NEUP Integrated Research Project Workshop 2:
FHR Benchmarking and VVUQ

Session 2.1: FHR University Research – Thermal Hydraulics

April 14, 2016

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Compact Integral Effects Test 1.0
Progress Updates

LOFC Validation Progress

Outcomes: Better models for predicting system performance, improved heat structure study/analysis

Heater Performance and Upgrade

Outcomes: Solve the problem of temperature fluctuations at the heater outlet, improve scaling to the Mk1, upgrade heat input capacity

Upgrade of Controls System (LabVIEW)

Outcomes: Tighter control of system inputs (ex. Heater) for transients, higher quality data collected, control strategy research open

X-PREX Facility Update

Dry Quasi-2D Silo

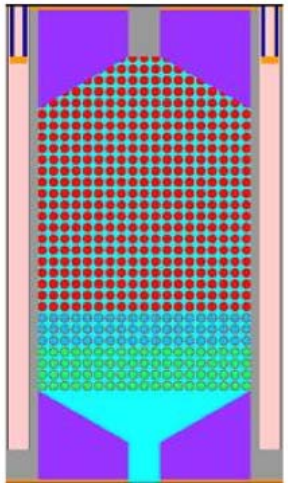
Control Blade Insertion (CoBIE)

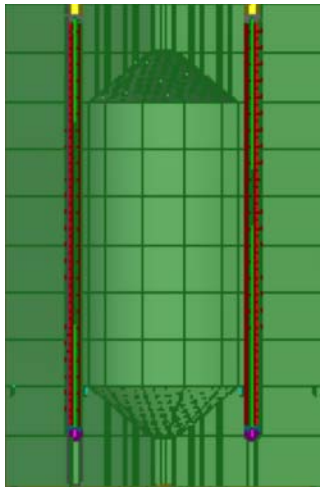
Dry Cylindrical Hopper

TMSR-SF1 Geometry Studied in X-PREX

Parameter	TMSR-SF1	X-PREX
Thermal Power	10 MW	--
Number of Pebbles	Start: 10950 Full: 14650	Start: 10950 Full: 14650
Core Outer Diameter	135 cm	28.6 cm
Core Height	180 cm	38.1 cm
Cone Angle	30°	30°

SINAP Random Bed TMSR-SF1

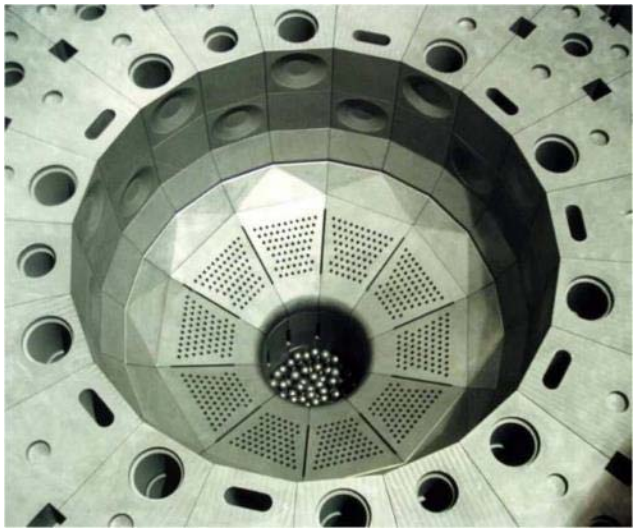




- **X-PREX Test Section Dimensions**
  - **D / d = 135 / 6 = 22.5 OK**
  - **H / d = 180 / 6 = 30.0 TWO HEIGHTS**

Current Work and Next Steps

- **Surface geometry studies**
  - **Dish-like indentations (HTR-10)**
- **Cylindrical silo with recirculation**
- **Improved image processing code**



Lower Section of HTR-10 Core