

Fact Sheet on Fuel Manufacturing and Utilization

What are the issues?

- The efficient utilization of uranium oxide, mixed uranium plutonium oxide (MOX) and other mixed oxide fuels in water cooled nuclear power reactors requires manufacturing facilities capable of producing zirconium alloy clad, conventional and advanced fuels with appropriate quality control and quality assurance.
- Once made, the use of such fuels requires a proper understanding of their behaviour in the reactor environment, so that safe operation for the design life can be achieved.

What services does Nuclear Fuel Cycle and Materials Section provide?

- Support Member States to improve in-pile fuel performance and management of materials; and to develop advanced fuel technologies for ensuring reliability and economic efficiency of the nuclear fuel cycle
- Provide assistance to Member States to support fuel-manufacturing capability, including quality assurance techniques, optimization of manufacturing parameters and radiation protection.
- Support the development fuel modeling expertise in Member States, covering both normal operation and postulated and severe accident conditions.
- Provide information and support for the operation of Nuclear Power Plant to ensure that the environment and water chemistry is appropriate for fuel operation.
- Support fuel failure investigations, including equipment for failed fuel detection and for post-irradiation examination and inspection, as well as fuel repair .
- Provide information and support research into the basic properties of fuel materials, including UO₂, MOX, (Th, Pu)O₂, (Th, U233)O₂ fuels and zirconium alloy cladding and fuel assembly components.
- Offer guidance on the relationship with back-end requirement (interim storage, transport, reprocessing, disposal), fuel utilization and management, MOX fuels, alternative fuels and advanced fuel technology and materials, economic and other aspects of nuclear fuel use (e.g. environmental impact)

What are recent NFCMS activities?

- provided support to a Member State manufacturing Gadolinia doped fuel.
- provided in-mast sipping equipment to a Nuclear Power Plant to allow the determination of fuel failure.

How to benefit from this activity?

- Member States interested in fuel performance and manufacture should contact the Technical Cooperation Department of the Agency.
- Member States interested in knowing more about the Agency's programme on source management should contact:

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