

International Conference on Management of Spent Fuel from Nuclear Power Reactors: An Integrated Approach to the Back End of the Fuel Cycle



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How innovative approaches and technologies throughout the Fuel Cycle are supporting NPP operations while anticipating future back-end challenges

Used Fuel Management is more and more one of the major topics that nuclear countries and utilities have to face when managing existing nuclear power plant as well as new build.

Stakeholders concerns are growing in parallel of the steady increase of used fuel inventories due to fading away of the back-end endpoint in most nuclear countries.

Utilities are additionally being challenged further with new operation conditions to accommodate Fukushima-driven safety requirements and to adapt to new grid demand due to growing share of renewables, intermittent energy by nature, while anticipating the ever-growing competition in electricity liberalized market.

To respond to this challenging environment and combination of constraints, AREVA has never stopped over the past few years developing and implementing new technologies at every step of the fuel cycle.

Starting from the Front-End, through Enrichment process and innovation in Fuel design and fabrication as well as Core design and management optimization with drastic reduction of used fuel discharged per electricity production and even direct re-use of earlier discharged used fuel with both corollary uranium savings and decrease of used fuel inventory and environmental impact.

If the innovation and new technologies in the very reactor operations have helped also responding to the above mentioned combination of constraints and requirements, innovations in the Back-End of the Fuel cycle have also helped to respond to the challenging environment whereas through advanced innovative solutions in a specific area, where used fuel inventory as well as plutonium balance of a utility are both brought to a minimum down to zero.

This paper/presentation will briefly describe challenges and issues at stake and present and illustrate through industrial scenarios how some AREVA's innovative approaches and technologies throughout the Fuel Cycle are safely and economically supporting NPP operations while anticipating future back-end challenges.

Country/ int. organization

AREVA

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