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Pu recycling capabilities of ASTRID reactor

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Amid the ASTRID's main goals, one of them is to demonstrate the full fuel cycle closing at the industrial scale. In particular with the recycling of plutonium coming from the treatment of UOX and MOX fuels from PWRs and also the MOX coming from ASTRID itself. Associated with the fuel cycle facilities, fabrication and reprocessing, the lessons learned from this industrial demonstration will be transposable to commercial Sodium cooled- Fast Reactors (SFR) and their associated fuel cycle. The paper presents the capability of the ASTRID reactor with its innovative CFV core (low void sodium worth), to recycle Pu from the treatment of MOX fuels from PWR, during its operation. The safety and performances goals assigned to the CFV core by the ASTRID project are maintained.

Physic impacts linked to various aspects initial content of Pu, decay heat, radiation sources), fuel subassemblies type (fresh and used) has been evaluated to identify the plutonium needs and the impacts on ASTRID fuel management (interim storage, handling) and in its associated fuel cycle (transport, facilities).

Country/Int. Organization

France / Commissariat à l'Énergie Atomique et aux Énergies Alternatives

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