

**Renewable and affordable power with clean air and zero carbon emissions** are the promises of the *Hydrogen Economy* that would be achieved from replacing fossil fuels with green hydrogen. While advances in fuel cell technology, electric motors, and renewable energy have brought us closer to this great future, one critical piece has been missing; **efficient hydrogen storage**.

## PROBLEM

With traditional hydrogen storage technology, vehicles cannot carry enough low-density hydrogen to be competitive with fossil fuels due to the heavy storage container weight. Even when stored at high pressure or cryogenic temperatures, the weight of the storage container far exceeds the weight of the hydrogen it carries, which cripples the ability of vehicles to utilize green hydrogen and creates a barrier to implementing the *Hydrogen Economy*.

## GTL SOLUTION/BREAKTHROUGH

However, GTL's breakthrough **BHL™ technology solves this problem and provides highly weight efficient hydrogen storage, allowing increased range and reduced cost per passenger mile, with zero carbon emissions.** Developed for the space industry, BHL™ has been validated in U.S. Government projects to provide a game changing four times (4X) improvement in tank mass for cryogenic liquids. GTL is currently extending this technology to liquid hydrogen storage by developing vacuum insulated BHL™ cryotanks that can achieve greater than 70% H<sub>2</sub> weight fraction with liquid hydrogen (LH<sub>2</sub>) compared to less than 20% H<sub>2</sub> weight fraction with conventional technology.

## VALUE PROPOSITION

An aircraft equipped with vacuum insulated BHL™ cryotanks with LH<sub>2</sub> could achieve 2X to 4X greater flight range than with an equivalent weight of fossil fuels and thereby provide over **50% reduction in cost per passenger mile**. This reduction in operating cost will provide a strong economic incentive for aircraft operators to adopt hydrogen technology, thereby achieving global environmental goals of clean air and zero carbon emissions.



**BHL™ Cryotank Validated 4X Mass Improvement**

**BHL™ Vacuum Dewar Cryotank**

## ABOUT GTL

In business for over 16 years, GTL is an established aerospace company with over \$30M invested in developing and validating transformational technologies. GTL is currently using its validated IP portfolio to develop components and vehicles for the aerospace market. Multiple commercial companies and U.S. Government agencies are presently funding GTL to implement BHL™ technology in cryogenic tanks for aircraft, spacecraft, and launch vehicles.

## For more information:

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