



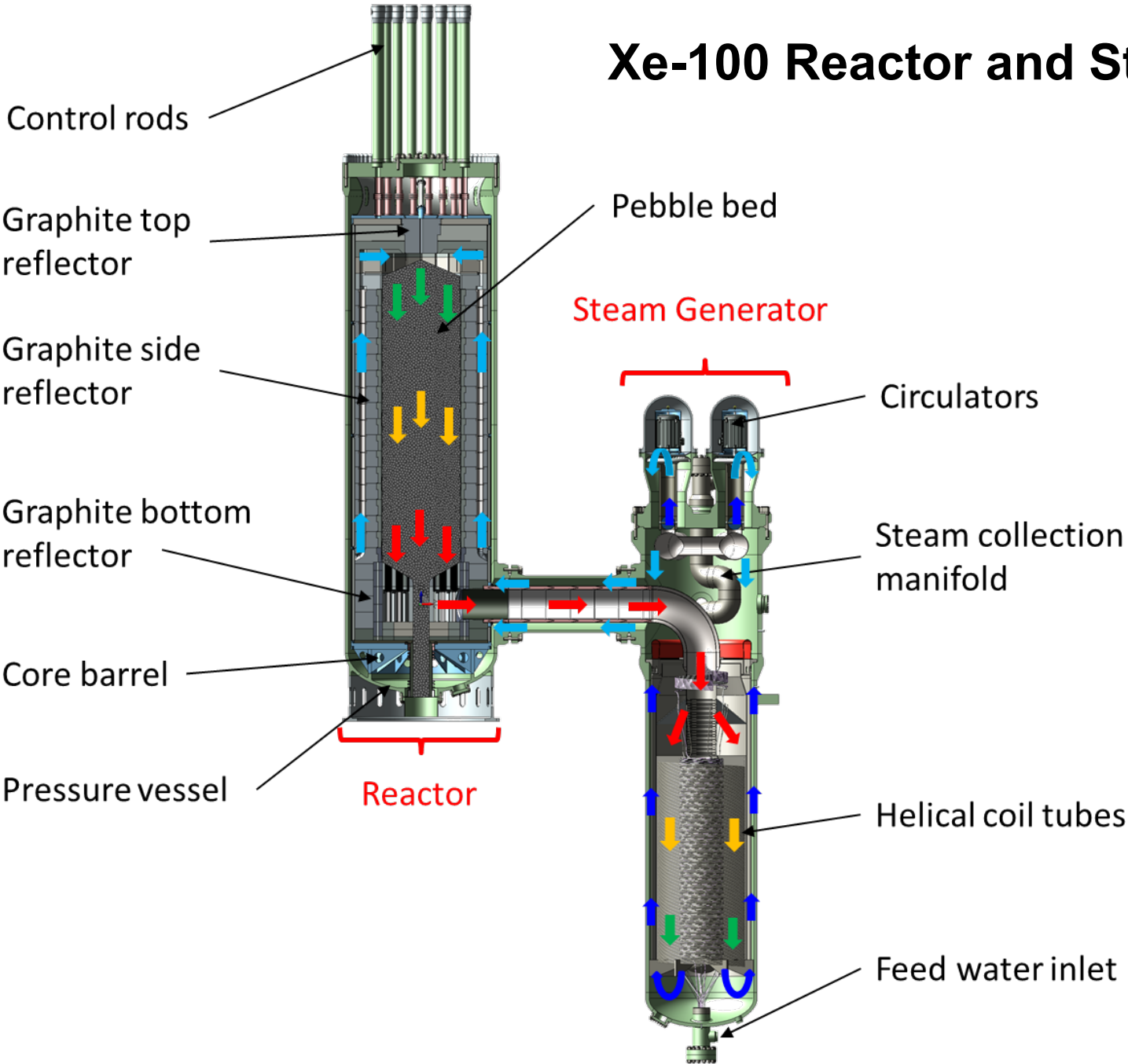
# ANS HFICD Next Generation Reactor I&C Webinar

*Yvotte Brits*

*Supply Chain Manager & Operator Training Simulator Manager*

19 October 2021

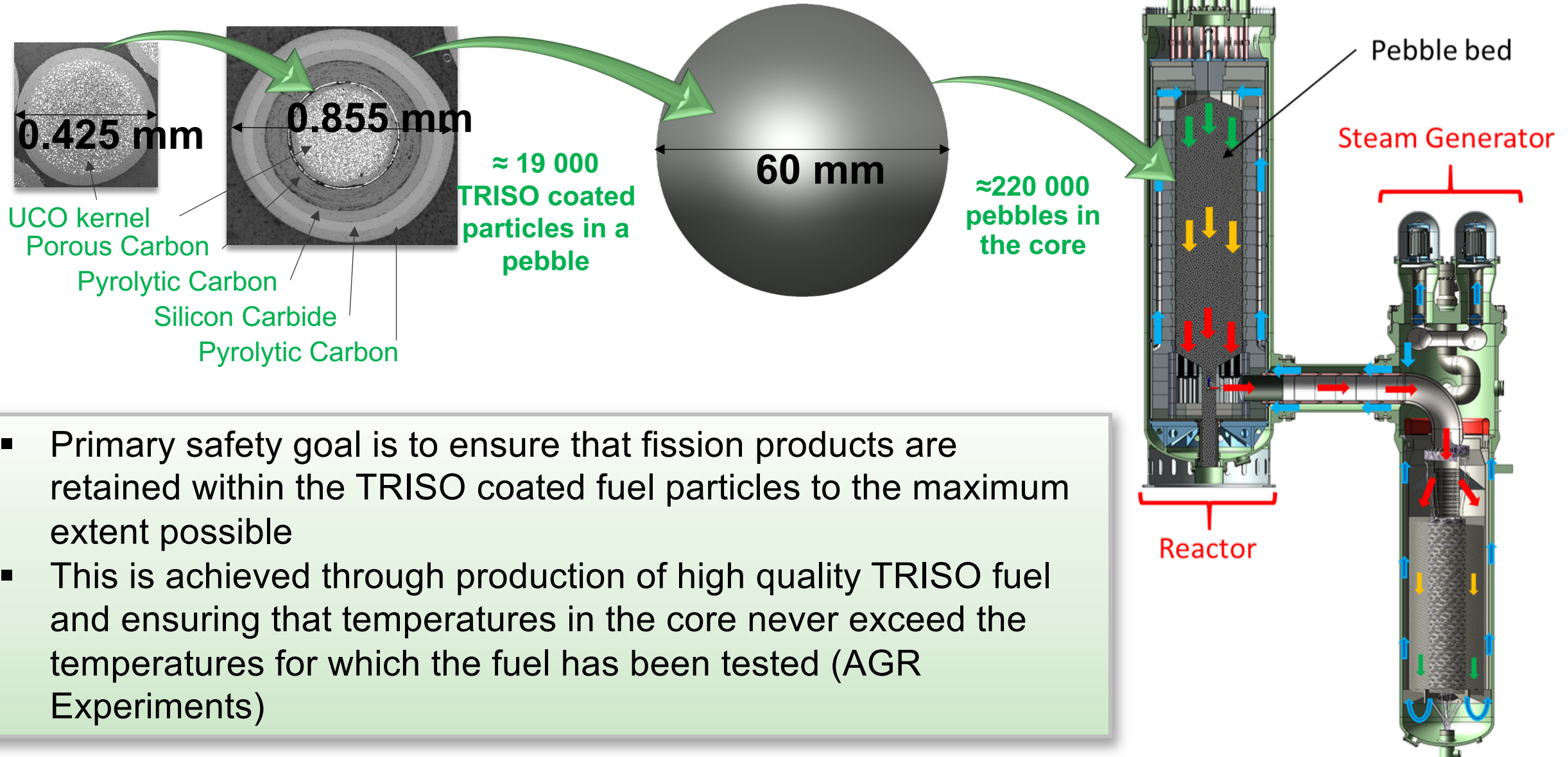
# Xe-100 Reactor and Steam Generator Detail



## Key Technical Specifications

- 200 MWt Pebble Bed Reactor
- 15.5% enriched HALEU
- Rankine Cycle Power Conversion – 75 MWe
- Helical Coil Steam Generator
- Super Heated Steam at 565°C/16.5 MPa
- Multi pass fuel cycle (average 6 passes)
- Online refueling
- Burnup up to 160 000 MWd/t

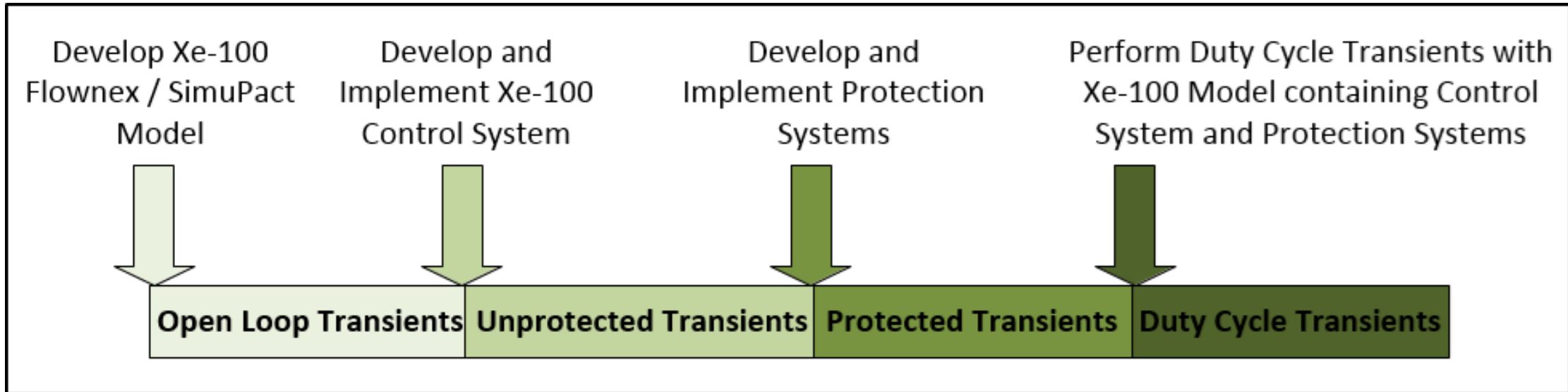
# UCO TRISO Particle – Primary Fission Product Barrier





# Control System Analysis Life Cycle

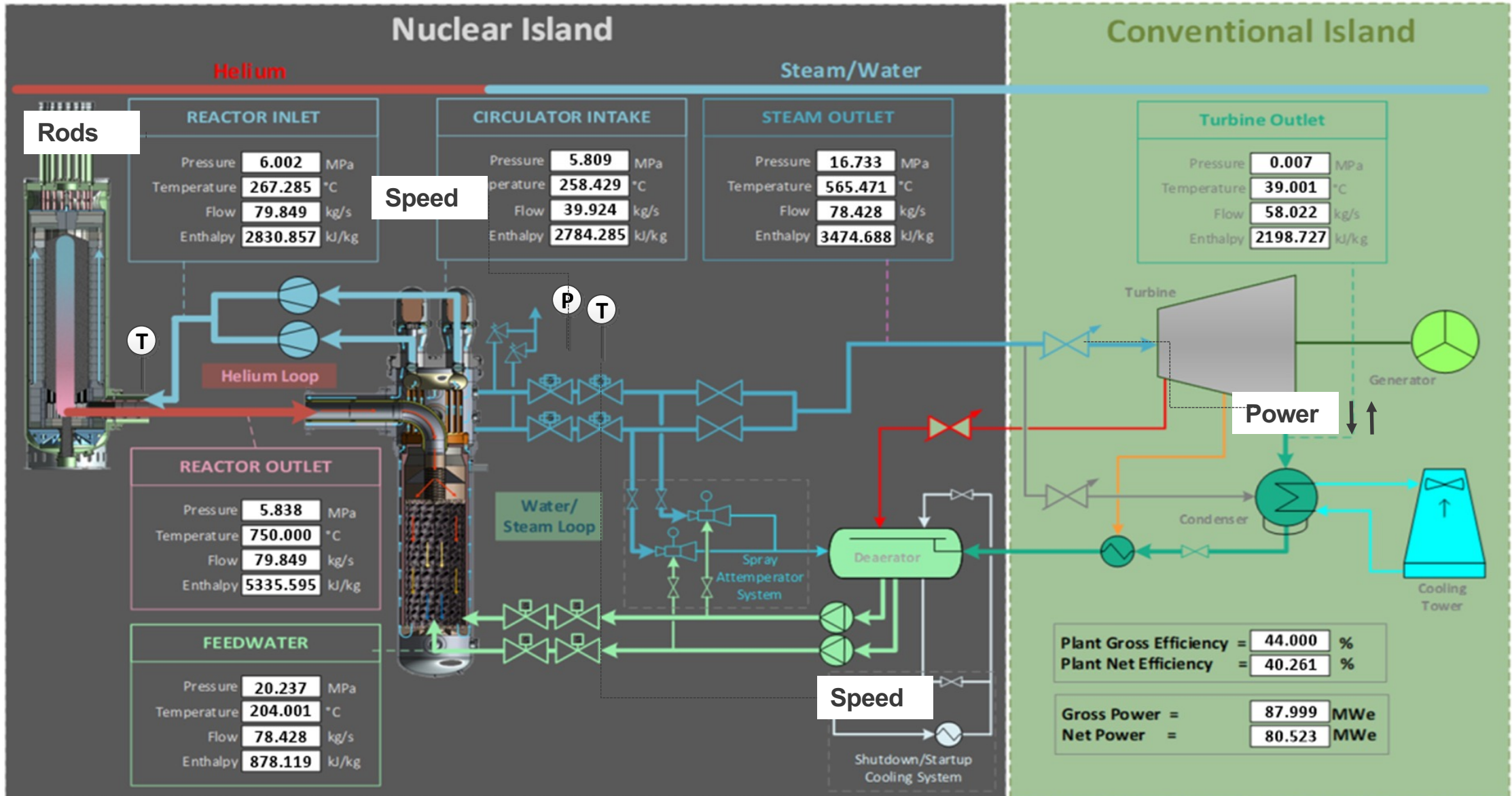
Yvotte Brits  
Senior Nuclear Systems Engineer





# Thermodynamic Cycle & Main Control Loops

Yvotte Brits  
Senior Nuclear Systems Engineer





# Control Approach

**Yvotte Brits**  
Senior Nuclear Systems Engineer

Controlled Variable	Set point	Manipulated Variable
Steam Generator Inlet Temperature	750°C	Control Rod Position
Main Steam Pressure	16.5 MPa	Helium Circulator Speed
Main Steam Temperature	565°C	HP Feed pump Speed
Electrical Load	40 – 100%	Turbine Throttle Valve Position

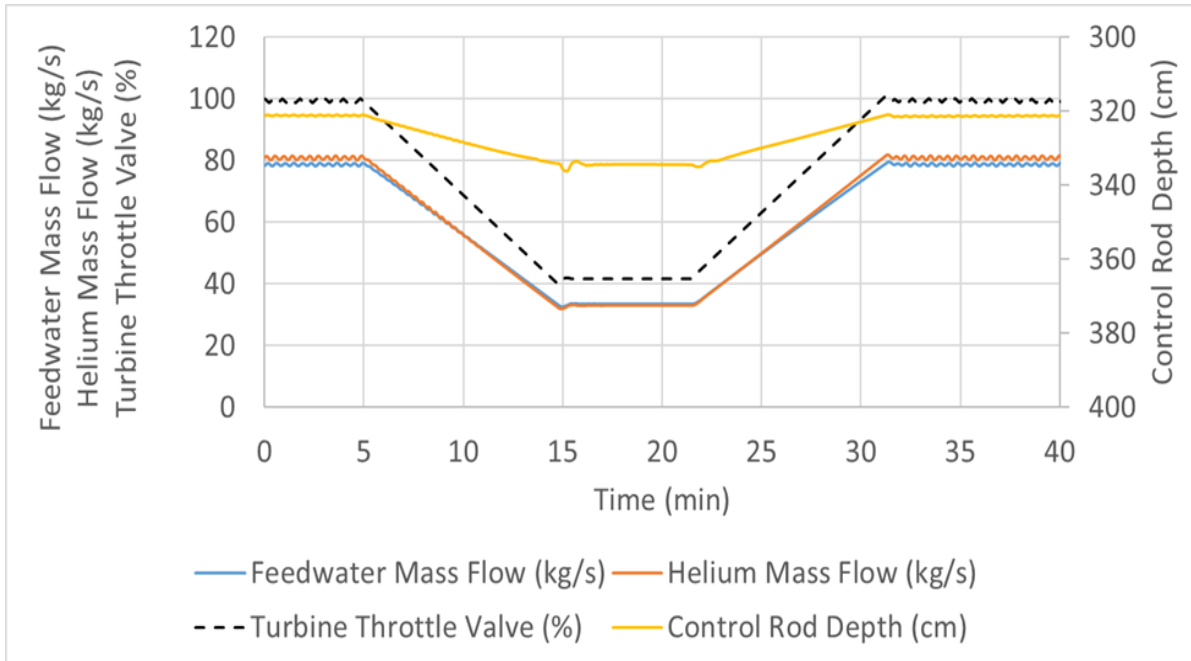
*Extract from XE-100 Plant Distributed Control System Design Description*



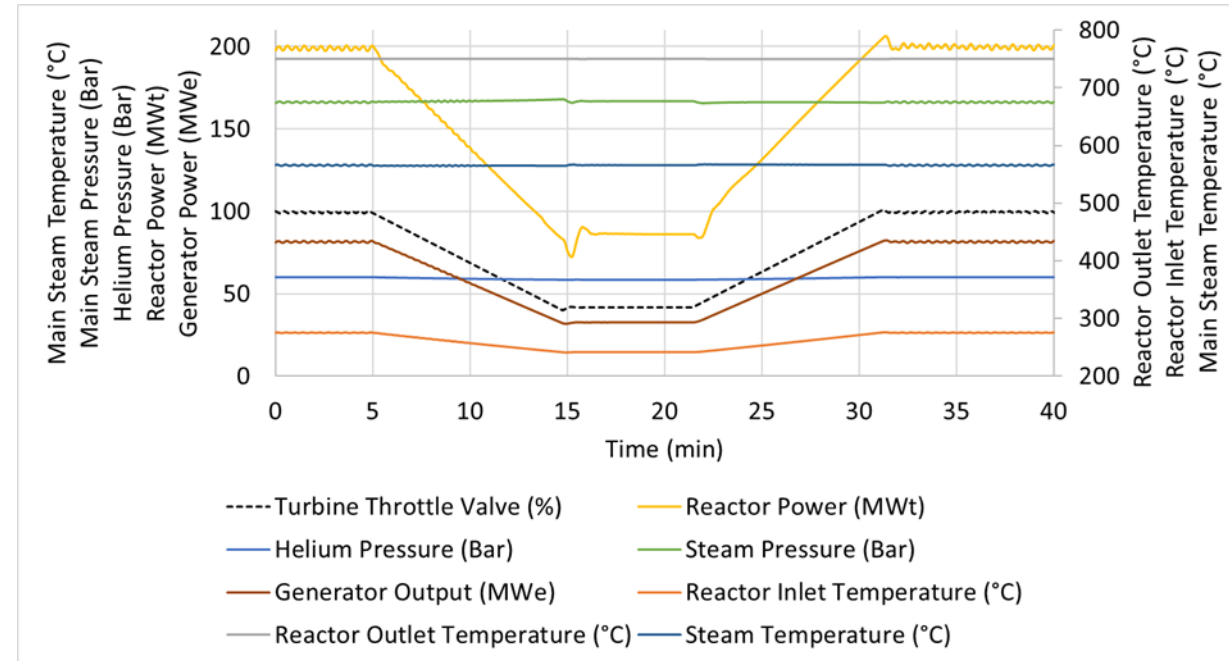
# Load Following Transient Testing

Yvotte Brits  
Senior Nuclear Systems Engineer

### Control Actions



### Plant Response



Extract from XE-E1-TG-H8-A08-100167\_Xe-100 Module Load Following Transient Analyses – Rev 2



**X Energy, LLC**

Phone: 301.358.5600

801 Thompson Avenue • Rockville, MD 20852

[x-energy.com](http://x-energy.com) @xenergynuclear