

Expert Session 1 – Workshop1

Commercialisation Roadmap

Perspectives and Gaps for Hydrogen Storage

Liquid Hydrogen Storage: tanks with complex shapes based on lightweight materials

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**STORHY
FINAL EVENT**

**June 3-4, 2008
Poissy, France**

Material related gaps & needs



- **Continuing characterisation of StorHy selected composites materials and liners at cryogenic temperature to strength technical data base for design:**
 - **Mechanical properties under biaxial stress.**
 - **Tightness, porosity, out gassing.**
 - **Properties evolution under thermal and pressure cycling.**
- **Evaluation of alternative composite materials and liner (e.g. structural aluminium sheet metal).**
- **Validation of composite to metal transition (e.g. inserts, breakthroughs) under thermal cycling.**

Component (tank) related gaps & needs



- **Design, manufacturing and test of free-form lightweight (composite and/or aluminium) tanks for:**
 - **Mechanical supports and thermal insulation optimisation to minimize boil-off and to maximize dormancy.**
 - **Functional (filling, extraction, dormancy, boil-off) qualification tests.**
 - **Safety (crash, rollover, fire, etc.) qualification tests.**
 - **Definition and qualification of future industrial manufacturing.**
- **Evaluation of alternative technical solutions such as cryo-compressed.**

System (tank + filling) related gaps & needs



- **Validation and optimisation of filling interfaces and processes.**
- **Analysis and optimisation of filling processes and filling stations in case of cryo or cryo-compressed storage.**