances Process Management" of the IEC Quality Assessment System for Electronic Components (IECQ), and with respect to the IECQ Specification:

- IECQ QC 080000:2017 - Hazardous Substance Process Management System Requirements

This Certificate is applicable to all electronic components, assemblies, related materials and processes for the following scope of activities :

Manufacture of Printed Circuit Boards (PCB)

- Attached Schedule: none

Issued by the Certification Body: **BSI**

Kitemark Court, Davy Avenue
Knowlhill, Milton Keynes MK5 8PP
United Kingdom

Authorised Person:
Paul Turner

bsi.

Origins – 2005 to address Hazardous Substances in electronic component supply – expanded to all sectors

While the original need was to address EU RoHS, IECQ HSPM was developed to cover any Regulations relating to the control of Hazardous Substances associated with electrical/electronic product components.

The example shown here, the IECQ HSPM Certificate, covers both EU RoHS and the China RoHS Regulations.

Ongoing annual surveillance Auditing required – All Locations visited.

Identifies manufacturers that have controls in place to prevent Hazardous Substances entering the manufacturing + supply chain processes.

Hazardous substances

IEC's Environmental CA Services:
IECQ Ecodesign Certification to IEC 62430

IEC QUALITY ASSESSMENT SYSTEM
covering Electronic Components, Assemblies, Related Materials and Processes
For rules and details of the IECQ visit www.iecq.org

IECQ Certificate of Conformity

Environmentally Conscious Design (Ecodesign)

— Certifies that IEC 62430 Environmentally Conscious Design Requirements are being met

Provides International confidence and trust of Organisations that embrace Ecodesign that minimse adverse impact to the environment thru compliance with IEC 62430. Thereby contributing to UN SDGs – **Prevents Green Washing....**

Developed in close cooperation with IEC/TC 111

IEC 62430
Edition 2.0 2019-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

HORIZONTAL STANDARD
NORME HORIZONTALE

Environmentally conscious design – Principles, requirements and guidance

Écoconception (ECD) – Principes, exigences et recommandations

1 Scope
This document describes principles, specifies requirements and provides guidance for organizations intending to integrate environmental aspects into the design and development in order to minimize the adverse environmental impacts of their products.

17

IEC's Environmental CA Services:
IECQ Carbon Footprint Verification –
IECQ WG 14 Green Approach + Collaboration with IEC TC 111

- Now providing **IEC Verification Statements, IECQ** on Carbon Footprint Declarations, using ISO Standards eg 14067

Provides an International Confidence that Carbon Footprint Claims can be Trusted, by ensuring Standards have been applied in the determination

__Verification__ according to ISO/IEC 17029
Use of ISO 14067+ And Other Standards:
Collaboration with IEC TC 111, 105, ISO TC 197+
Caters for future publication of IEC 63372

IEC QUALITY ASSESSMENT SYSTEM (IECQ)

For rules and details of the IECQ visit www.iecq.org

IECQ Verification Statement
Carbon Footprint of Product

IECQ Certificate No.:	IECQ-V IECQDEMO 23.0001	Issue Date.: 2024/01/24	Expiration:	2027/01/23
CB Reference No.:	EXAMPLE - Carbon Footprint of Product			

Example for Carbon Footprint Claim Company X
XYZ Street Address,
XYZ Town/City Address.
Australia

The organization has developed and implemented procedures, and related processes which have been assessed by the IECQ Body, according to IECQ 03-1 and ISO/IEC 17029, issuing this statement and found to comply with the applicable requirements of the IECQ Approved Process Scheme (IECQ 03-2) and in respect of standard(s) or specification(s):

- ISO 14067:2019 {Ed 1.0} - Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification
- CFP–PCR, e.g., Climate change - PCR (Product Category Rules)

Product/Service: Description of Product / /Service

Carbon Footprint of Product per Functional Unit: The CFPP per Function Unit Value

Carbon Footprint Study Report: Reference to Carbon Footprint Study Report

Additional Information: Carbon Footprint of Product Additional Information as required.

INTERNATIONAL STANDARD	**ISO 14067**
	First edition 2018-08

Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification

Gaz à effet de serre — Empreinte carbone des produits — Exigences

TECHNICAL SPECIFICATION	**ISO/TS 19870**
	First edition 2023-11

Hydrogen technologies — Methodology for determining the greenhouse gas emissions associated with the production, conditioning and transport of hydrogen to consumption gate

IECQ **Nuclear Supply Chain Certification** Compliance to ISO 19443 – Management System requirements for Organisations supplying goods and services to the Nuclear Industry

Certifies an Organisations Management System Process with **ISO 19443**

ISO 19443 uses ISO 9001 QMS as a basis

Addresses goods and services that are Important to Nuclear Safety (ITNS)

A new Service of IECQ – First 5 Certificates issued
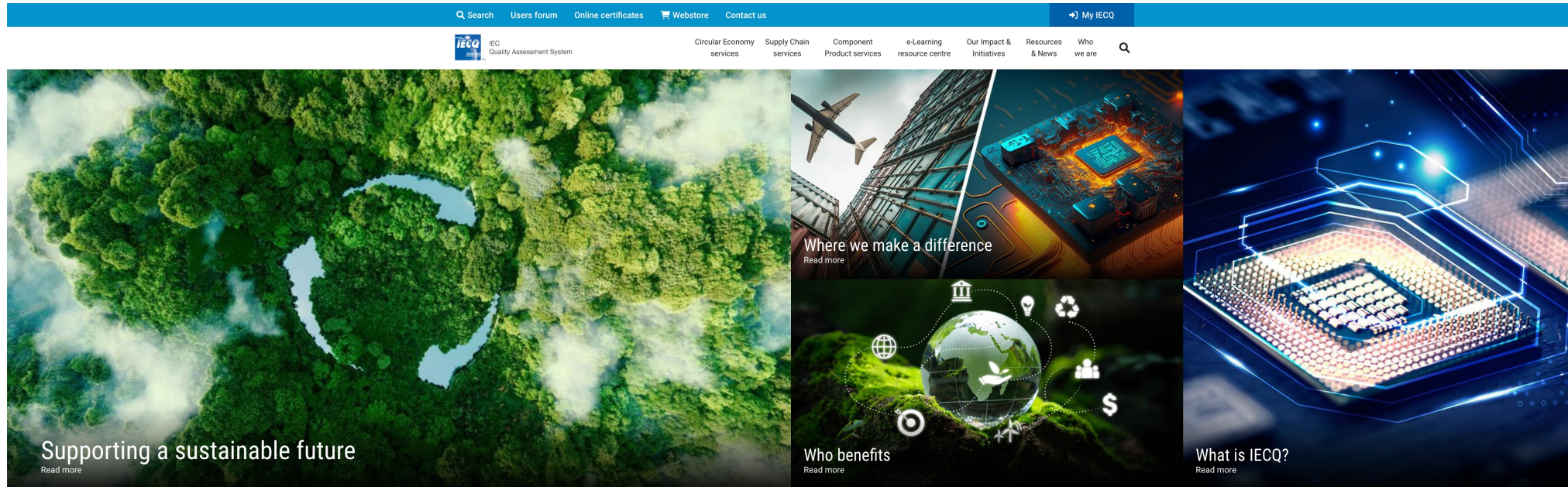
News Alert: - COP28 reports of the signing of a pledge to triple use of Nuclear Energy by 2050 as part of the replacement of reliance on fossil fuels

INTERNATIONAL STANDARD

ISO 19443

First edition 2018-05

New IECQ Website – Essential for the new Environmental CA Services – www.iecq.org

With Animated Videos that explain IECQ in more detail

Thank You