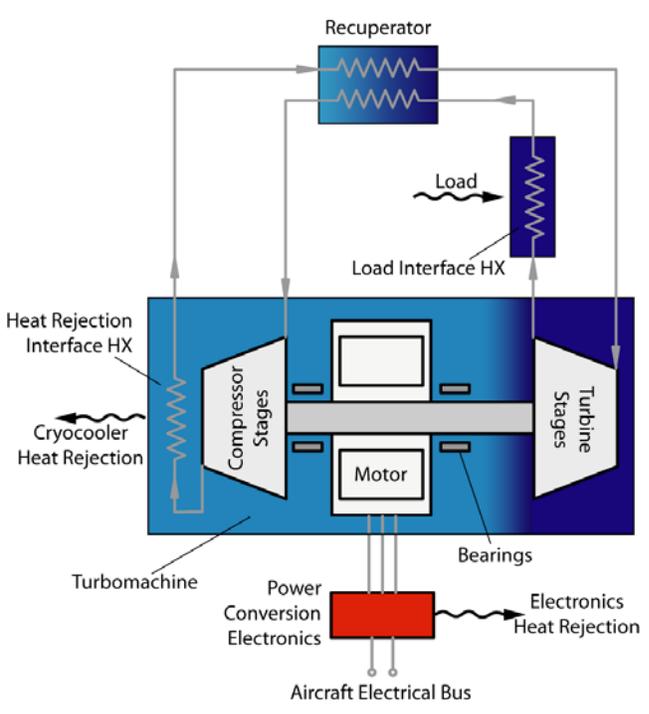


BRIEFING CHART

<p>NASA SBIR/STTR Technologies <i>Thermal Management System for Superconducting Aircraft</i> PI: Dr. Anthony Dietz, Creare Incorporated, Hanover, NH Proposal No.: 08-1 A2.01-9677</p>	
<p><u>Identification and Significance of Innovation</u></p> <ul style="list-style-type: none"> • Creare’s <i>Cryoflight</i> cryocooler is an enabling technology for superconducting aircraft • High performance turbo-Brayton cryocooler • Efficiency exceeds the best currently available • Weight is five times lighter than current coolers • Optimized for aircraft superconducting machines • Aircraft superconducting generators and motors decouple power production from propulsion • Allows radical new designs like a blended wing body with distributed propulsion • Large reductions in emissions, fuel burn, and noise • Necessary for sustainable growth in air transportation <p><u>Expected TRL Range at the end of Contract</u> Phase I TRL 3; Phase II TRL 4</p>	
<p><u>Technical Objectives</u> To design, develop, and demonstrate a thermal management system for superconducting aircraft, comprising a lightweight, high-performance <i>Cryoflight</i> cryocooler.</p> <p><u>Work Plan</u></p> <ul style="list-style-type: none"> • <i>Phase I</i>: Demonstrate feasibility by scoping, sizing, and optimizing a cryocooler for this application and developing a preliminary design of the critical component—the turbomachine • <i>Phase II</i>: Build and demonstrate the turbomachine • <i>Phase III</i>: Build, test, and deliver complete thermal management systems 	<p><u>NASA Applications</u></p> <ul style="list-style-type: none"> • Necessary for sustainable growth in air transportation • Cooler for superconducting aircraft technology demonstrators • Cooling for cryogen liquefaction and storage for space missions and at spaceports on earth <p><u>Non-NASA Applications</u></p> <ul style="list-style-type: none"> • Cooler for production superconducting aircraft • Cooling for superconducting machines in power generation (wind turbines) • Cryogen liquefaction and storage <p><u>Contacts</u> Dr. Anthony Dietz, Dr. Mark Zagarola (603) 643-3800</p>