



Contribution ID: 238

Type: **Contributed Oral**

C2Or4D-01: Advancing liquid hydrogen storage: GTL's composite vacuum-jacketed cryotank innovations

Tuesday 20 May 2025 16:15 (15 minutes)

Gloyer-Taylor Laboratories (GTL), a leader in cryogenic composite technologies, has spent over a decade developing ultra-lightweight cryotanks to transform liquid hydrogen (LH₂) storage and transfer systems. Focused on aerospace and hydrogen-electric propulsion, GTL's composite vacuum-jacketed dewar tanks deliver hydrogen weight fractions between 60% and 80% while reducing tank mass by up to 75% compared to conventional solutions. Recent LH₂ experimental tests validated the technology, demonstrating hard vacuum levels of 2.8e-6 torr, LH₂ storage for over 21 hours with minimal boil-off (~1% per day), and rapid chill-down to 20 Kelvin in under 20 seconds. Subscale tanks withstood multiple cryo-thermal cycles without degradation, confirming durability and readiness for real-world applications. Building on these successes, GTL is advancing toward flight hardware production, fabricating scalable composite dewar tanks for hydrogen-powered aircraft, drones, and space missions. These advancements position GTL at the forefront of hydrogen storage innovation, enabling safer, cost-effective, and sustainable hydrogen propulsion across a range of aerospace and energy applications.

Author: Mr GLOYER, Paul (Gloyer-Taylor Laboratories)

Co-authors: Dr MAHONY, Colin (Gloyer-Taylor Laboratories); Mr BRADFORD, David (Gloyer-Taylor Laboratories); Mr WILCOX, Eric (Gloyer-Taylor Laboratories); Dr BATTERSON, Joshua (Gloyer-Taylor Laboratories); Mr MCDONALD, Landen (Gloyer-Taylor Laboratories); Mrs MORGAN BRADFORD, Malorie (Gloyer-Taylor Laboratories); Mr TAYLOR, Zachary (Gloyer-Taylor Laboratories)

Presenter: Mr GLOYER, Paul (Gloyer-Taylor Laboratories)

Session Classification: C2Or4D - Aerospace Applications I