

# Technology Licensing

## Background

Westinghouse has developed state-of-the-art nuclear fuel codes and methods, and through superior training and documentation, is capable of effectively delivering them to Westinghouse licensees worldwide. Westinghouse fuel technology consists of its design codes, procedural manuals to guide the designer in applying the methodology, and training, an essential element of successful and effective technology licensing. Throughout the year, the Westinghouse Technology Upgrade and Maintenance Service provides plant operators and fuel vendors with the latest versions of codes and improvements in methodology.

Westinghouse has established close working relationships with licensees by participating in joint fuel and core design, training, and licensing activities. Westinghouse technology licensees play a key role in establishing the future direction of the technologies through their participation in the Technology User Group meetings, where members jointly establish development priorities.

## Description

Westinghouse fuel-design technology licensing provides design methodologies, engineering computer programs, manuals and documents, training in the use of the computer programs, and other services necessary to support the delivery of reload core design technology.



By using Westinghouse-developed and licensed technologies, plant operators facilitate understanding and implementation of new tools and methods

Licensee engineers apply the design tools in classroom training and design participation programs. Technology licensing services include:

- Nuclear-design model development and design calculations that include setting enrichments, model development, loading pattern development, generation of normal operations input for thermal-hydraulic design, safety evaluation, generation of nuclear design report parameters and information necessary to support reactor operation.
- Thermal-hydraulic design that focuses on core hydraulics, core component analysis, departure from nucleate boiling rate correlations, verifying core operational limits, and providing input for accident analysis and reload design activities.
- Fuel rod design that verifies that fuel rod integrity is maintained so that reactor coolant does not become contaminated.
- Mechanical design that evaluates structural behavior of the fuel assembly and its component parts.
- Technology upgrades that share the newest and best from a broad group of users.
- Supply of computing hardware and operating systems matching that on which Westinghouse engineers perform their design calculations. Network Management Service, also available from Westinghouse, performs the job of continuously monitoring the hardware and operating system to detect deviations from the Reference Westinghouse Computing System on which code performance has been validated.

## Benefits

Westinghouse technology packages offer the following comprehensive capabilities and advantages:

- Availability of proven, licensed methodology
- Elimination of costs associated with generation and review of topical reports
- Enhancement of utility resource utilization
- Superior technology and proven ability to effectively deliver capabilities to licensees
- Continuous technology improvements driven by an active production environment
- Large user community with an organized improvement forum, the Westinghouse Technology User's Group
- Experienced training staff with over 14,000 student-days of training
- Pool of backup resources for design application in an emergency