



Benha University

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Renewable Energy Systems



By



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Lecture (12)



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Renewable Energy Systems Codes & Standards

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Difference between Regulation & standard?

Regulations	Standards
A Rule that we must follow	Not written by Government but written by organizations.
Rules that the Government makes under an Act	Typically refer to product performance or how to do a job
Rules are made “real” and “enforceable” by the power that the Government gives itself under an Act	Have no authority on their own, but may be adopted into regulations making them legal requirements
e.g. Health & Safety Act Regulation for Hearing Protection	May be referred to specifically in a regulation

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International specifications for solar panels

1. International Electrotechnical Commission (IEC).
2. Country-specific certification.
3. Environmental certifications

International certificates are granted for products

- ❖ It's an International certificates are granted for products conforming to specifications.
- ❖ Most photovoltaic panel companies provide samples to any of the following German accredited bodies for testing And certify that this product conforms to specifications:
 - * TÜV Rheinland
 - * TÜV Süd
 - * VDE

1. IEC

1. International Electrotechnical Commission (IEC)



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- ❖ **IEC** is the world's leading organization that prepares and publishes International Standards for all electrical, electronic and related technologies.
- ❖ **IEC** provides a platform to companies, industries and governments for meeting, discussing and developing the International Standards they require.
- ❖ **IEC** Take numbers from 60000 to 79999 and write in this form (IEC 62446)

IEC Committees

- ❖ **Committee No (TC61):**

which deals with the specifications of household appliances and similar devices.

- ❖ **Committee No (TC62):**

which deals with the specifications of devices in the medical field.

- ❖ **Committee No (TC64):**

which deals with the specifications of electrical installations and protection against electric shocks.

❖ **Committee No (TC108):**

is specialized in the specifications of electronic devices in the fields of audio and video, information, and communication technology.

The importance of conformity assessment for IEC specifications

- ❖ Inspection and Check.
- ❖ Conduct some tests.
- ❖ Granting and renewing quality assurance certificates.
- ❖ The ability of products to maintain continuity and presence in the markets.

The basic components of the conformity assessment body for IEC

1. Regulator.
2. National accreditation bodies
3. Certification bodies.
4. Testing laboratories.
5. IEC and ISO

Renewable Energy Systems IEC Standards

a) **IEC Technical Committee TC82**

- ❖ was established in 1981. It is the most important International body regarding photovoltaic related standardization.
- ❖ The main tasks of TC82 are to prepare international standards for systems of photovoltaic conversion of solar energy into electrical energy and for all the elements in the entire photovoltaic energy system.

b) **ASTM Committee E44**

- ❖ on Solar, Geothermal and Other Alternative Energy Sources is composed of subcommittees that address specific segments within the general subject area covered by the technical committee.

- ❖ In the USA, **The National Electric Code (NEC)** contains sections that specifically cover solar-energy and distributed power generation systems.
- ❖ **The International Residential Code (IRC)** and the **International Energy Conservation Code (IECC)** reference related standards that apply if installing, respectively, a residential or commercial PV system.
- ❖ **The International Fire Code (IFC)** establishes solar provisions relating to fire access and fire safety.

2. CE

2. Conformity Europeans (CE):

- ❖ A European organization that sets standards and specifications to ensure that products comply with the quality, security and safety laws of the EU. Construction was envisaged in parallel with the creation of the European Union.



3. ISO

3. International Organization for Standardization (ISO):

- ❖ It is a global federation based in Geneva and has more than 90 national statistical bodies.
- ❖ It is abbreviated as **ISO** based on the Greek word "ISOS" which means "equal".
- ❖ It was built a year ago **1947**.

ISO Certificate

- ❖ It's a certificate issued by foreign and Arab parties, which is mandated by the International Organization for Measurement and Standardization (ISO).
- ❖ Provides requirements and guidelines necessary for the establishment of quality management system and aims to provide products or services that meet the global requirements