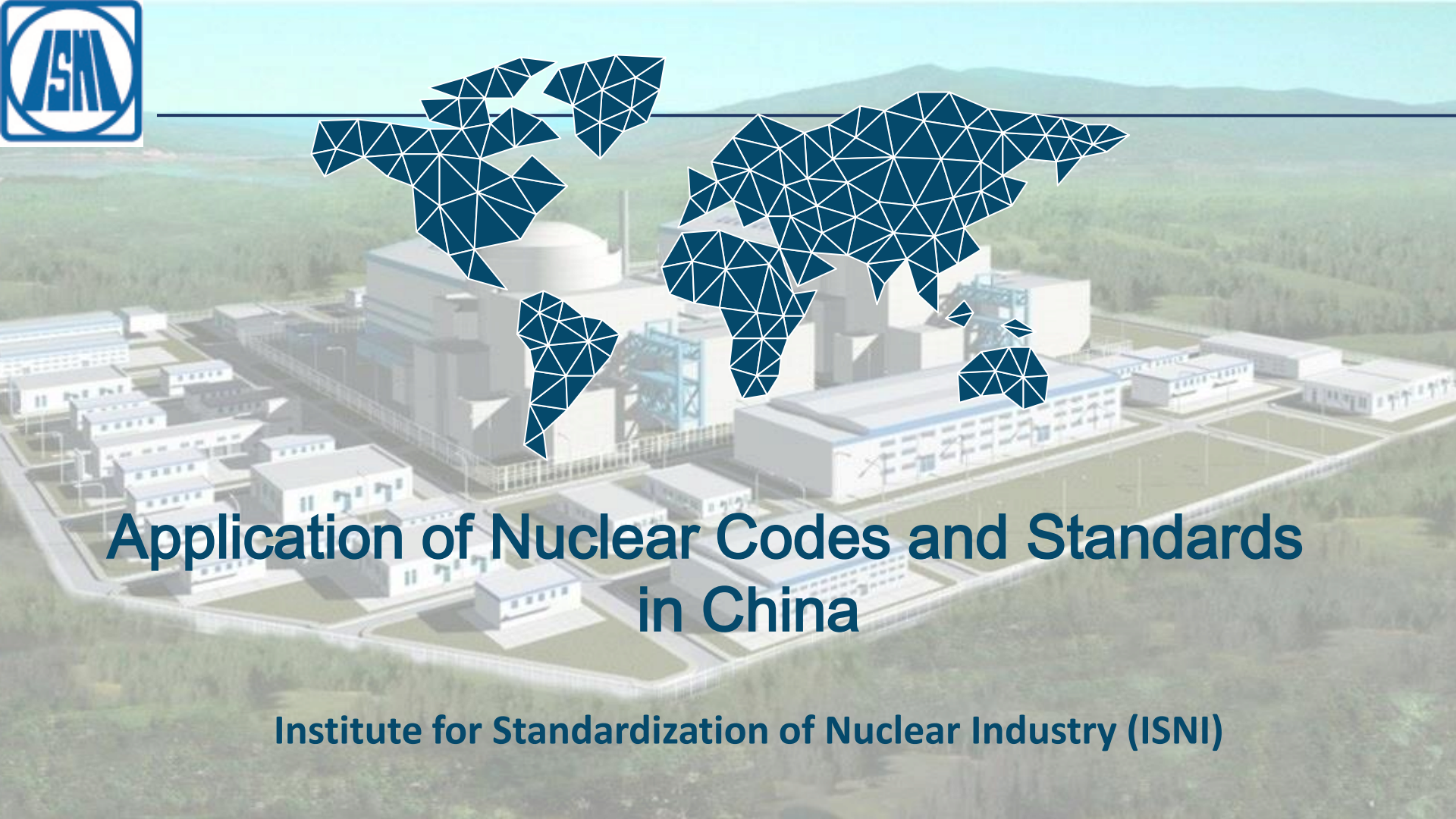


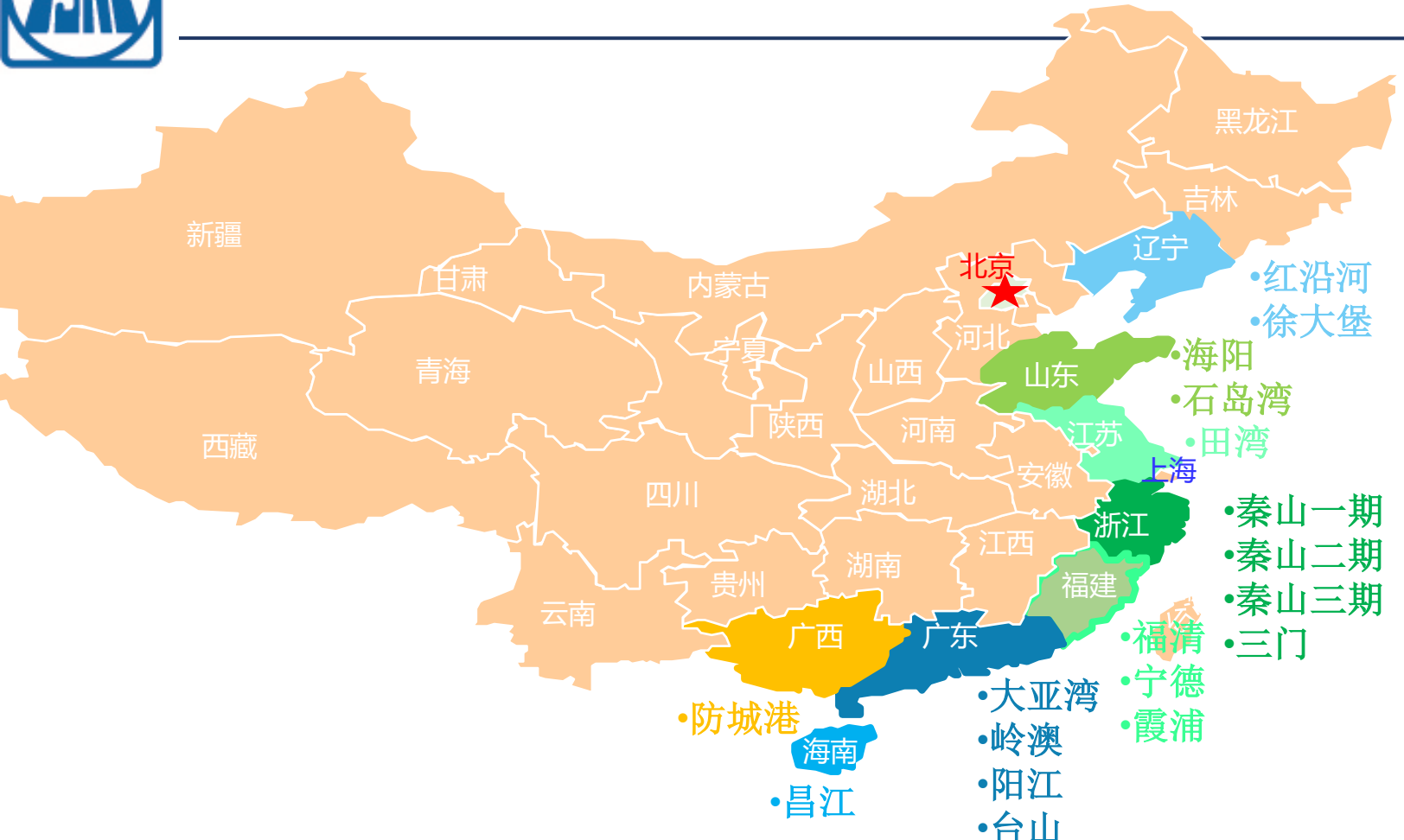
Application of Nuclear Codes and Standards in China

Institute for Standardization of Nuclear Industry (ISNI)

Contents

- Application of international and other countries' standards
- Codes and Standards System in China Nuclear Power Industry
- Development and application of Chinese nuclear mechanical codes and standards

Application of international and other countries' standards

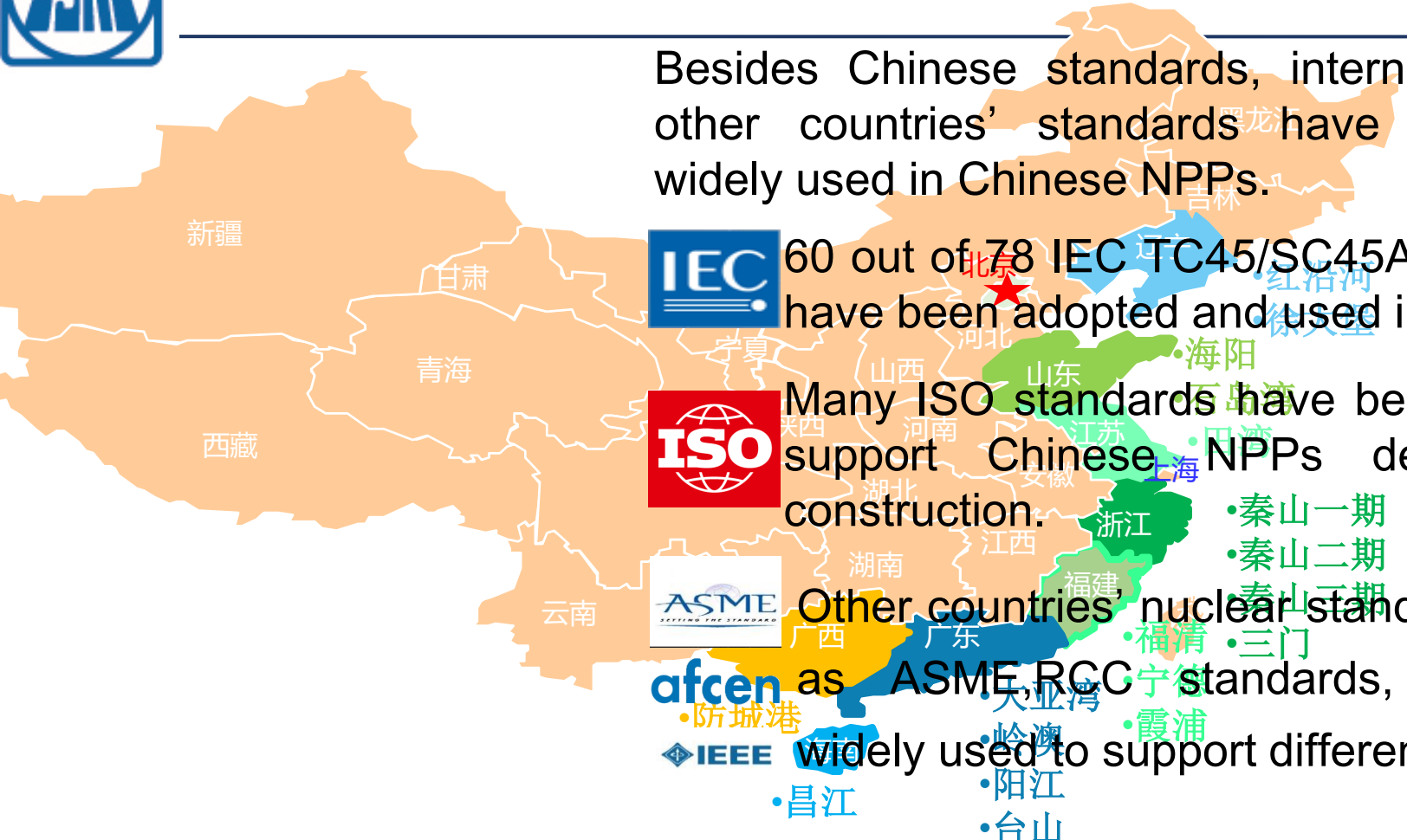


- M310
- HPR1000
- EPR
- AP1000
- VVER
- HTGR
- SFR

etc…

Application of international and other countries' standards

Besides Chinese standards, international and other countries' standards have also been widely used in Chinese NPPs.

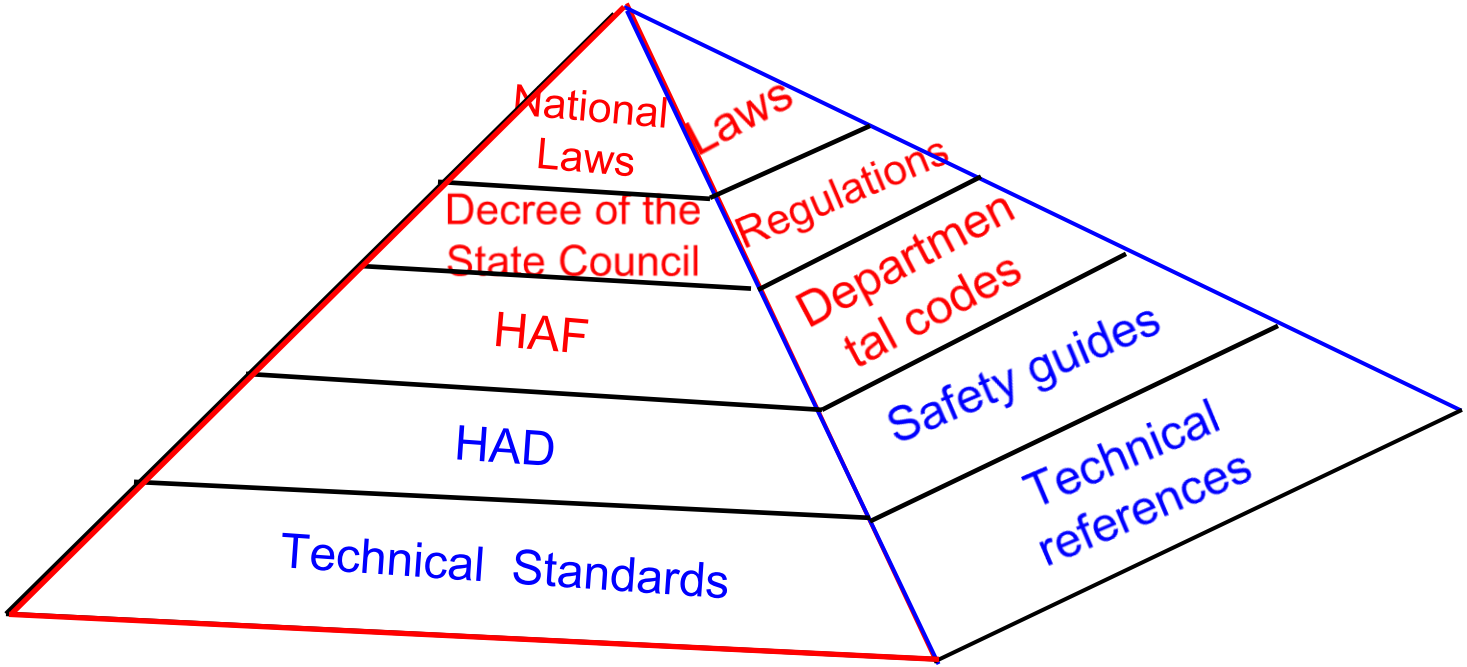


60 out of 78 IEC TC45/SC45A standards have been adopted and used in China.

Many ISO standards have been used to support Chinese NPPs design and construction.

Other countries' nuclear standards, such as ASME,RCC standards, are also widely used to support different NPPs .

Nuclear Codes and Standards System in China

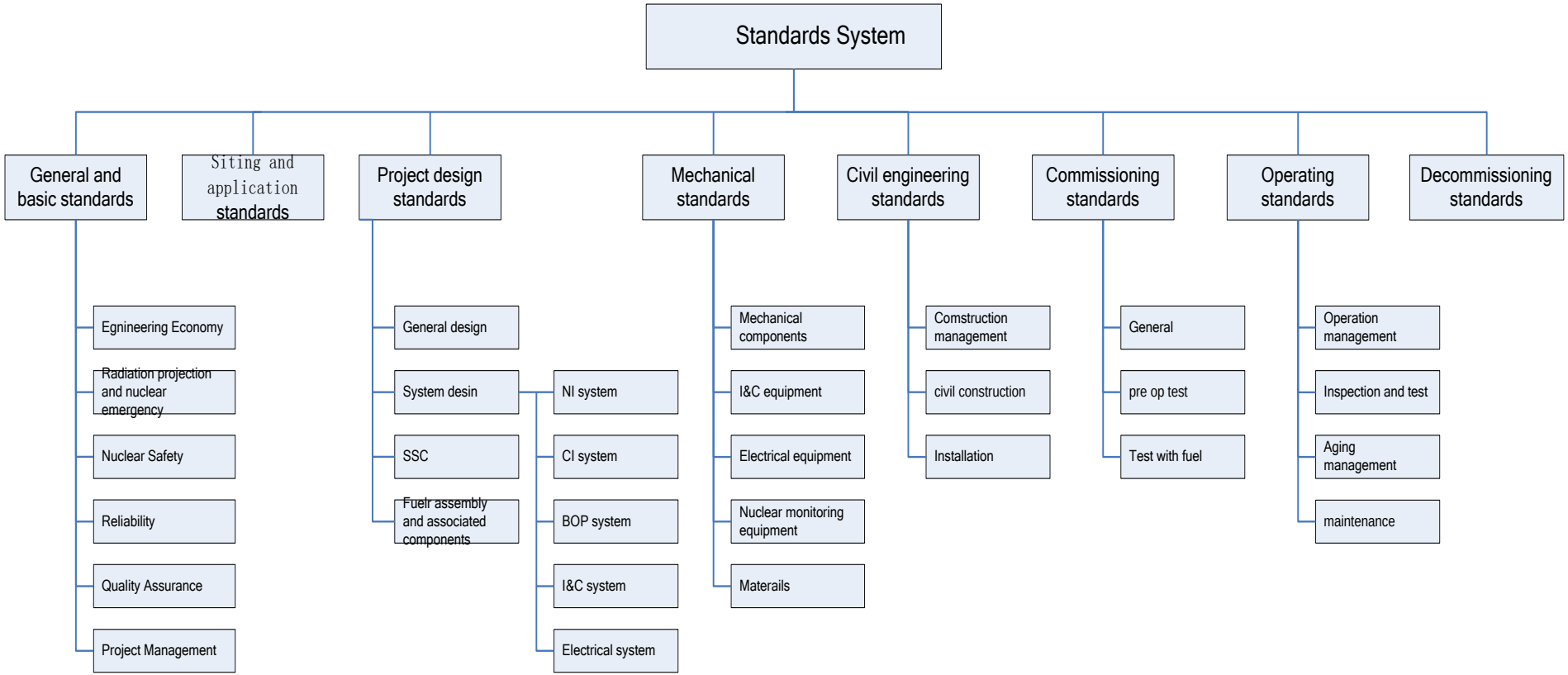


Nuclear Codes and Standards System in China

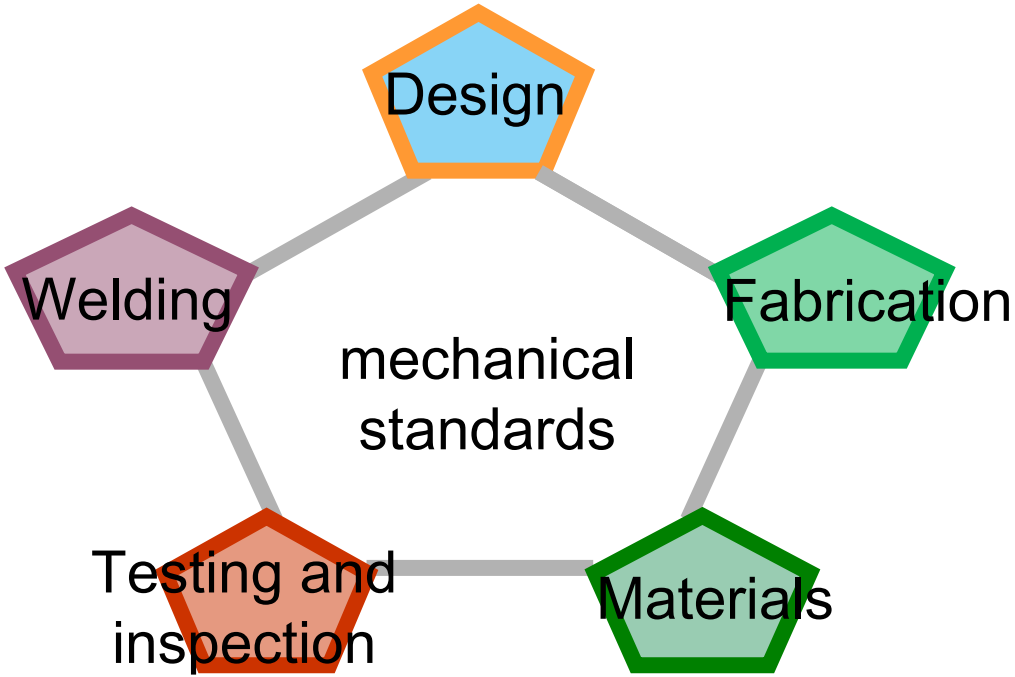
Nowadays, an integrated and comprehensive nuclear standards system has been developed mainly for Nuclear Power Plants in China.

The Standards system consists of general and basic standards, siting and application standards, project design standards, mechanical equipment and components design standards, Civil engineering standards, commissioning standards, operating standards and decommissioning standards.

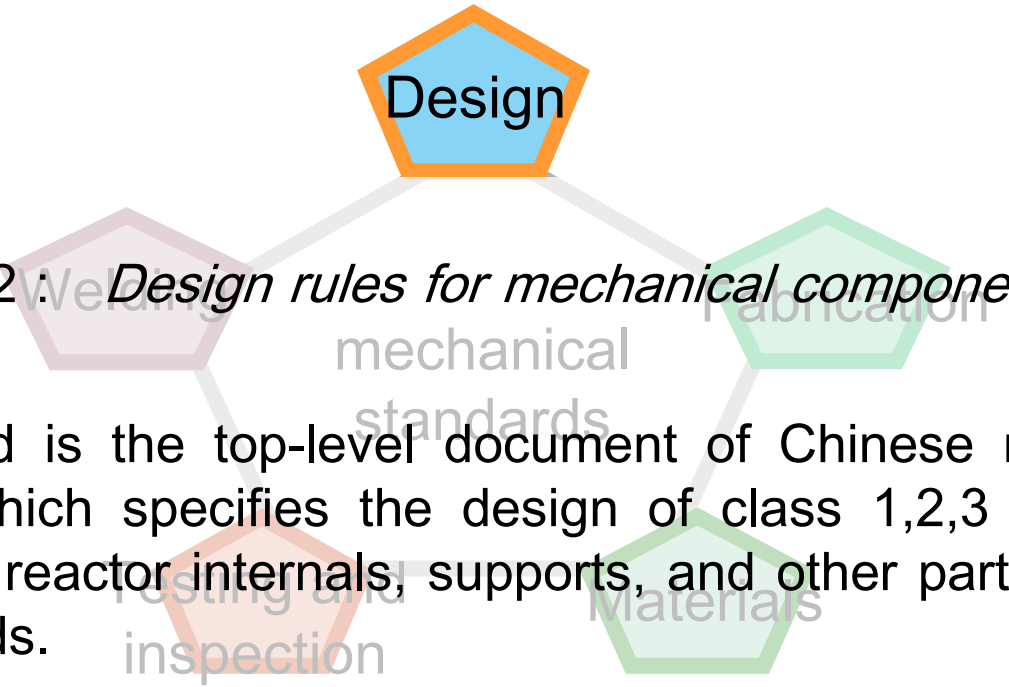
Nuclear Codes and Standards System in China



Development of Nuclear mechanical standards



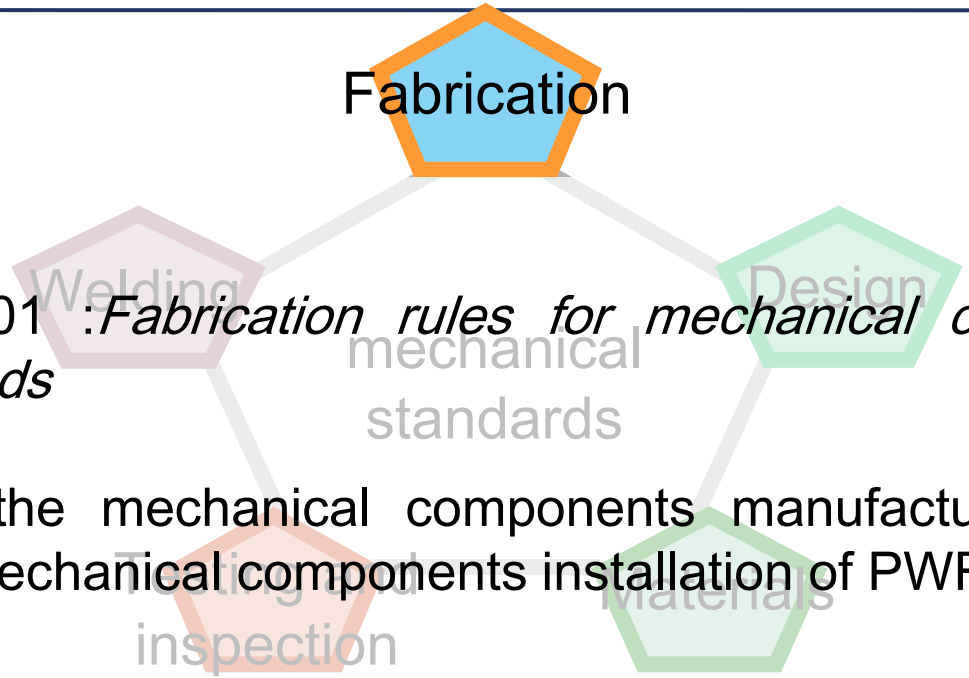
Development of Nuclear mechanical standards



- GB/T 16702 : *Design rules for mechanical components of PWR nuclear islands*

This standard is the top-level document of Chinese nuclear mechanical standards, which specifies the design of class 1,2,3 components, small components, reactor internals, supports, and other parts or components in nuclear islands.

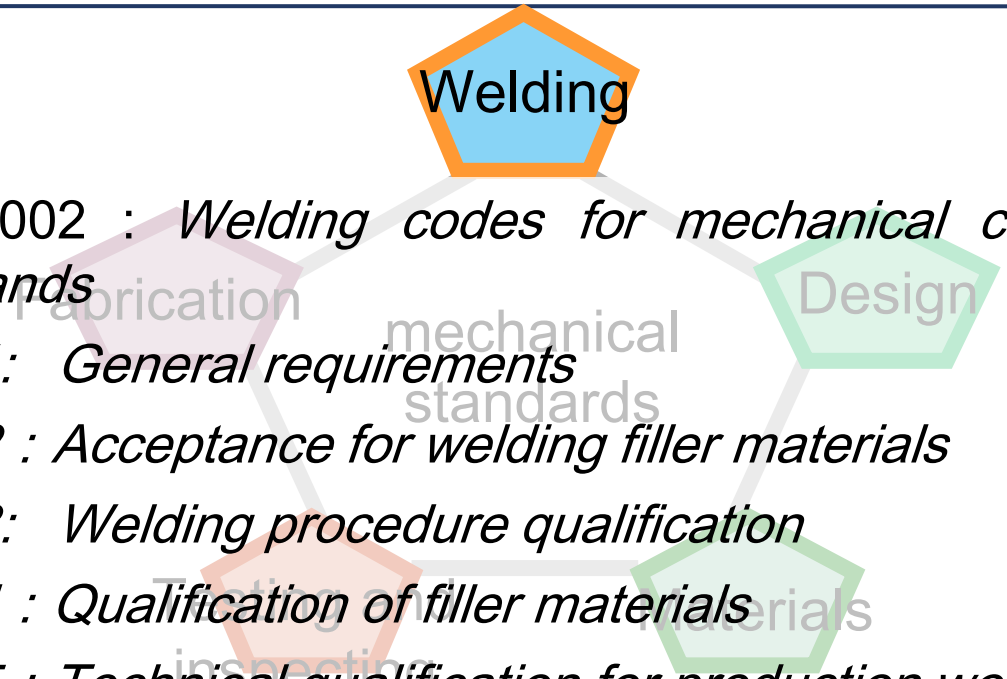
Development of Nuclear mechanical standards



- NB/T 20001 :*Fabrication rules for mechanical components of PWR nuclear islands*

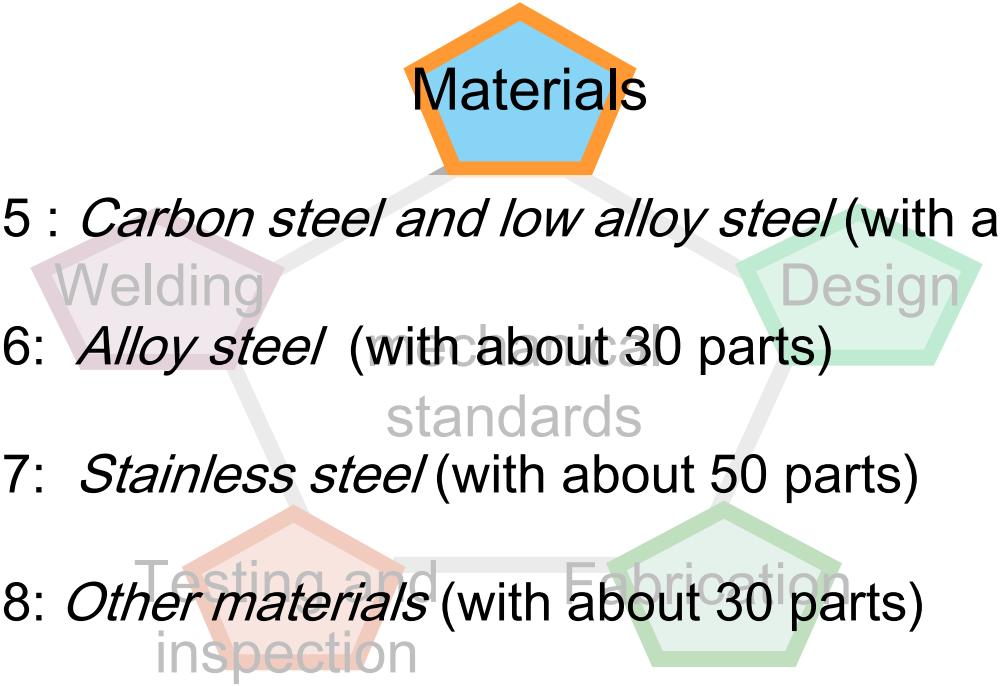
Specify the mechanical components manufacture of PWR nuclear island and mechanical components installation of PWR nuclear island.

Development of Nuclear mechanical standards



- NB/T 20002 : *Welding codes for mechanical components of PWR nuclear islands*
  - —— *Part 1: General requirements*
  - —— *Part 2 : Acceptance for welding filler materials*
  - —— *Part 3: Welding procedure qualification*
  - —— *Part 4 : Qualification of filler materials*
  - —— *Part 5 : Technical qualification for production workshops*
  - —— *Part 6 : Production Welds*
  - —— *Part 7 : Hardfacing*

Development of Nuclear mechanical standards



- NB/T 20005 : *Carbon steel and low alloy steel* (with about 30 parts)
- NB/T 20006: *Alloy steel* (with about 30 parts)
- NB/T 20007: *Stainless steel* (with about 50 parts)
- NB/T 20008: *Other materials* (with about 30 parts)
- NB/T 20009: *Welding materials* (with about 30 parts)

Development of Nuclear mechanical standards

Testing and inspection

- NB/T 20003: *Non-destructive testing for mechanical components in nuclear island of nuclear power plants*

Seven kinds of NDT methods, Ultrasonic testing、Radiographic testing、Penetrant testing、Magnetic particle testing、Eddy current testing、Visual testing、Leak testing, have been specified in this standard.

- NB/T 20004: *Physical and chemical test methods for materials used in nuclear island components of nuclear power plants*

This standard summaries the physical and chemical test methods as normative references and adds some specific rules to meet the NPP's special requirements.

Application of Chinese nuclear mechanical standards

Nowadays, Chinese nuclear mechanical standards have been gradually adopted and used in China and abroad, such as HPR1000.

With the development of Chinese standards and feedback from projects, we also encountered problems of technology diversity in various standards. The work of MDEP is very significant and highly appreciated, we will also benefit from it.

Meanwhile, we are also willing to share our experiences with MDEP group.


Thank you
for your attention!