Advanced Type of Nuclear Reactors

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New Type of Reactors

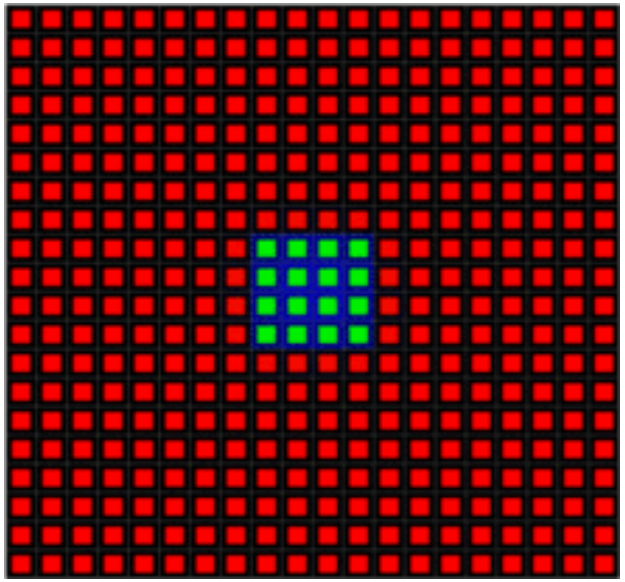
- The new type of reactors use gas coolants rather then water and they are designed in such a way that the reactor will shut down automatically when the heat goes above a certain threshold limit.

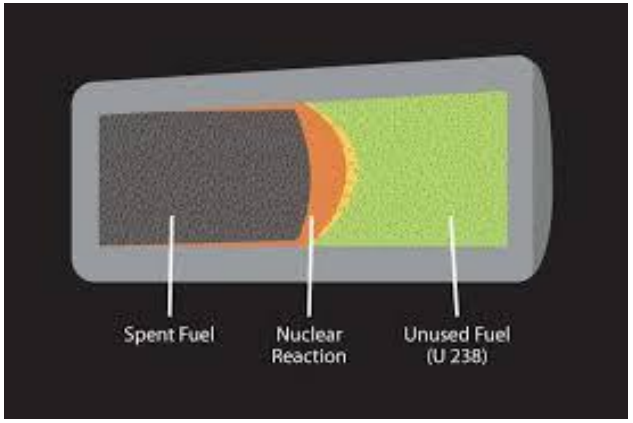
- They use inherent passive systems which means that they will shut down in an emergency without any human or computer intervention.

New Innovations

Traveling Wave Reactor

- A **traveling-wave reactor** (TWR) is a type of nuclear reactor that nuclear engineers anticipate can convert fertile material into usable fuel through nuclear transmutation in tandem with the burnup of fissile material.
- TWRs differ from other kinds of fast-neutron and breeder reactors in their ability to use fuel efficiently without uranium enrichment or reprocessing, instead directly using depleted uranium, natural uranium, thorium, spent fuel removed
- The fission takes place in a boundary zone that travels outward





Thorium Reactors

- **India has abundance of Thorium reserves**
- **Thorium is more abundant in nature than uranium**.
- It is fertile rather than fissile, and can only be used as a fuel in conjunction with a fissile material such as recycled plutonium.
- Thorium fuels can breed fissile uranium-233 to be used in various kinds of nuclear reactors.
- Still requires more then a decade research to be economically feasible.
- **China is making some headway with support of US**