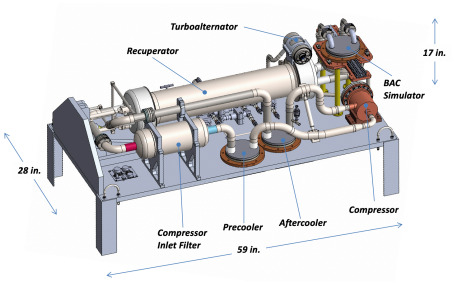
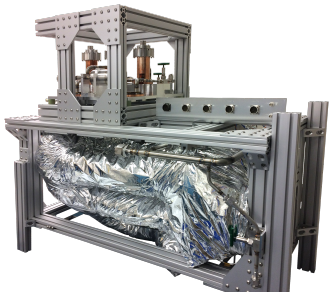
TECHPRES-75, Liquid and Monopropellant Systems and Related Technologies

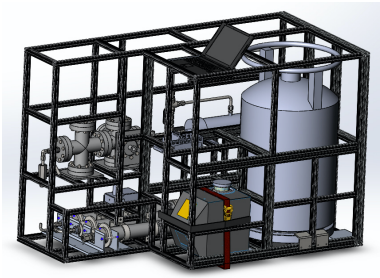
- **Title**: "*Enabling Extended Utilization of Cryogens in Space: Plans and Status of the Cryo Fluid Technologies Project under NASA's Game Changing Development Prog*ram;" **Presenter**: **Michael Doherty,** michael.p.doherty@nasa.gov
- **Focus**: Maturation of Cryogenic Fluid Management (CFM) technologies essential to NASA's future missions in science and exploration which utilize both chemical and Nuclear Thermal (NTP) in-space propulsion, surface landers, and in situ resource utilization.
- **Themes**: Cryogenic fluids, such as hydrogen, oxygen, and methane, are critical to efficient in-space transportation, surface landers, and sustainable human presence on the Moon and Mars.
  - Develop cryogenic surface coatings technology and low temperature cryocoolers, to reflect and intercept energy from cryo storage tanks, reducing fluid evaporation
  - Demonstrate techniques for successful and efficient transfer of cryogens in microgravity, supporting refueling of propulsion systems for reuse



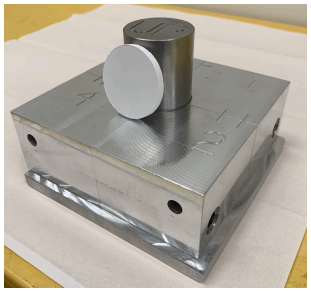
150W/ 90K Cryocooler Conceptual Design



20W 20K Cryocooler in Cleanroom



RGCT Transfer Line Chilldown Test



One Inch Diameter Yttrium Oxide (Y2O3) Rigid Tile Sample Sitting on Sample Mold