



NASA SBIR/STTR Technologies



Ultrasonic Tape Laminated Cryogenic Tank Structures Processed Outside the Autoclave

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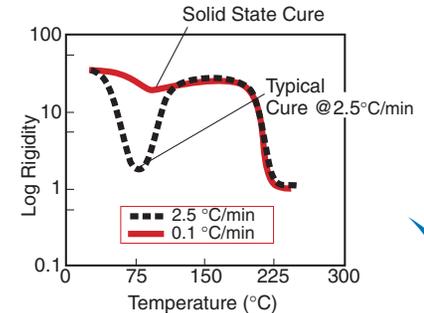
Identification and Significance of Innovation

- Large composite aerospace structures such as RLV cryotanks require novel out-of-autoclave processes so that they are not cost prohibitive
- Foster-Miller has demonstrated that the combination of UTL and Solid state bag-less curing can nearly match autoclave processing in mechanical performance (~90%)
- Further development of UTL/SS cure in order to reach 100% parity would dramatically reduce manufacturing costs for many aerospace structures

Foster-Miller's UTL
Debulking to Net Thickness



Bag-Less Oven Cure of
Large Aerospace Structures



Low Cost Large Aerospace Structures
with Autoclave Equivalent Properties

591-IBDP-020642-5

Technical Objectives and Work Plan

Objective: To demonstrate that Foster-Miller's novel out-of-autoclave UTL/Solid State cure can provide equivalent performance to that of autoclave cured composite laminates.

Task 1. Application Review and Material Selection
Task 2. UTL/Solid State Total Cure Process Formulation
Task 3. Resin Characterization and Solid State Cure Profile Refinement
Task 4. UTL/Solid State Cured Laminate Fabrication
Task 5. Critical Mechanical Properties Testing

Phase II: Sub-scale demonstration of UTL/solid state cure process

NASA and Non-NASA Applications

- 2nd Gen. RLV secondary composite structures
- 3rd Gen. RLV cryotanks
- Other :
 - Air Force SOV cryotanks
 - JSF and F18 composite components

Contacts

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