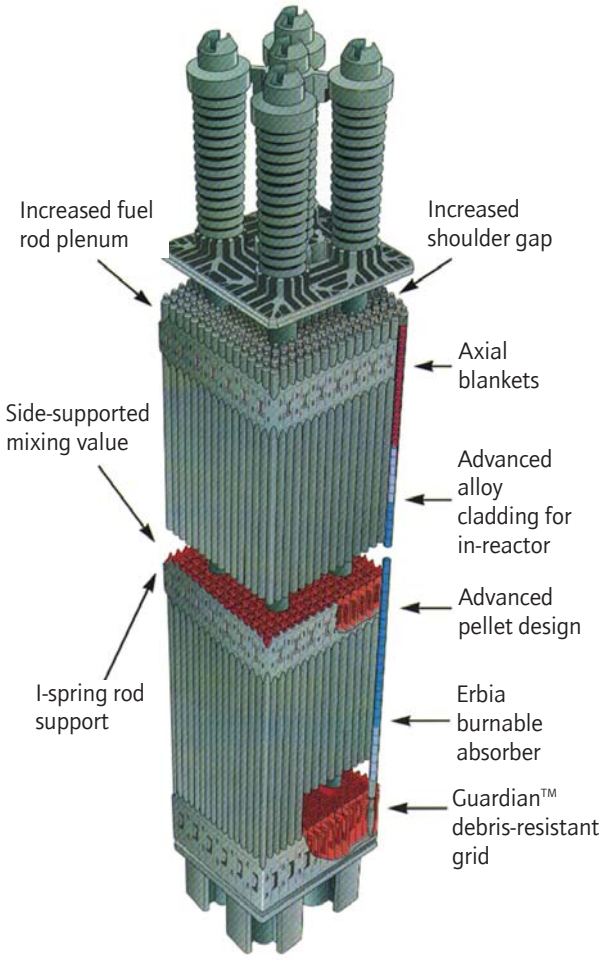
Westinghouse Fuel for Combustion Engineering-Designed Reactors

Engineering Services

Our latest fuel design, Turbo™, is designed to meet our customers' high standards for fuel quality, reliability, and dependability. The Turbo fuel design provides improved fuel cycle economics, higher burnup capability, and improved performance.



Background

Westinghouse fuel for Combustion Engineering (CE) 14x14 and 16x16 designs is rugged and reliable. One of the main reasons for this is the use of a robust all-Zircaloy fuel assembly design with five large guide tubes and the application of an extensive development and qualification process to implement the fuel design in-reactor. Westinghouse CE uses a full set of qualification tests and extensive lead fuel assembly (LFA) programs for in-reactor demonstration. As a result of this process, no fuel failure has ever been attributed to the introduction of a new fuel design feature by Westinghouse for CE-designed fuel.

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Westinghouse

For more information, call your local Westinghouse Electric Company sales representative.

Westinghouse CE Turbo Fuel Advantages

Erbia Integral Burnable Absorbers

The erbia integral burnable absorber was developed specifically for application in long (18- to 24-month) fuel cycles. The use of erbia as a burnable absorber results in a substantial gain in power operating margin over that available with the use of other burnable absorbers for long fuel cycles. With proper design, erbia fuel managements have both low cost and thermal margin benefits.

Advanced Pellet Design

An advanced fuel pellet design allows Westinghouse to either design longer cycles with the same number of fresh assemblies, or reduce the number of fresh fuel assemblies required in each fuel cycle. In each case, there is a decrease in fuel cycle costs.

Axial Blankets

Axial blankets provide improved fuel cycle economics by reducing the neutron leakage from the top and bottom of the core. In general, axial blankets increase the axial power peaking. Westinghouse has performed numerous evaluations of PWR axial blanket designs for various fuel managements in order to optimize the economic benefit and the impact on thermal margin. In general, the use of 7-inch axial blankets at the top and bottom of the reactor core provides the highest achievable uranium resource benefit with acceptable thermal margin impact.

Zircaloy Mixing Grids

The Zircaloy mixing grids contained in the Turbo fuel design provide a further reduction in the potential for fuel rod fretting relative to the current grid design. The grids also support longer fuel cycles, and significantly increase core thermal margin. The Zircaloy mixing grids feature straight Zircaloy strips, an improved rod support system with a patented axial I-spring, and side-supported mixing vanes. The straight strip configuration results in a grid that is both stronger and stiffer than the current grid. The I-spring rod support system significantly reduces rod-fretting wear by increasing the contact area and maintaining contact with the fuel rod throughout the in-reactor life.

Guardian Debris-Resistant Grids

The patented Guardian debris-resistant grid, located just above the inlet flow nozzle, increases the reliability of the Westinghouse proven rugged fuel design.

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