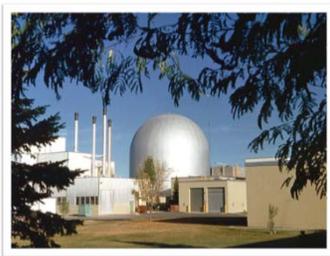


Fast Reactor Development at Argonne

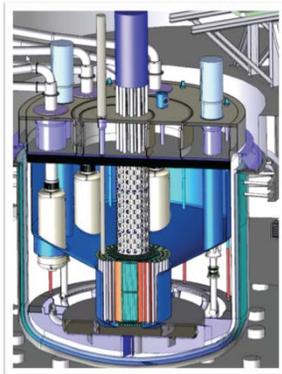
What is a Fast Reactor?

- Fast reactors avoid the slowing down of neutrons that takes place in conventional water-cooled power reactors
Fast reactors use other coolants, such as liquid sodium
- Fast reactors efficiently fission uranium and all other heavy elements (actinides) comprising used reactor fuel for energy generation
Allows full recycle of used fuel to "close the nuclear fuel cycle"



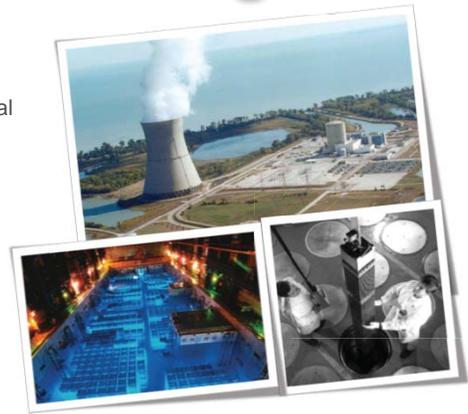
Experimental Breeder Reactor-II

Argonne is developing a prototype for future commercial fast reactors



Advanced Sodium-Cooled Fast Reactor

Other nations are also developing fast reactor technology for recycling actinides and improving uranium utilization



LWR Industry

Why do we need Fast Reactors?

- Possibility to extract several hundred times more energy from the same amount of uranium
... allows vast reduction of uranium mining and eliminates need for fuel enrichment and enhances energy security
- Enables 100-fold reduction in the amount of high-level waste
... actinides in the waste stay radioactive for many thousands of years, so their recycle and consumption in fast reactors eases waste management
- System can be designed to be "inherently safe"
... safety assured through physics of design and inherent system features, as opposed to operator actions or engineered systems
- Creates additional fuel for sustainability

Closing the Fuel Cycle with Fast Reactors

