

Thermal Test Loop Overview

Optional subhead



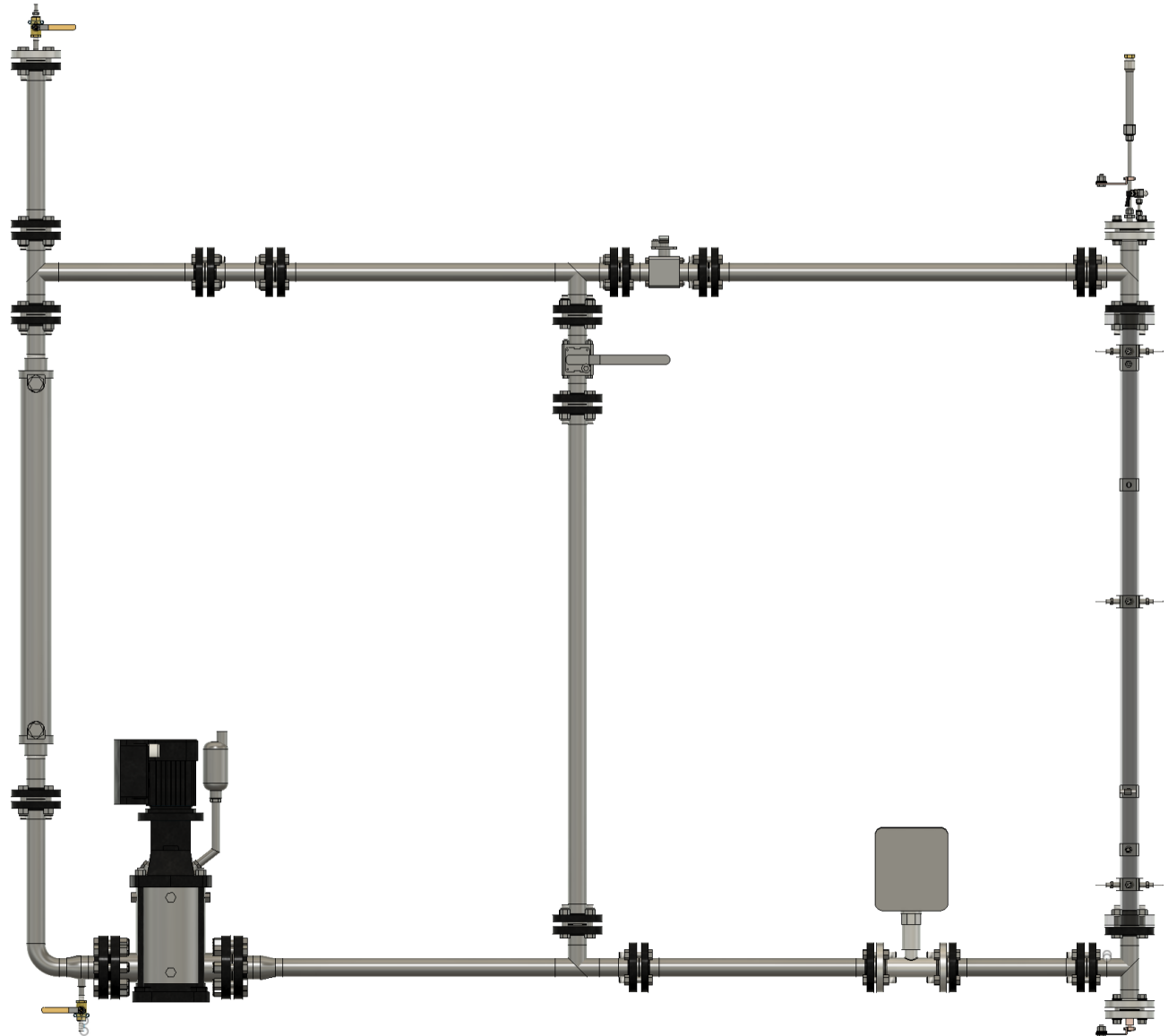
Current Setup

- C004g @ 300 main
- Closed Loop
- Developed first by Dr. Leo Carrilho in *2005*



Current Setup

*CAD Model developed by Miriam
Morales and Hampton DuBose*



Component Breakdown

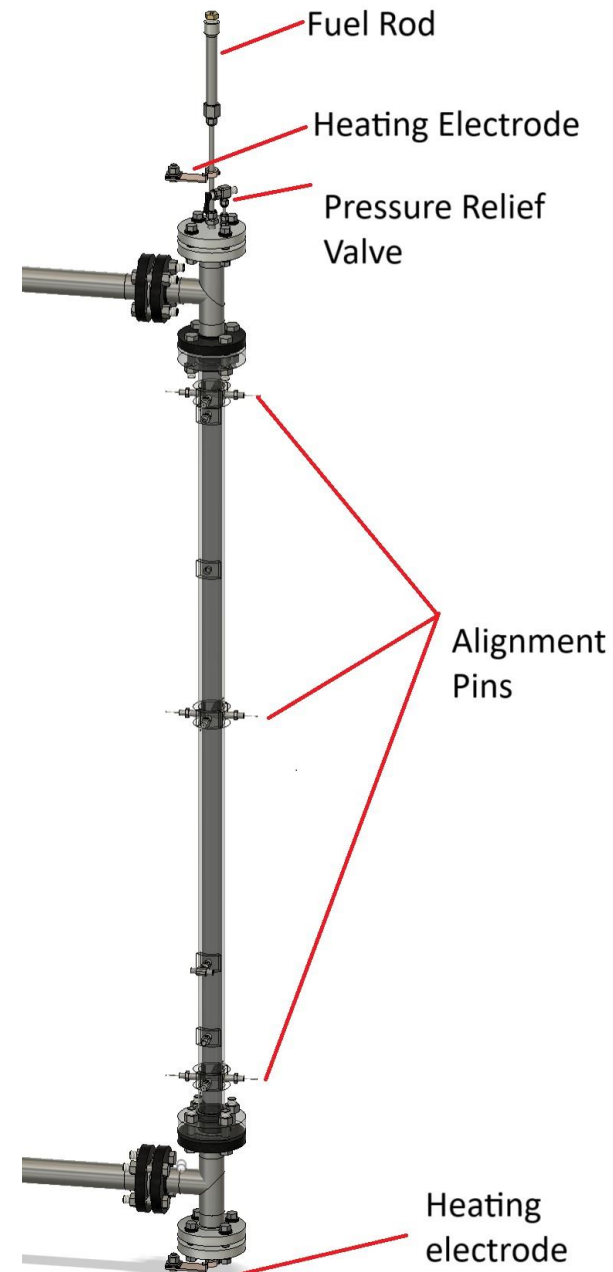
Fluid Pump

- Drives coolant fluid through fuel rod containment
- Max Flowrate: 14-15 m³/hr
- 0.75 hp



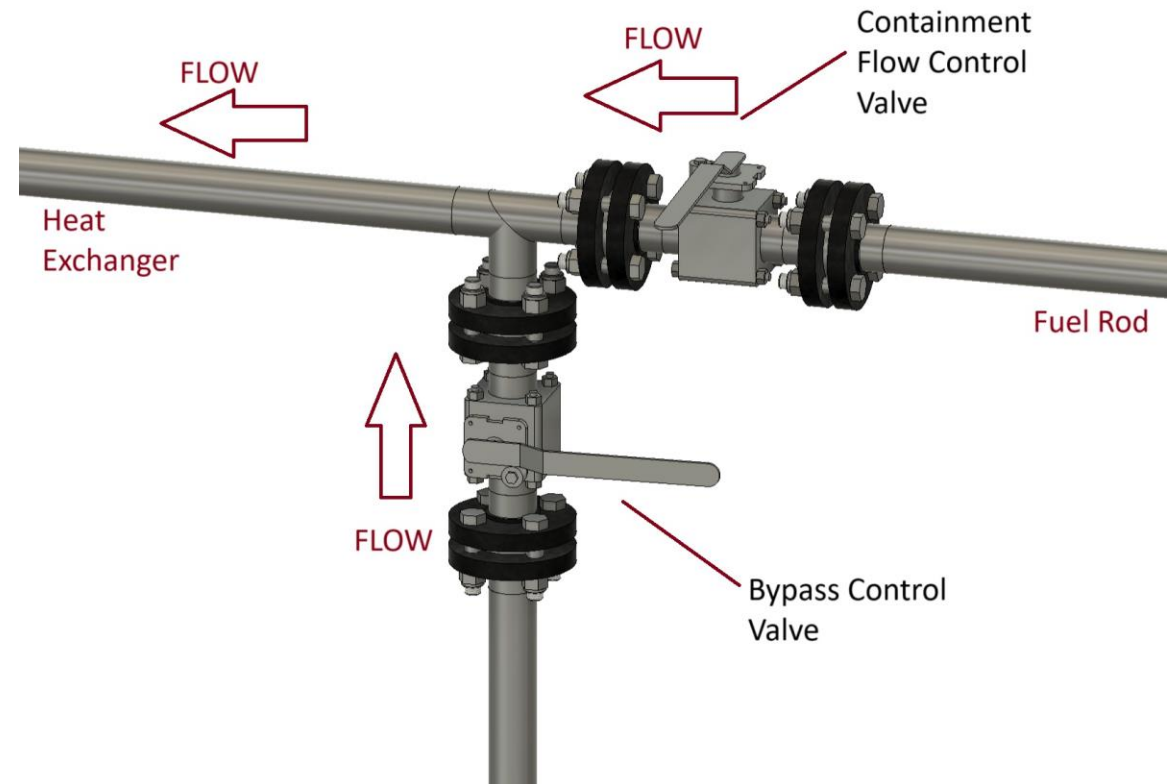
Energy Source- 'Reactor vessel'

- Single fuel rod secured in channel
- Plexiglass pipe for visibility
- Resistive heating adds energy to water
- Interchangeable system for testing different fuel rods
- Has channels for pressure measurements



Flow Control Valves

- Vertical valve shuts/opens bypass channel
 - Changes flow rate through heat source
- Containment Control Valve governs flow through heat source
 - Blockage simulation



Pressurizer

- Air Hose Attachment on top
- Raises boiling point of water by pressurizing entire system w/ Air
- Increases efficiency of real reactors

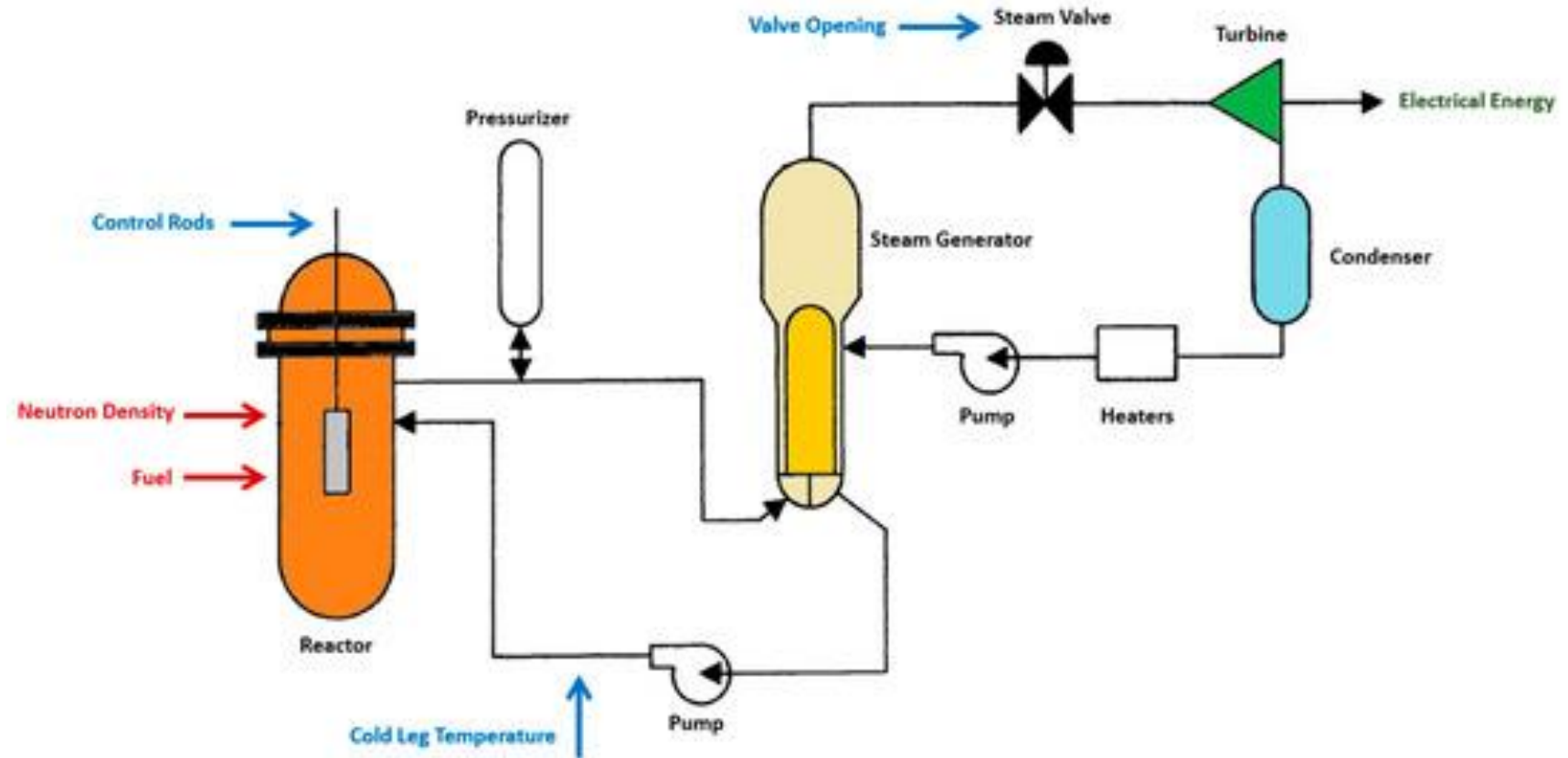


Heat Exchanger

- Tap water pulls heat from the loop
- 1 m² of heat transfer area
- Water is expelled outside

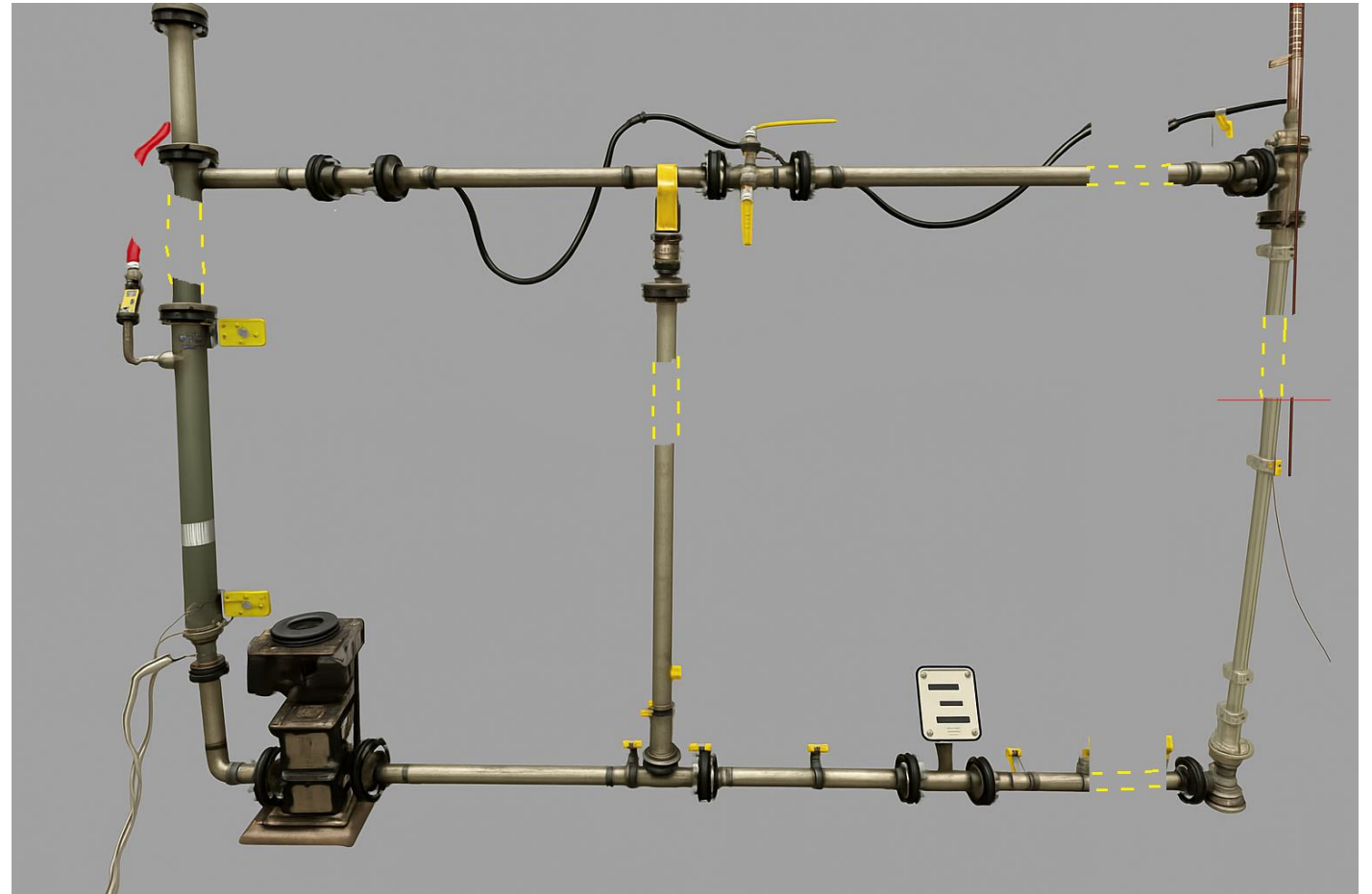


Typical PWR System



Plan for expansion to add measurement instruments

- Add lengths of pipe to both horizontal and all three vertical pipes to improve measurement capability at different locations along the loop



Plan to add 'Control Room'

- Develop remote control and monitoring capabilities
- Located in C004 or Nearby



Thank You for Your Time

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