

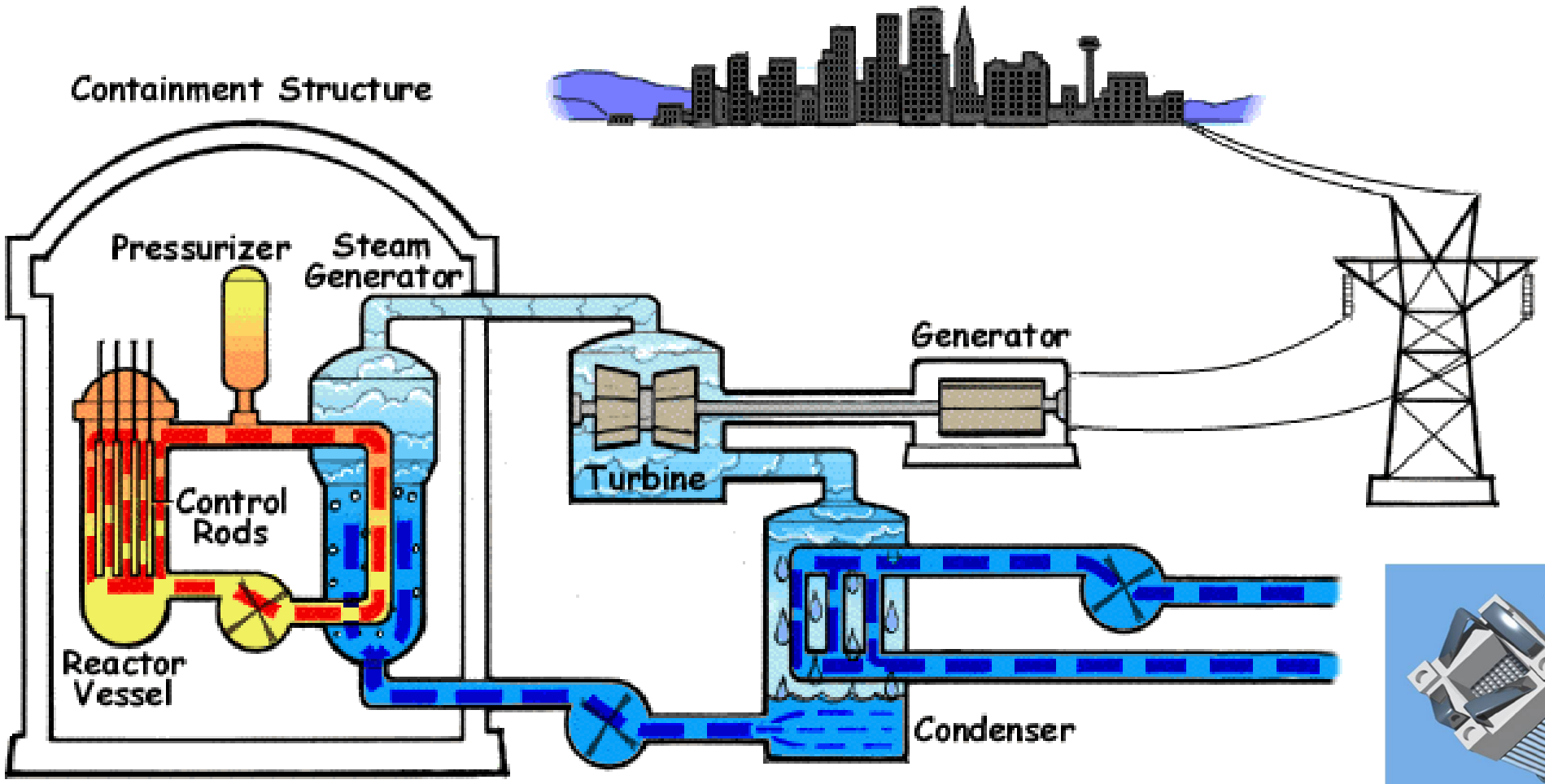
Nuclear Energy 101

Public Policy Discussions on Nuclear Energy

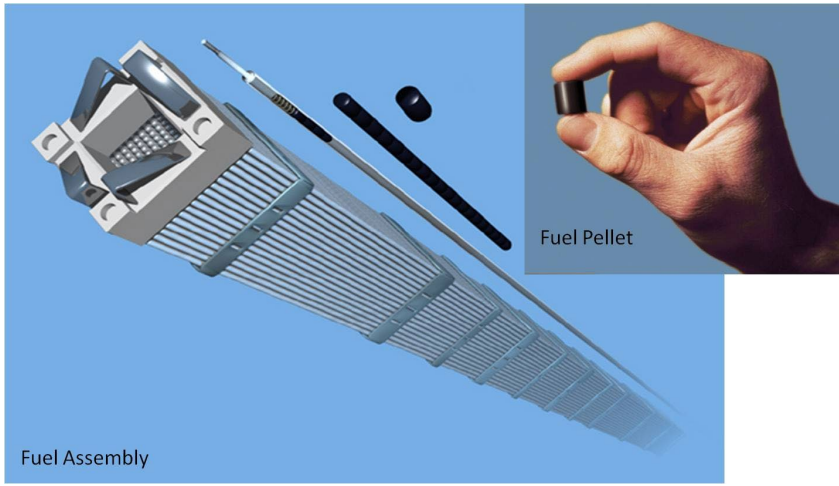
Salt Lake Community College Taylorsville Campus

Dr. Matthew J Memmott
AlphaTech Research Corp.
November 3rd 2026

Nuclear Power Plants







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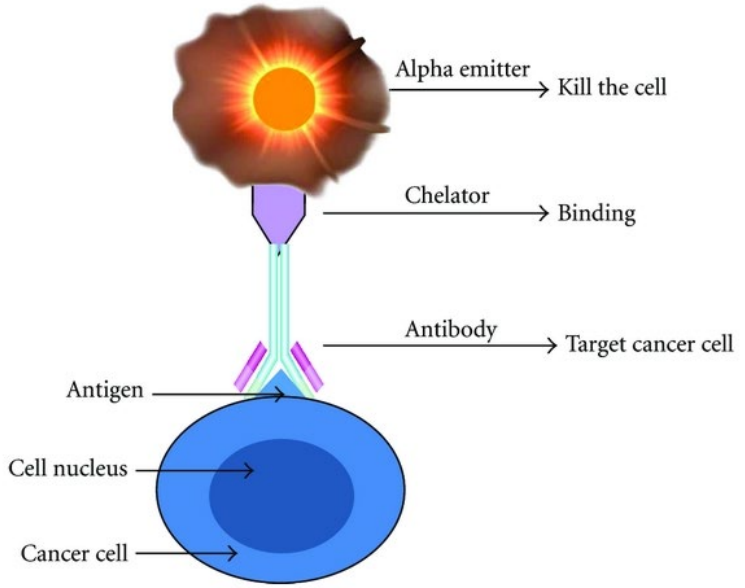
What Does Fission Look Like?



https://www.youtube.com/watch?v=7eHkpUSaVwU

Where would we be without it?

- Huge potential for good
  - Medicine
    - 20M procedures a year in US
      - X-rays
      - Cancer Treatments
      - Diagnostics (PET, MRI, CTS)
  - Energy
    - 20% of the US electricity
    - No emissions
    - Lowest Death Rate
    - Massive amounts of energy
    - Reliable – runs 343 days/year
  - Research
  - Manufacturing



Annual Death rates per TW*hr		
Source	Deaths	US Electricity Percentage
Coal	161	39%
Oil	36	1%
Natural Gas	4	27%
Biofuel/Biomass	12	1.70%
Solar	0.83	0.40%
Wind	0.15	4.40%
Hydro	1.4	6%
Nuclear	0.04	20%

Big 4 Challenges of Nuclear

- Radiation
- Safety





- Nuclear Waste

- Weapons/ Proliferation

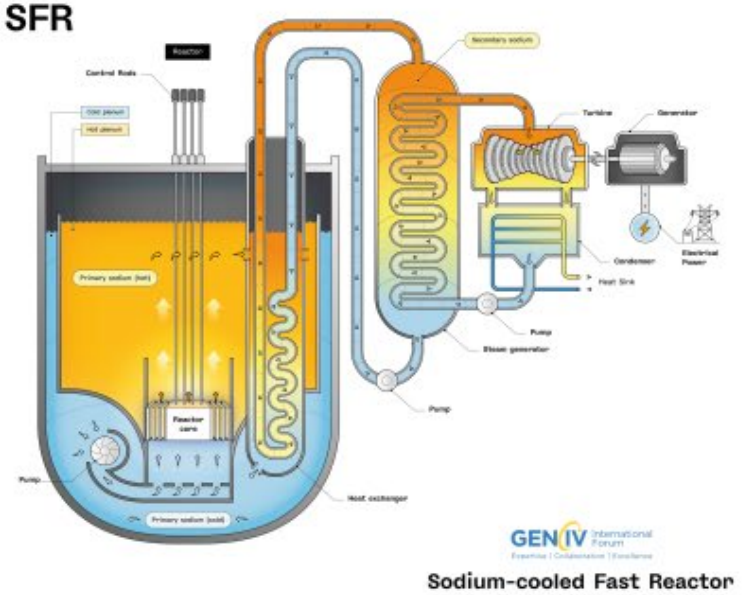




- Economics

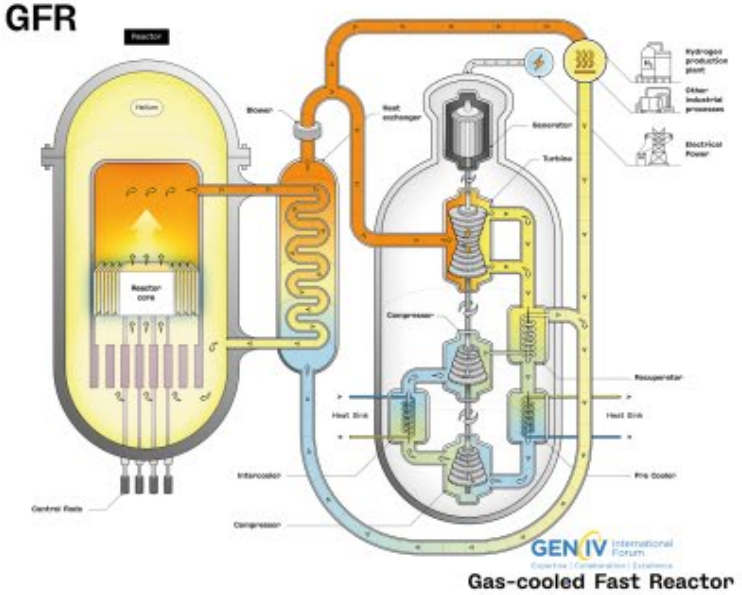
Advanced Reactors – Solve Big 4 Problems

SFR



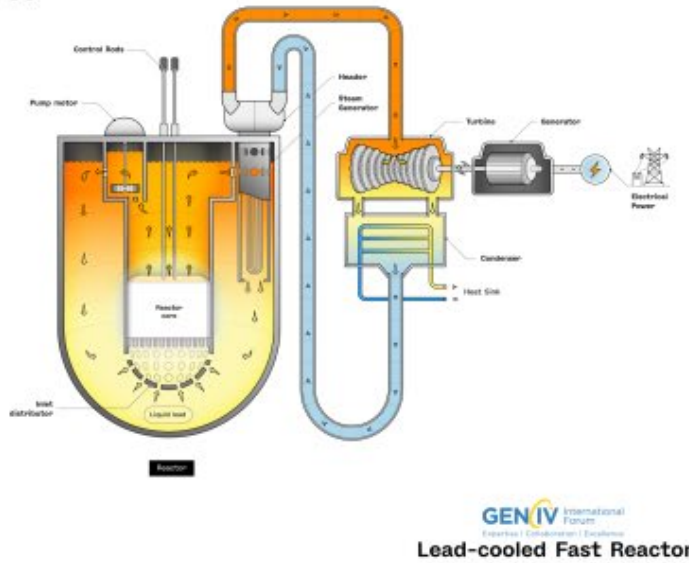
Sodium-cooled Fast Reactor

GFR



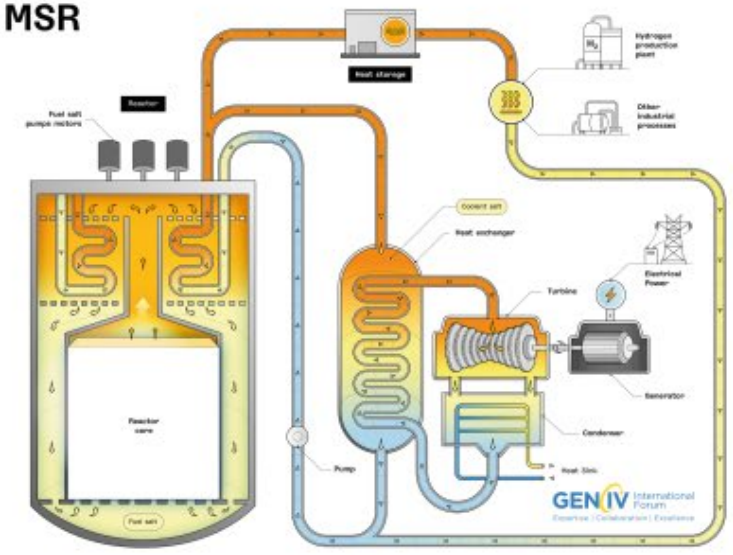
Gas-cooled Fast Reactor

LFR



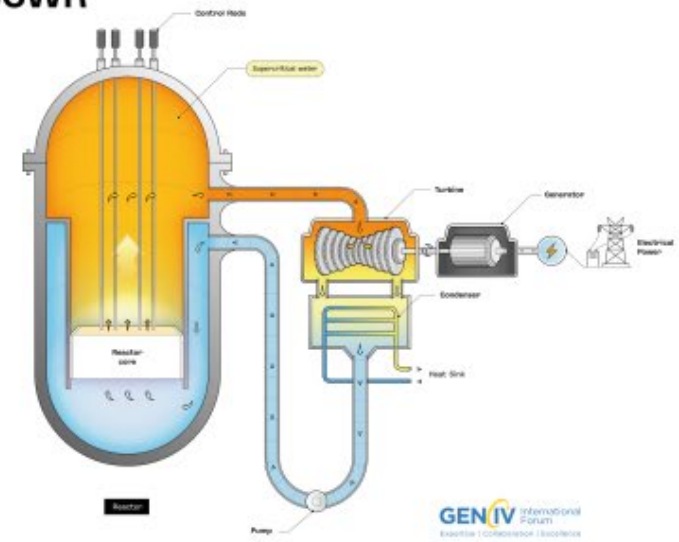
Lead-cooled Fast Reactor

MSR



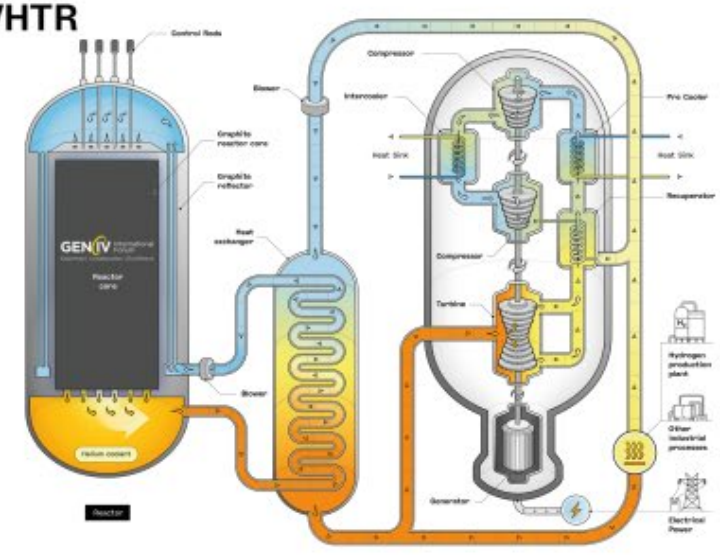
Molten Salt Reactor

SCWR



SuperCritical-Water-Cooled Reactor

VHTR



Very-High-Temperature Reactor

Conclusion

- Nuclear is clean baseload energy source
  - 60-year-old LWRs (current) are incredibly safe
  - Waste, safety, economics are challenges
- Lots of new Advanced Reactors
  - Solve Waste, Weapons, Cost, Safety Problems
  - Can operate WITHOUT water!!!
  - Some even provide water
- No Advanced reactor is currently operating, though 80 different companies are working to develop them, with delivery times ranging from 2030 to 2040