



International Atomic Energy Agency

**CUC Stage 2 Activity
“Proven Technology”**

Elaboration of User Consideration 7.1

**Technical Cooperation Workshop on
Common User Considerations
Vienna, September 22-25, 2008**



INPRO
International Project on
Innovative Nuclear Reactors
and Fuel Cycles

Proven Technology Consideration (1)

7.1	<i>Proven Technology</i>	
7.1.1	Proven technology should include overall NPP system and elements. The elements should include components, plant structures, design and analysis techniques, maintainability and operability features and construction techniques.	
7.1.2	Proven technology of overall NPP system should be demonstrated through several years of operation of similar NPP as a commercial plant with a good operational record.	
7.1.3	Proven technology of the elements as defined in 7.1.1 should be demonstrated through one or more of the following; –several years of operation in existing NPP, –full or part scale testing facilities, several years of operation in other applicable industries such as fossil power and process industries.	

Technology Proven Consideration (2)

7.1.4	<p>The Supplier should review existing databases of operating experience to identify both positive experience as well as causes of significant events and unplanned outages, and incorporate appropriate features in the NPP design.</p>	<p>The access to existing databases could enable the User to perform an informed assessment of the NPP performance..</p>
7.1.5	<p>The reactor system should have been licensed or should be licensable in the country of system origin and the licensing information should be made available.</p>	<p>Reactor system is defined Nuclear Steam Supply System with similar reactor and general system configuration. There are several ways the Supplier could demonstrate licensability of the reactor system, such as design certification, or statement by Regulator of the country of system origin that there is no significant potential issue with the licensing of the reactor system in the country.</p>

Objective of the Consideration

- **By requiring a certain level of “proven technology” the technical, schedule, and economic risk is reduced to an acceptable level**
- **Part of the technology assessment is to determine the current development status of the required or desired technology for NES deployment**
- **Eliminating technologies that have not been proven increases the confidence that the design will not require modification prior to construction and that the proven system will function as planned**

Proposed Scope of Activity

“Part of having confidence in the technology selection for a New Nuclear Power Plant for energy generation is to choose technologies and designs that have been applied/deployed before in order to reduce the economic and technical risk for the project”

Guidelines will be prepared which define the various levels of development and maturity that a technology goes through, and describes some key parameters that can be used to assess the development status of proposed technology options for every part of the fuel cycle

Proven Technology

Define the steps in technology development from basic concept to highly reliable deployed technologies

- **Establish a generic baseline for the evolution of a technology from an idea in a lab to a reliable and “proven” technology**
- **Provide a definition including specific attributes which characterizes a mature proven technology**
- **Develop a methodology to assess and recognize these candidate technologies**

Proven Technology

Describe the characteristics of each step and what distinguishes a technology during it's evolution

Provide case studies from successful technology acquisition that were successful because proven technology was selected

- **Some examples where it worked**
- **Some examples where the process required change or was not reliable and this led to budget or schedule inflation**