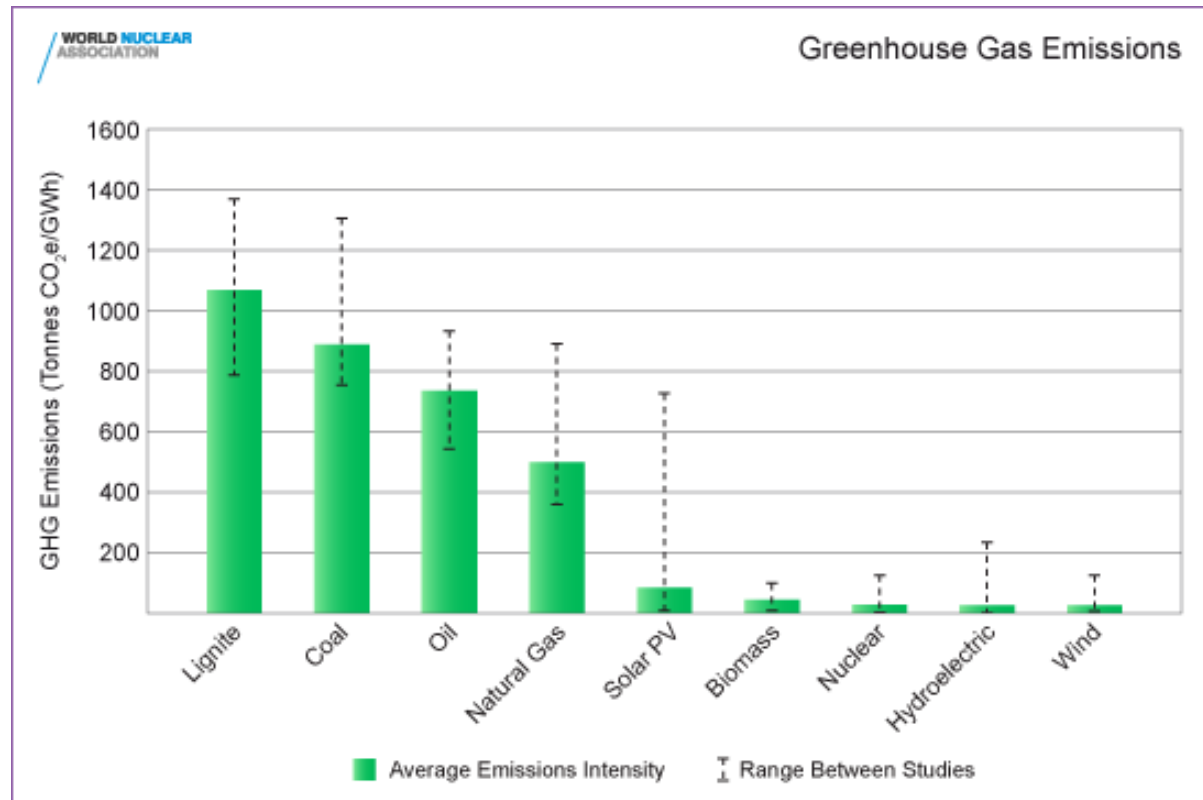
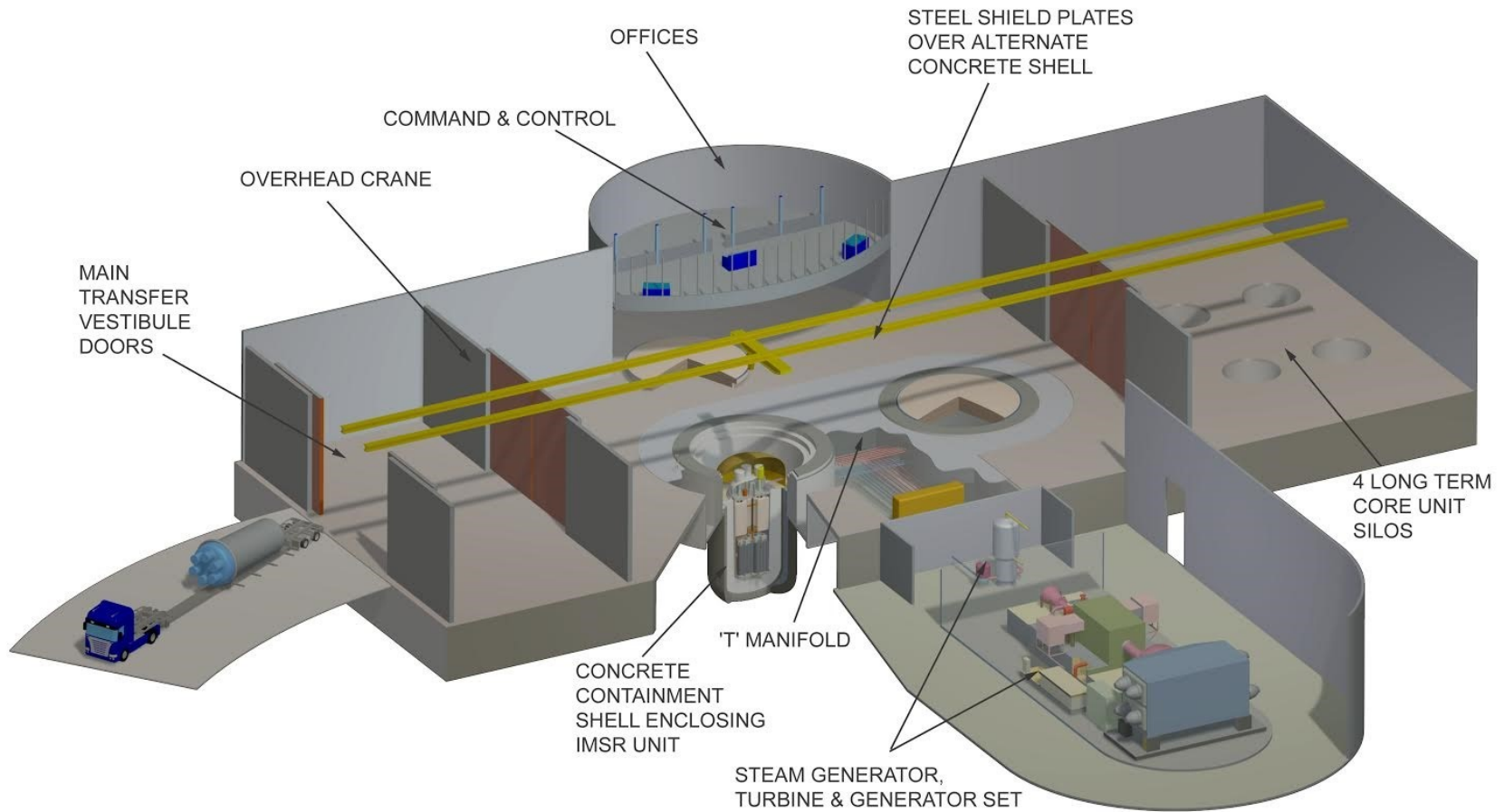
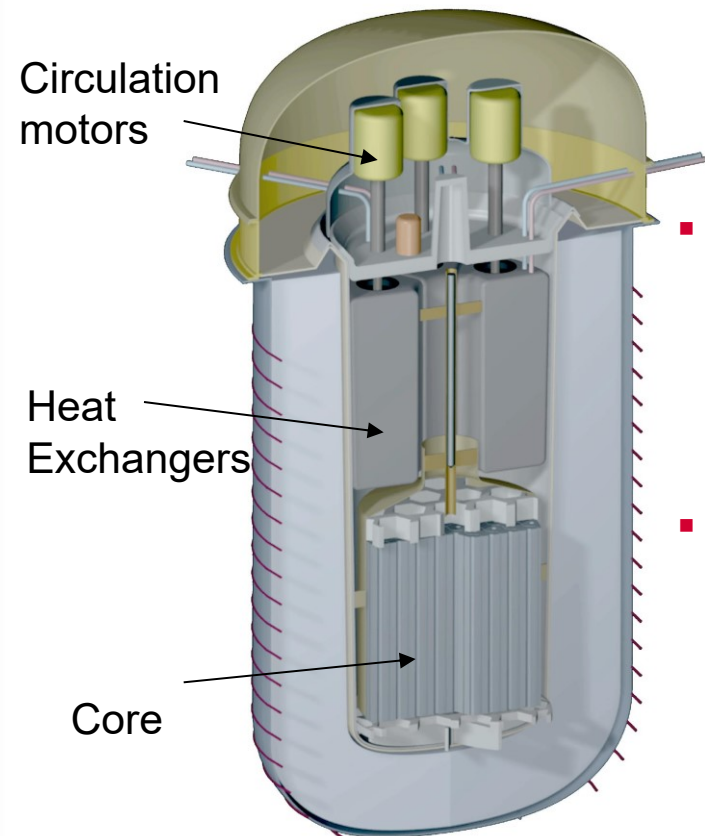


- SMARTS: Small, Modular, Advanced Reactor Thermal-hydraulics Simulator
- Nuclear power is, and will continue to be, an important source of electric power generation.
- Significant energy with little GHG emissions.
- SMRs potentially improve political and economical limitations of traditional light water reactors



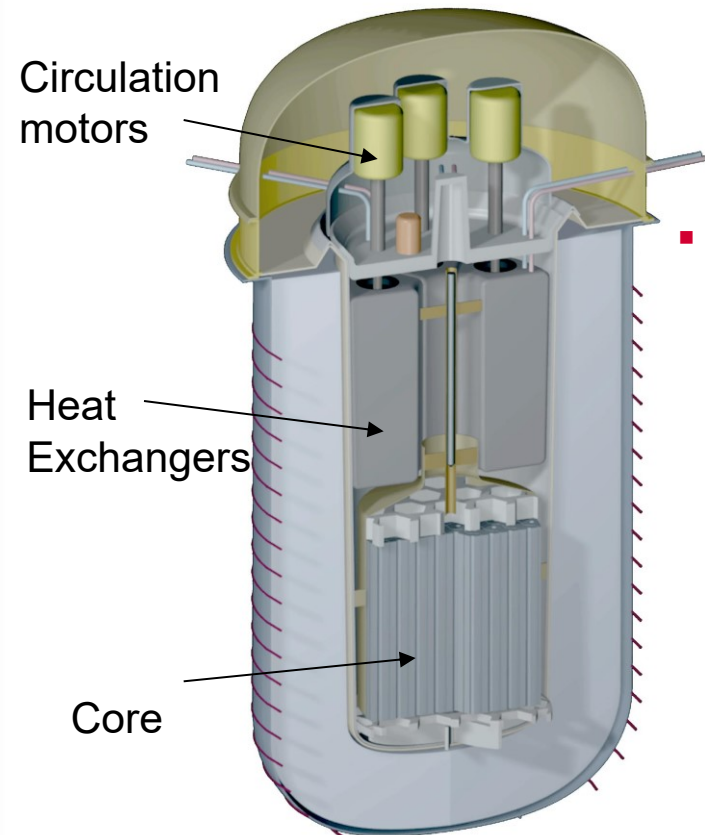


# SMARTS capstone project



- **Core design optimization requires experimental testbed to study:**
  - | Flow of coolant and/or liquid fuel
  - | Heat exchanger design
- **SMARTS students will design a 1/5 scale core with:**
  - | Artificial (non-radioactive) heat source
  - | Simulated coolant and/or liquid fuel
  - | Instrumentation and visualization of flows, pressure distributions, temperature distributions.
- **Specific analytical projects include**
  - | pressure vessel design
  - | thermal hydraulics and heat exchangers
  - | data acquisition, temperature, pressure and flow measurements
  - | materials selection, corrosion, strength of materials
- **Goal is experimental testbed for design of new heat exchangers**

# SMARTS capstone project



- **Project is supported by:**
  - | CNSC (Canadian Nuclear Safety Commission)
  - | Terrestrial Energy Inc.
  - | One of the lead engineers is a CNSC engineer
- **Future demand for nuclear power engineers expected to be high**
  - | “The nuclear industry in Canada is being driven by refurbishment projects on existing reactors, while new projects are being planned or considered in Ontario, New Brunswick, Quebec, Alberta, and Saskatchewan. Because half of the nuclear industry’s workforce will be eligible to retire within 10 years, the industry is looking to attract new workers who have a variety of backgrounds and skills.” (cna.ca)