Kairos Power

Public Release

Generic FHR (gFHR) Reactivity Control System

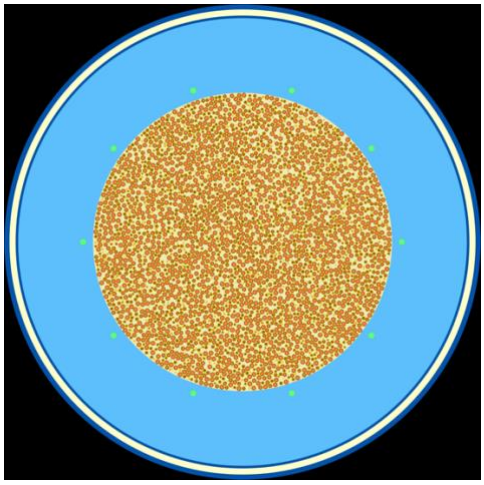
Produced by:
Kairos Power Core Design team

The gFHR reactivity control system consists of 10 rods that are inserted in the side reflector.

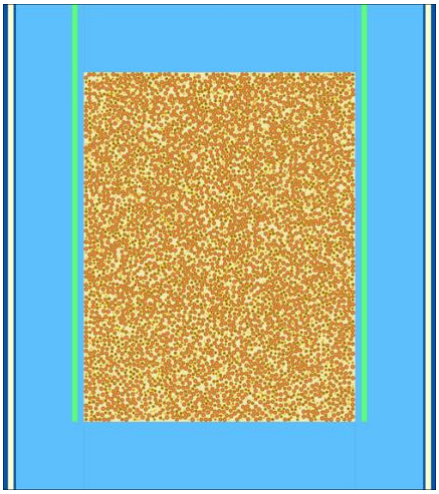
Control system definition: These rods are responsible for reactivity management during normal operation. The total worth of the rods is also capable to shut-down the reactor to hot conditions (550°C).[1]

Parameter	Value	Notes
Absorber Material	B4C	
B-10 Enrichment	100 at. % B-10	
Absorber Density	1.76 g/cm3	70% of theoretical density
Number of Rods	10	
Diameter of Rods (cm)	5.2	
Centroid of Rods (cm)	7.9	from core-reflector interface
Azimuthal Dependence	Equidistantly distributed	
Fully Withdrawn	Aligned with top of the top reflector	
Fully Inserted	Aligned with bottom of the pebble bed	
Un-rodded Material	Flibe	
Cladding	None	Assumption

The schematic of the control system is provided in following figure.



Horizontal Cross Section



Vertical Cross Section

Images rendered by Serpent 2 for schematic of control rod locations

[1] The shutdown system is not included here.