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The ASTRID core at the end of the conceptual design phase

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Within the framework of the French ASTRID project, core design studies are being conducted by the CEA with support from AREVA and EDF. The design studies include the GEN IV reactor objectives, particularly in terms of improving safety.

Options selection was performed at the conclusion of the pre-conceptual design phase. The CFV core was confirmed as the reference core for the ASTRID project. The design routes of the core has be reoriented for the conceptual design phase of the ASTRID project :

- Limitation of the core diameter,
- Innovative options of control and shutdown architecture : control and safety absorber rods used to manage the core reactivity during the cycle,
- Introduction of complementary safety device for prevention and mitigation of severe accidents,
- Choice of S/A internal storage instead of external storage, Neutron shielding on the Inner vessel components.

At the end of the ASTRID conceptual design phase (2015), a new evolution of the CFV core (CFV V4) which integrated these above options was designed. This paper will describe the CFV V4 focusing core performances, behavior during unprotected transients and experimental validation programs.

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