Investigation of Tritium Control and Release Mitigation Options in Double-Wall Twisted-Tube Heat Exchangers (DT-HXRs)

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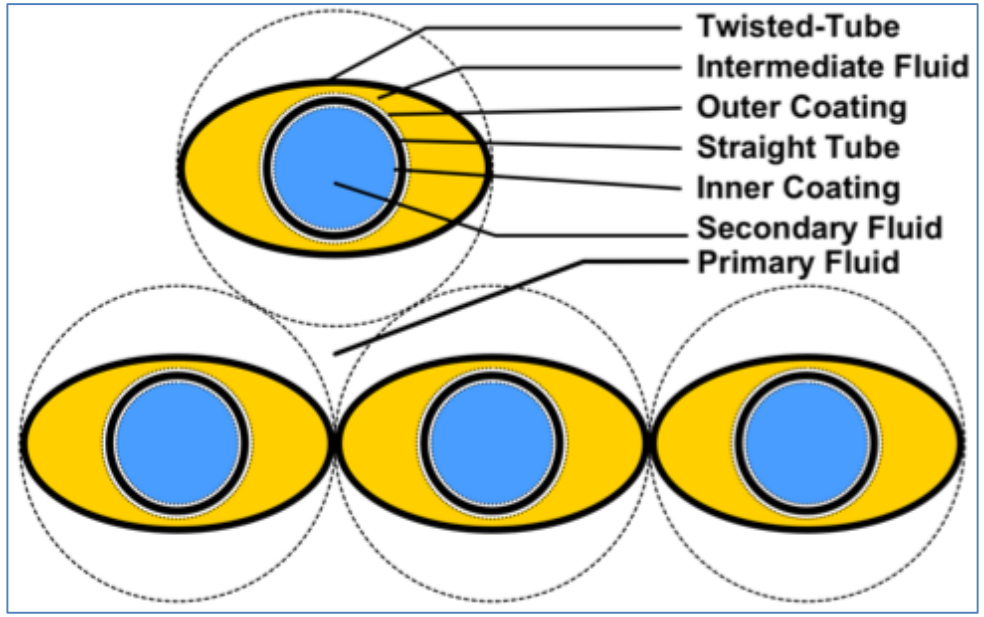
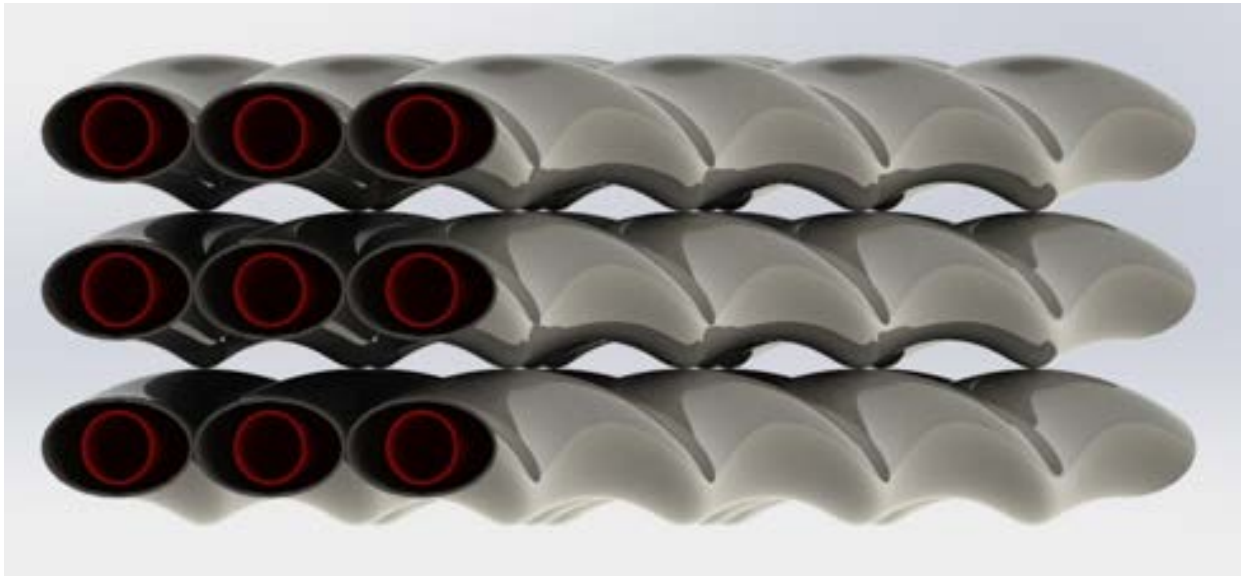
Double-Wall Twisted-Tube Heat Exchangers

Double-wall twisted-tube heat exchangers are being investigated as an option for the removal of heat from molten salt coolant.

- Double-wall tubing ideal for prevention of fluids mixing
- Twisted-tubes provide increased heat transfer between mediums





Tritium Control in DT-HXRs

We will be investigating multiple methods for the control of tritium permeation throughout the DT-HXR system.

Intermediate Fluids	Surface Coatings
He	Carbides
He/O	Aluminides
Li	Titanium Ceramics
	Tungsten
	Yttrium (for Gettering)

Current Status of DOWTHERM Heat Trasnfer Loop

- Project start October 1, 2015
- Currently constructing experimental loop
- Low pressure heat exchangers purchased and fabricated
- Low pressure testing to begin in 2016

Project Scope

- Scoping simulation and trade-off studies for intermediate fluids considering tritium recovery
- Low pressure testing with DT-HXR
- Work on optimizing high pressure heat exchanger design
- High pressure testing coupled to S-CO_2 loop at SNL
- Data reduction, validation, and inspection techniques

Questions?