

Mixed oxide fuel assemblies

for pressurized water and boiling water reactors

Combining our advanced fuel assembly designs with reprocessed mixed uranium and plutonium dioxide to create mixed oxide (MOX) fuel

Challenge

Improving plant efficiency and reducing operating costs is a key challenge for commercial nuclear power plant (NPP) operators. Finding more efficient fuel solutions is key to solving this.

Solution

At Framatome we offer MOX fuel assemblies to tackle this challenge. Instead of using up nuclear fuel once and then storing it in the final repository, the generated plutonium, with its long half-life, as well as the remaining uranium, can be recovered through reprocessing, thus closing the nuclear fuel cycle.

Recovered plutonium, in the form of plutonium dioxide (PuO_2), can be mixed with depleted uranium dioxide, forming MOX fuel. This fuel can for example be used instead of freshly enriched uranium fuel, meaning less wastage of natural resources and reduction of both high-level and low-level nuclear waste inventories.

The typical average PuO_2 quantity per MOX fuel assembly is around 9 wt% and the typical uranium 235 enrichment is about 0.25 wt%, using tail material from the enrichment process.

We have extensive experience in designing MOX fuel assemblies, both for boiling water reactors (BWRs) and pressurized water reactors (PWRs). We can design MOX fuel assemblies for all BWR and all PWR plants, including our latest industry leading fuel assembly designs.

We design MOX fuel assemblies with high quality MOX fuel provided by Orano and fuel assembly components made by Framatome.

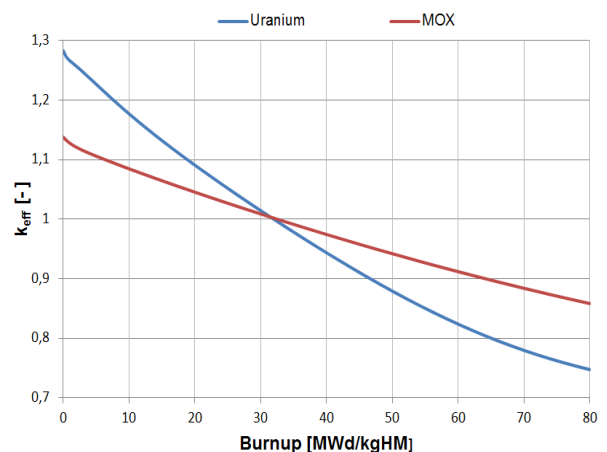
Key figures

1966 first MOX fuel assembly designed by Framatome went into operation

>8,500 MOX fuel assemblies delivered up to now, of which
 ~1,600 for BWRs
 ~1,400 for European and Asian and North American PWRs
 >5,500 for the 17x17 French PWR fleet

Your performance
 is our everyday **commitment**

Comparison of Reactivity



Typical k_{eff} -curve for an enriched natural uranium fuel assembly and a MOX fuel assembly

Customer benefits

- Improved fuel economics through use of recycled fuel instead of fresh fuel
- Optimized in-core performance
- High burnups of up to 60 MWd/kgHM
- Easy adaptation to MOX fuel as it can be used in all Framatome BWR and PWR fuel assembly designs

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