



Challenges for Global New Plant Construction

**TECHNICAL AND REGULATORY ISSUES FACING NUCLEAR
POWER PLANTS**

LEVERAGING GLOBAL EXPERIENCE

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Notice

All statements by the author represent his opinion alone and do not necessarily represent the position of ASME.

Topics

- Focus
- Challenges
- Solutions
- Summary
- Action Needed

Emerging Nuclear Countries

- Over 45 countries actively considering embarking upon nuclear power programmes
- Range from sophisticated economies to developing nations
- Front runners are UAE, Turkey, Vietnam, Belarus, and Poland.

Emerging Nuclear Countries

Major challenges:

- Size and quality of their grid system
- Licensing reactor designs
- Lack of nuclear infrastructure

Focus

- Licensing reactor designs
- Lack of nuclear infrastructure

Multiplicity

- Multitude of reactor designs
- Multitude of codes, standards and regulatory requirements, including:
 - technical
 - quality assurance
 - conformity assessment

Harmonize and Converge

- MDEP multinational initiative to develop innovative approaches to leverage the resources and knowledge of the national regulatory authorities
- MDEP CSWG objective of finding ways to **harmonize** and **converge** national codes, standards, and regulatory requirements and practices.

Global Challenges (1 of 2)

Divergence, not Convergence

Contributors to divergence include:

- Application and use of existing national standards
- Language and cultural differences
- Desire for localization

Global Challenges (2 of 2)

Divergence, not Convergence

Three areas:

- Technical Codes and Standards
- Quality Assurance
- Conformity Assessment

Global Solutions (1 of 6)

Equivalence, not Convergence

Equivalence: the condition of being equal or equivalent in value, worth, function, etc.

Convergence: the merging of distinct technologies, industries, or devices into a unified whole.

Global Solutions

(2 of 6)

Equivalence

Three areas:

- Technical Codes and Standards
- Quality Assurance
- Conformity Assessment

Global Solutions (3 of 6)

- We need globally accepted processes to establish equivalence.
- Processes that establish equivalence of:
 - different technical codes and standards
 - different quality assurance and conformity assessment systems
- Processes that can be accepted by regulators with assurance of quality and safety.

Global Solutions (4 of 6)

Convergence is Possible

Technical convergence could be achieved if global nuclear community converges on one set of existing and proven technical standards.

Global Solutions (5 of 6)

An Integrated and Comprehensive Set of Nuclear Codes and Standards

- BPV III for Construction of Nuclear Facility Components,
- BPV XI for Inservice Inspection
- Operating and Maintenance Code
- NQA-1 for Nuclear Quality Assurance
- Other nuclear standards include those for:
 - Nuclear Cranes
 - Nuclear risk Management
 - Qualification of Mechanical Equipment
 - Air and Gas Treatment

Global Solutions (6 of 6)

Global and Open Development

- Fully transparent development process – open to the public
- Committee members from Japan, Korea, UK, France, etc.
- International Working Groups in China, Europe, India
 - Working groups function as a regular working group, conduct business in their native language, and have access to C&S Connect to review, comment and ballot on proposed changes to codes and standards
- ASME is an existing venue that is already leading to convergence

Summary

- Convergence is not realistic as currently being pursued.
- Equivalence recognizes reality – it is what we are doing today!
- Equivalence addresses key contributors to divergence.
- Convergence could be achieved if we converge on one set of existing and proven technical standards.

Action Needed

- Develop internationally accepted processes to establish equivalency!
- Alternatively, global nuclear community converges on one set of existing and proven technical standards!

WNA Needs to Take the Lead!