

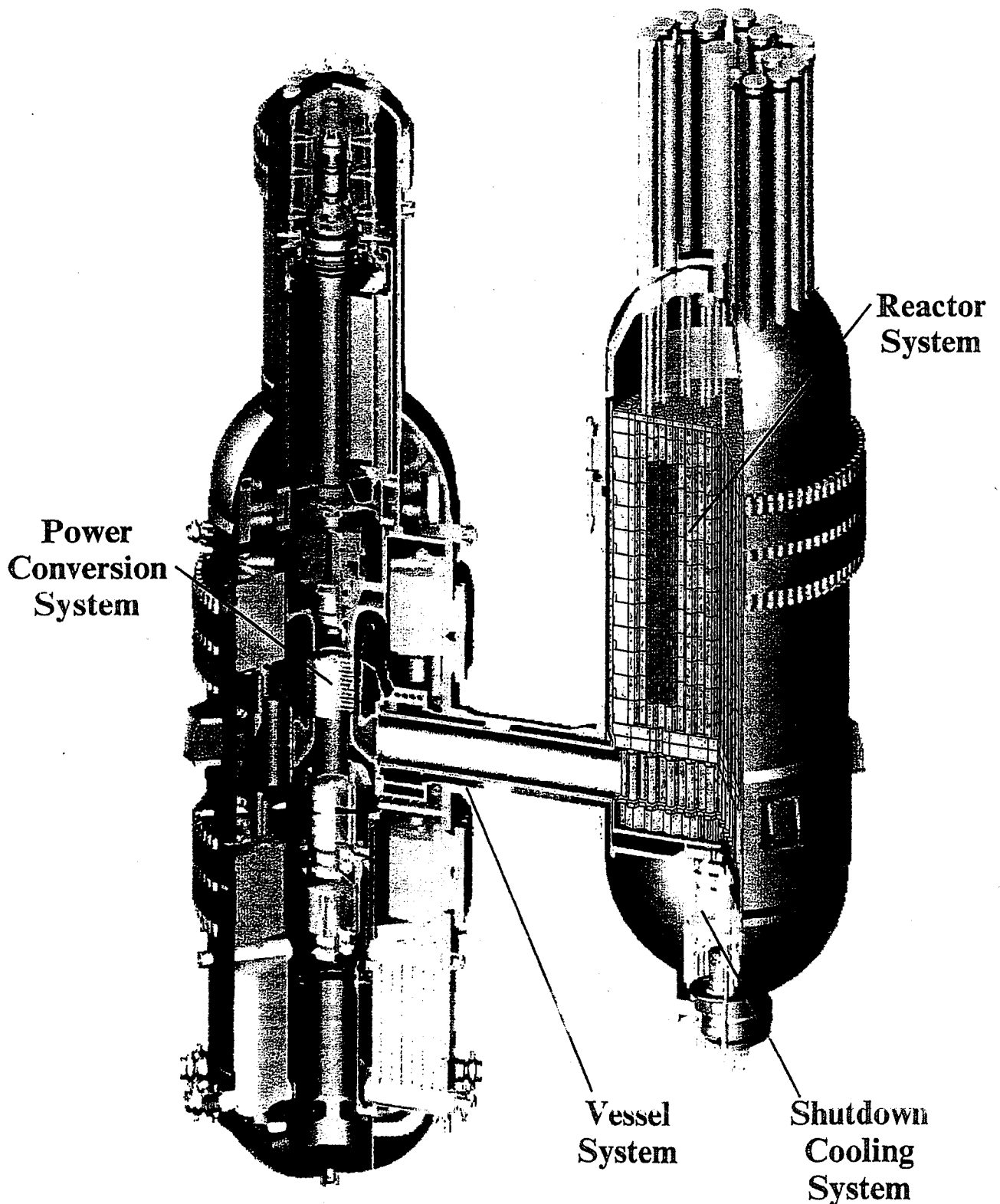
Helium-cooled Refractory Alloys FW/Blanket Concept

Clement Wong, Richard Nygren and APEX team

- CAD
- Neutronics
- Design Model for Dual Channel He Cooled Heat Sink
- CCGT
- Task status

APEX Study Meeting
University Of California-Los Angeles
Faculty Center, California Room
November 2-4, 1998

GT-MHR COMBINES MELTDOWN-PROOF ADVANCED REACTOR AND GAS TURBINE



He-cooled FW/Blanket/Divertor

(Identified active task areas)

- **Next iteration of neutronics and thermal hydraulics design should be performed, including decay heats.**
- **FW/Blanket and divertor design configuration should be reviewed with the goal of high system reliability, including coolant distribution and transition zones.**
- **Material properties should be reviewed with focus on irradiated properties, and potential compatibility issues of He/alloy and tri-metallic loop, including review of high temperature materials and joints of dissimilar materials.**
- **Safety issues should be identified.**
- **Perform first wall design including 2D, 3D thermal structural analyses.**
- **Review high heat flux removal techniques, e.g. porous medium Vs helical tape.**
- **Assess helium loop pressure drop.**
- **Review and update helium CCGT development**
- **Assess FW/plasma interaction.**

11. FW design, 2-D and 3-D analysis	GA	August 99	on schedule
12. Identify He impurity control system	Ulrickson	August 99	?
13. Tritium migration	Sze/Willms	August 99	on schedule
14. Safety, decay heat, LOCA and LOFA anlysis	McCarthy /Mogahed	August 99	on schedule
15. Preliminary understanding and solution approach to material/coolant loop/power conversion issues	Nygren/Wong	August 99	on schedule
16. Preliminary approach on FW/plasma interaction issues	Wong	August 99	on schedule