Group D:
Platform/Pipe Interface

"Where it all comes together"

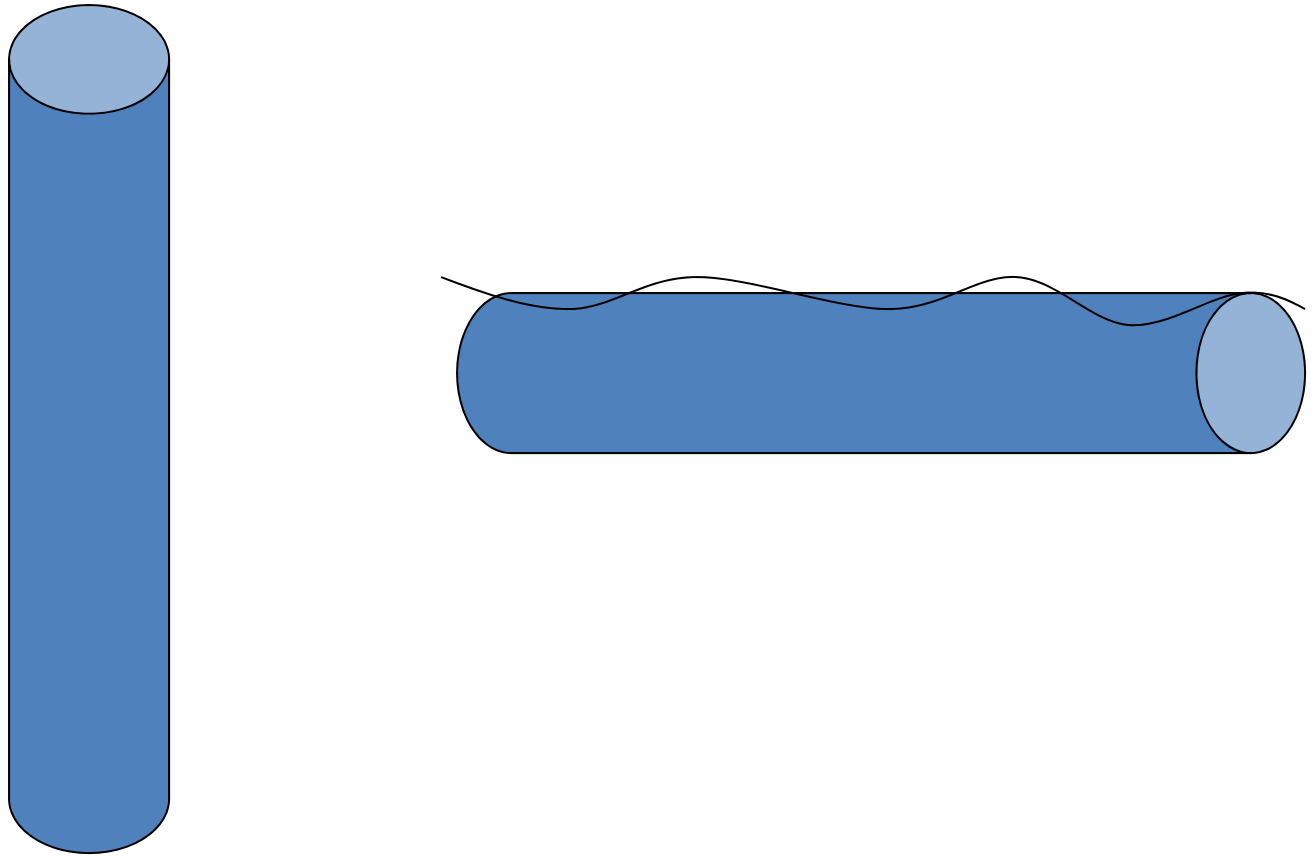
Baseline Parameters for Workshop OTEC Discussions

- Offshore
- Floating
- Moored
- Cable to shore
- 5-10 MWe scalable to commercial scale
- Potentially relocatable

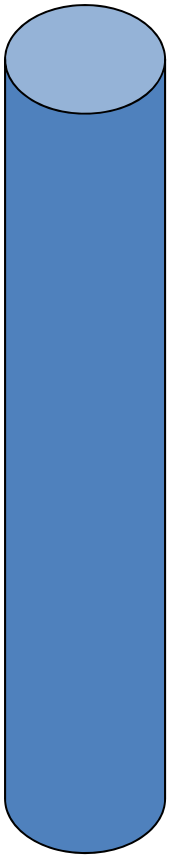
Interface Requirements

- Need to attach pipe to platform
  - Rigid or Gimbal? (Design Decision)
- CWP needs to be detachable at least one time
- CWP Optionally able to be reattached – dependent on relocation area
- Need to have some level of pipe recovery
- Survivable for duration of plant life
  - Corrosion, etc
- Must be able to attach 4m pipe
- Interface may need angle of motion (Design Consideration)
- Interface Sealant
- Compatible with CWP construction

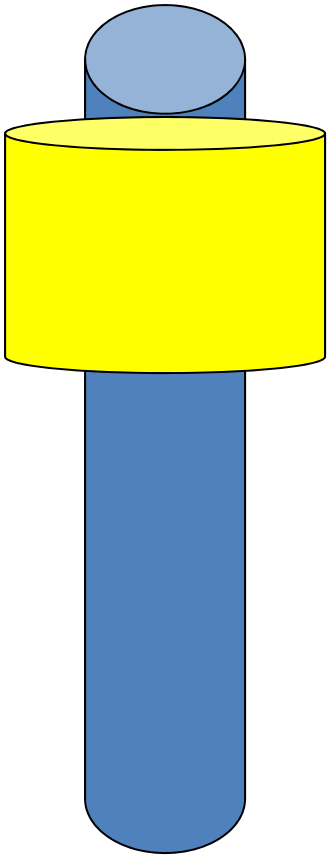
CWP Manufacturing Orientations



CWP Configurations



Hanging



Self-supported

Life Cycle Considerations

		Fixed	Gimbal	Flex
Manufacturability		G	G	Y
Operability		G	G	G
Reliability		Y[1]	G	G
Logistics	**Vertical Build**	Y	G	Y
	Horizontal Build	R	R	G
Maintainability		G	Y	R
Scalability		G	Y	R

[1]Dependent on platform but also imposes risk on to CWP

Risks

- If interface detaches with hanging pipe, then the pipe sinks
- If interface detaches with self-supporting pipe, then the pipe is available to be reconnected
- If interface leaks, then performance degradation
- If interface leaks, then repair is difficult
- If horizontal build, then installation and deinstallation logistics are more complicated
- If vertical build, then handling system failure could result in loss of pipe

What are the cost drivers for the interface?

- Gimbal vs. Fixed (Flex not scalable)
- Decommissioning
- Relative motion of pipe vs. platform, especially during fabrication
- Complexity of handling system
- Buoyancy costs
- Trade-off between land fabrication vs. platform fabrication
- Coupling/Decoupling

What are possible costs-savings?

- Refined analysis and model tests
- Utilize existing technologies
  - Scalable technologies
- Material choices
  - More robust
  - Corrosion
- Manufacturing process selection
- Relocatable pipe
- Economy of scale

What research could be done on cost reduction?

- Find and adapt existing technologies and analysis tools
- Material selection
- Buoyancy

Are the technologies viable? What are the economic factors? What are the limitations?

- Technologies are viable and have been demonstrated at various scales
  - Dimensions and material are issues
- Cost
- Limitations are manageable with current knowledge

What is the development time frame?

- 1 to 2 years for requirements development to include analysis and model tests
- 1 to 2 years to delivery