IEC Conformity Assessment Systems

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Why are IEC International Standards relevant?

- Putting our products into context: “Recognizing the important contribution that international standards and conformity assessment systems can make in this regard by improving efficiency of production and facilitating the conduct of international trade. . .”

- “Members shall use [international standards] as a basis for their technical regulations....”

- “Members shall play a full part...in the preparation...of international standards....”

WTO TBT Agreement
Assessment activities
Conformity Standards development
Like two sides of a coin

Standards = knowledge
Conformity Assessment = application of knowledge
Standards + Conformity Assessment = Value
Value Creation

• IEC international Standards support all three types of CA
  o 1\textsuperscript{st} party CA – performed by manufacturers
  o 2\textsuperscript{nd} party CA – performed by end users
  o 3\textsuperscript{rd} party CA – performed by independent party

• However, the IEC’s CA activities support only 3\textsuperscript{rd} party CA.

• IEC creates a framework for global certification by qualified, commercial test laboratories & certification bodies and international valorization of those certificates through a mutual recognition arrangement.

• One standard, one test performed anywhere, one certificate accepted everywhere.
Why perform Conformity Assessment?

- **Safety:** governments want to protect:
  - Consumers
  - Workers in high risk areas
  - The Environment

- **Performance:** buyers, (including wholesalers) want to ensure quality and safety

- **Interoperability:** other manufacturers want to know that their product will work correctly with the one being assessed.
Largest multilateral agreement

- Thousands of testing laboratories
- > one million certificates
- Accepted globally
- No duplication
- Less time and cost
- One test...one certification – many markets
Benefits for Industry

- IEC Standards are written by experts from small, medium and large enterprises
- Acceptance of products on world markets
- Rationalization/cost reduction in design and manufacturing
- Access to latest “best practices” (i.e. technology)
- Improve safety and quality
- Use IEC Standards and benefit from one-stop global conformity assessment
Benefits for governments (1)

- International Standards are best source for governments for:
  - Legislation/regulation
  - Issuing tenders
- Potential source for WTO compliance contributing towards fulfillment of TBT Agreement
- Standards provide detailed technical interpretation of the law
Benefits for governments (2)

- Widest range of acceptable products
- Assured neutrality (no supplier countries favoured)
- Assurance that the issuer has “adequate and enduring technical competence” (6.1.1 of WTO’s TBT Agreement)
- Confidence in imported products:
  - No dumping of poor-quality goods
  - No “hiding” behind false origins (built in one place but trans-shipped through another)
- Safety ensured.
IEC Conformity Assessment structure

CONFORMITY ASSESSMENT BOARD
Management of CA policy and Systems

Deals with Conformity Assessment matters of the IEC

Administers / oversees Conformity Assessment Systems

Current Examples
- Input to ISO/CASCO
- ILAC/IAF Liaison
- Others, WTO, UNECE, etc

Current Systems
- IECEE
- IECEx
- IECQ
- IECRE
What is CAB?

- CA decision-making body
- Determines IEC CA policy
- Reports to CB (Council Board)
- Responsible for all Systems
- Approves their rules, accounts, budgets
- Manages the relationship with ISO/CASCO, ILAC/IAF, etc.
IECEE
System of Conformity Assessment Schemes for Electrotechnical Equipment and Components

IECEEx
System for Certification to Standards Relating to Equipment for use in Explosive Atmospheres

IECQ
Quality Assessment System for Electronic Components

IEC RE
IEC General System for Certification to Standards relating to plant, equipment and services associated with Renewable Energy Systems

IEC Wind Energy Scheme

IEC Solar Energy Scheme

IEC Marine Energy Scheme
System for conformity assessment schemes for electrotechnical equipment and components
The Members and service providers of the IECEE System are:

- 54 Member Bodies - 1 per Country
- 77 Certification Bodies - 1 or more per Country
- 481 Testing Laboratories - 1 or more per Country
- More than 3000 Manufacturer’s Testing Laboratories under the responsibility of the relevant National Certification Body
IECEE covers

- IT and office equipment
- Electronics, entertainment
- Electrical equipment for medical use
- Installation accessories and connection devices
- Safety transformers and similar equipment
- Lighting
- Switches for appliances and automatic controls for electrical household appliances
- Industrial Automation
- Portable tools
- Photovoltaics
- Household and similar equipment
- Measuring instruments
- Low voltage, high power switching equipment
- Installation protective equipment
- Capacitors as components
- Batteries
- Cables and Cords
Participating Member Countries

Argentina, Australia, Austria, Bahrain, Belarus, Belgium, Brazil, Bulgaria, Canada, China, Colombia, Croatia, Czech Rep., Denmark, Finland, France, Germany, Greece, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Kenya, Korea Rep. of, Libya, Malaysia, Mexico, Netherlands, New Zealand, Nigeria, Norway, Pakistan, Poland, Portugal, Russian Federation, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States, Viet Nam
IECEE CB and FCS Schemes

- “de facto” the most accepted proof of compliance by authorities and regulators
- Passport to market entry without further testing
Safety-Performance-Environment

IEC Standards for electrical safety

IEC Standards for energy efficiency

IECEE Hazardous Substances Programme
IEC 60335-2-24

INTERNATIONAL STANDARD
NORME INTERNATIONALE

Household and similar electrical appliances – Safety – Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers

Appareils électroménagers et analogues – Sécurité – Partie 2-24: Règles particulières pour les appareils de réfrigération, les sorbètiers et les fabricats de glace
CB Scheme and CB-FCS Process

Sample request
- Certification Body requests sample(s) and sets the testing programme

Testing
- Laboratory’s staff performs the measuring and testing programme

Inspection
- Certification Body’s staff performs the Factory Inspection

Evaluation
- Certification Body’s staff evaluates the Test Report

Decision
- Certification Body’s officer takes the Certification decision

Licence
- Certification Body issues the Test Certificate with the Test Report
CB Test Certificates and associated Test Reports issued by Certification Bodies in one country, are accepted by Certification Bodies in other member countries for purposes of national certification

CB Test Certificates and associated Test Reports accepted by several Regulatory Authorities

CB Test Certificates and associated Test Reports directly accepted by Retailers, Buyers, Vendors worldwide

Reduced testing and certification costs

Capacity to eliminate multiple unnecessary national certifications

Portable conformity assessment
IECEx

Worldwide system for certification to standards relating to equipment for use in explosive atmospheres
33 countries in Management Committee

76 ExCBs (+others at application stage)

46 Ex Testing Laboratories

Covers all Ex needs: devices, installation, maintenance, repair, services, inspection and the competence of personnel

Strong in Europe, North America and Asia. New interest from Gulf region

Annual growth exceeds 30%

All certificates issued are available online
Participating Member Countries

Australia, Brazil, Canada, China, Croatia, Czech Rep., Denmark, Finland, France, Germany, Hungary, India, Israel, Italy, Japan, Korea Rep. of, Malaysia, Netherlands, New Zealand, Norway, Poland, Romania, Russian Federation, Singapore, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, United Arab Emirates, United Kingdom, United States
What is IECEx

- The single International IEC System with Schemes covering Certification to Standards that relate to Equipment and Services in areas relating to Explosive Atmospheres, to provide an Internationally accepted means of demonstrating claimed compliance with International Standards.

- IECEx is a “Conformity Assessment Tool” providing confidence that Products, Services and Personnel Competence covered by an IECEx Certificate meet specified requirements, (International Standards).

- IECEx identifiers:

IECEx is the International Standard way of doing Ex Certification
Examples of industries covered

- Automotive refuelling stations and petrol stations
- Oil + gas extraction
- Oil refineries, rigs and processing plants
- Gas pipelines and distribution centres
- Chemical processing plants
- Printing industries, paper and textiles
- Hospital e.g. operating theatres
- Aircraft refuelling and hangars
- Surface coating industries
- Textiles
- Mining
- Sewerage treatment plants
- Grain handling and storage
- Woodworking areas
- Sugar refineries, storage, packaging + distribution
- Metal surface grinding, especially aluminium dusts and particles.
- Transportation
- Pharmaceuticals
- Food processing
- Furniture manufacturer
- + many others …
IECEx – examples of devices

- Communication
- Lighting
- Transportation
- Protection Systems
- Radios
- Instrumentation
- Motors
- Processing Plant
- Ventilation
- Gas analyising
- Others
- Coal mining industry
• Globally recognized as THE certification system in Ex areas.
• Certification of Personnel Competencies in Ex environments is gaining traction.
• This certification ensures that personnel who are to execute installations and repairs in Ex areas have the necessary skills and competence to do so.
Quality Assessment System for Electronic Components
- 14 members (Member Bodies)
- 23 CBs + branches
- Covers components and related processes in Electronics and Aviation industries
- Hazardous substances management
- Counterfeit avoidance measures
IECQ Member Bodies

IECQ Member Bodies (IECQ MB)

Map of IECQ Member Bodies (MBs)
IECQ scope

- Facilitates electronic manufacturing and compliance with strict hazardous substances regulations.

- Management tool for components’ supply chain – counterfeiting avoidance = safer electronics

- Aviation and electronics manufacturing industry
IECQ – independent confidence

that these comply with these

IECQ provides assurance that components and assemblies comply with the component manufacturer’s declared specifications including standards.
IECQ work

- Active components, such as integrated circuits
- Passive Components
- Hybrid Integrated Circuits
- Printed Circuit Board and Assemblies
- Electromagnetic Components
- Opto Electronics
- Electromedical Components
- Wires and Cables
- Process Systems
- Hazardous Substances, IECQ HSPM
IECQ and the environment

- IECQ HSPM: Hazardous Substance Process Management (ex: lead / mercury)
IEC System for Certification to Standards Relating to Equipment for Use in Renewable Energy Applications
## Participating Member Countries

- Austria
- Canada
- China
- Denmark
- Egypt
- France
- Germany
- Hungary
- India
- Kenya
- Japan
- Korea Repub. of
- Netherlands
- Portugal
- Spain
- Sweden
- United Kingdom
- USA

18 Member countries
IECRE Structure

Conformity Assessment Board

IECRE Management Committee, REMC
Overall management of the IECRE System

- National Members (Countries)
- Officers + Executive, Scheme Chairs, IEC Gen. Sec
- Expert Working Groups (WGs) – as needed

IECRE Secretariat
Technical Support
Administration

WE OMC
Wind Energy
Operational Management Committee

- National Members
- TC 88 + SC Liaison Committees + WGs

ME OMC
Marine Energy
Operational Management Committee

- National Members
- TC 114 + SC Liaison Committees + WGs

PV OMC
PV Solar Operational Management Committee

- National Members
- TC 82 + SC Liaison Committees + WGs
Types of Renewable Energy Sources

Common sources include:
- Solar – Photovoltaic (PV)
- Solar – Thermal
- Wind Power
- Marine Energy
- Hydro Energy
- Geothermal
- Biomass and biogas
- Fuel Cells
Benefits of Conducting Conformity Assessment through IEC

- IEC Brand
  - Global recognition - industry
  - International recognition, e.g. WTO + UN
  - IEC Reports and Certificates used Nationally

- Open and Transparent Process
  - Clear Rules
  - Transparency in process and results

- Industry have a say and provide direct input.

- Consistency in CA processes among participating Certification/Test Bodies
provide a global framework for independent assessment and certification of equipment and services associated with Renewable Energy applications.

Types of Certificates have yet to be defined.
Benefits for the developing countries

- No need to develop a separate system of certification or approval
- The regulations of the countries can be simplified by requiring the conformity of the IEC ad hoc system
- Wider range of acceptable products
IEC Conformity Assessment
Further Information

Conformity Assessment
CA (Conformity Assessment) is any activity which results in determining whether a product or other object corresponds to the requirements contained in a specification.

A specification, typically but not exclusively a standard, is a technical description of the characteristics which are required to be fulfilled by some object. These objects may be products (which in this context include services), processes, bodies, people or systems (management systems, for example).

Officially, CA is the “demonstration that specified requirements relating to a product, process, system, person or body are fulfilled”. Note that the phrase “conformity assessment” does not limit or classify the activity in any way – a consumer who buys an appliance and at home checks that it conforms to a technical description may be said to be carrying out “conformity assessment”.

IEC
IECEE
IECEX
IECQ

IEC RENEWABLE ENERGY

IEC Renewable Energy
accepted worldwide
Thank you.