



SUPPLY CHAIN REQUIREMENTS IN A GLOBAL ENVIRONMENT

Dr. Jörg Aign

April 2019, Atomexpo - Sochi

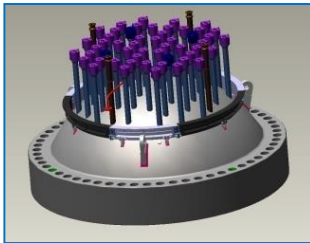
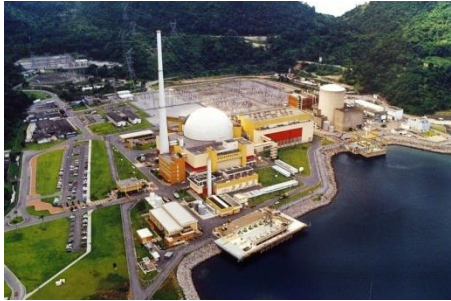
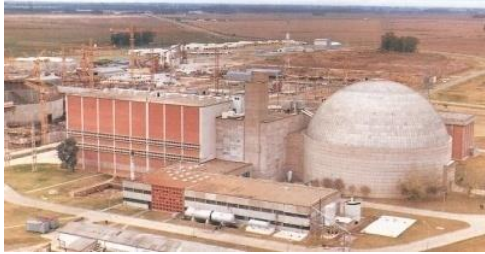
TÜV NORD NUCLEAR

TESTING, INSPECTION & CERTIFICATION

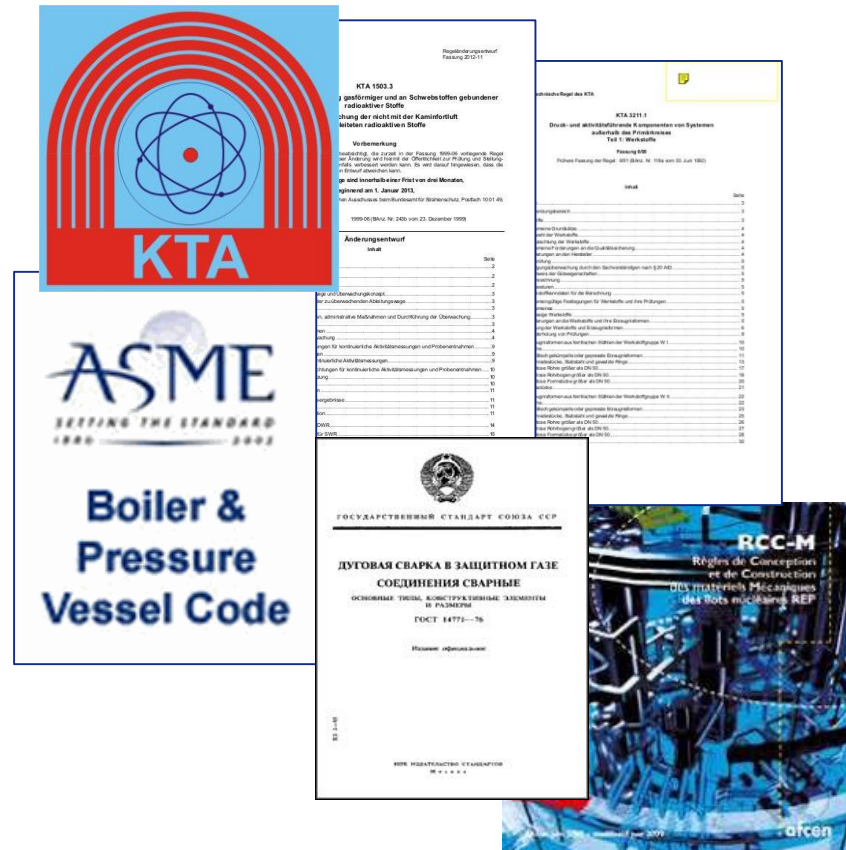


TÜV NORD NUCLEAR

EXPERIENCE ON INTERNATIONAL PROJECTS AND APPLICATION OF STANDARDS



- IAEA Safety Guides and Standards
- NEA Publications
- German KTA codes, DIN standards, RSK Guidelines
- German TGL
- European PED
- French RCC-M, RCC-E
- US NRC Reg. Guides, SRP 10 CFR
- ASME Codes III, VIII
- Korean KEPIC codes
- Russian GOST
- Swedish SSMFS
- Finnish YVL codes
- Argentinean Regulatory Standards



German Nuclear Projects

- High Application of German **KTA-Rules**
- **Quality Standards** established **in regulatory environment**
- **Sustainable market** conditions for suppliers
- Record of **qualified suppliers**
- **Consistent** set of **codes** and **standards**
- Equilibrium of **supply** and **demand**
- Tendency towards **expansion** and **export**
- Role play of **inspection organization** well established

Closed concept of technical QA -Requirements

Similar situation encountered by application of other codes: GOST, ASME, RCC-M, ...

CHALLENGES FOR A GLOBAL NUCLEAR NEW BUILD SUPPLY CHAIN

VARIETY NATIONAL & INTERNATIONAL STANDARDS



Systems and components are being designed and manufactured worldwide and are subject to the regulations of the construction site country

- **Maintain** high **quality** and **safety** standards in an environment of **globalization** and **strong competition**
- Global **dimension** of new build program **demand**s larger **capacity** of nuclear safety qualified suppliers
- **Localization** requirements involve build-up of a **new supplier base** (or local-foreign JVs / Consortia)
- **New** designs comprising innovative solutions as well as adapted or improved existing **technologies**



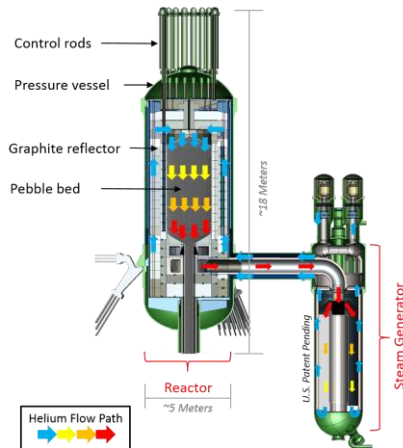
➤ Codes and Standards **Technical requirements**

- Respect the Safety classification
- Guarantee required components properties

➤ Codes and Standards **QA-Requirements**

However:

Codes and standards differ in details therefore:
mixing is not allowed & has is associated with certain
inconsistencies



Pebble Bed Modular Reactor:

- Simultaneous compliance with different standards may be mutually exclusive

→ RPV of PBMR according to ASME and KTA could not be achieved because of contradictory requirements for the grinding of welds

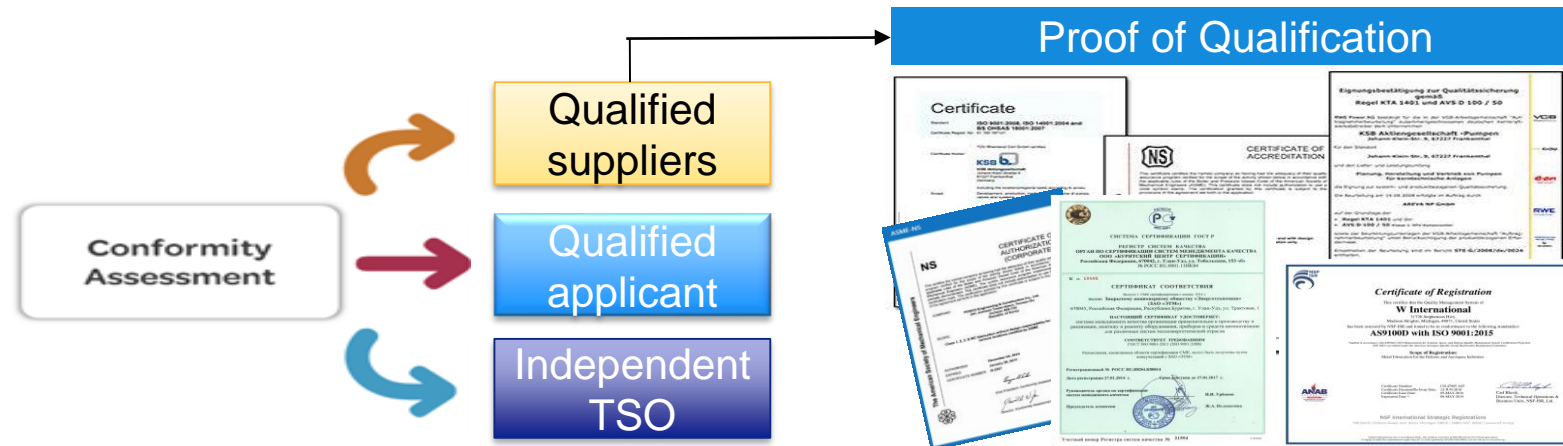
➤ Codes and Standards Technical requirements

➤ Codes and Standards QA-Requirements

- Follow the recognised procedure for conformity assessment

Conformity assessment:

- *is carried out according to the same rules in principle*
- *guaranties the required SSC properties*



SUPPLY CHAIN REQUIREMENTS IN A GLOBAL ENVIRONMENT

VARIOUS NATIONAL & INTERNATIONAL STANDARDS



#1 Harmonize quality standards

-
- *Classification of items and activities*
 - *Important to nuclear safety (ITNS) - grading application of quality requirements*
 - *Competence and qualification of human resources*
 - *Provisions for counterfeit, fraudulent or suspect items (CFS)*

SUPPLY CHAIN REQUIREMENTS IN A GLOBAL ENVIRONMENT

VARIOUS NATIONAL & INTERNATIONAL STANDARDS



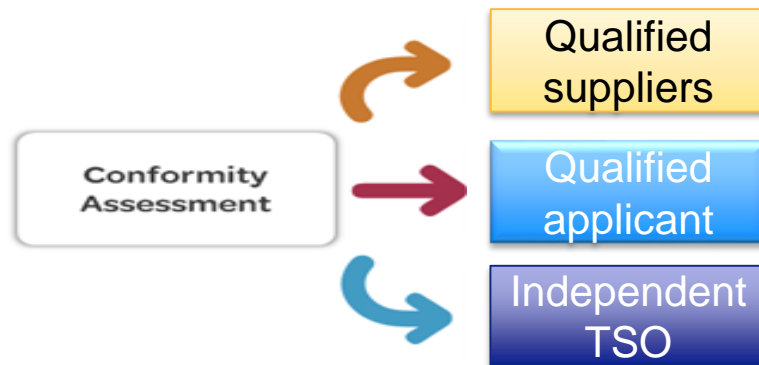
#1 Harmonize quality standards

#2 Improve qualification of suppliers

-
- *Groundwork for quality Supplier Management*
 - *Safety, economic, environmental and social performance standards to be considered*
 - *Pre-requisites: ISO 9001 (19443), ISO 14001, OHSAS 18001, IAEA GS-R-3/GS-R Part 2 etc.*
 - *Additional requirements from local regulations*

SUPPLY CHAIN REQUIREMENTS IN A GLOBAL ENVIRONMENT

VARIOUS NATIONAL & INTERNATIONAL STANDARDS



#1 Harmonize quality standards

#2 Improve qualification of suppliers

#3 Implement integrated product conformity assessment

-
- *Increase expectation level and confidence in the quality of the nuclear supply chain*
 - *Key to an integrated quality process through design, manufacturing and installation*

SUPPLY CHAIN REQUIREMENTS IN A GLOBAL ENVIRONMENT

VARIOUS NATIONAL & INTERNATIONAL STANDARDS



#1 Harmonize quality standards

#2 Improve qualification of suppliers

#3 Implement integrated product conformity assessment

#4 Establish close cooperation with nuclear regulatory authorities



Nuclear Regulatory Authority
'ensuring the protection of people and the environment from radiation hazard'

KEY TAKE-AWAYS

- Safety and quality of nuclear SSC can be achieved on the basis of various sets of codes and standards
- Establishing **unified fundamental nuclear quality standards**
 - **helps** broadening the supply chain basis
 - **increases** feasibility of new suppliers to achieve and maintain qualification
 - **enables** emerging nuclear industry in new nuclear countries
 - **promotes** economic development of local economy

KEY TAKE-AWAYS

- Safety and quality of nuclear SSC can be achieved on the basis of various sets of codes and standards
- Establishing **unified fundamental nuclear quality standards**
 - **help** broadening the supply chain basis
 - **increase** feasibility of new suppliers to achieve and maintain qualification
 - **enable** emerging nuclear industry in new nuclear countries
 - **promote** economic development of local economy

The **German economy** is **preparing** for the **transfer of ISO 19443 into** the set of **DIN standards**

TÜV NORD is member of the respective DIN working group

Thank you for your attention

Спасибо за внимание.