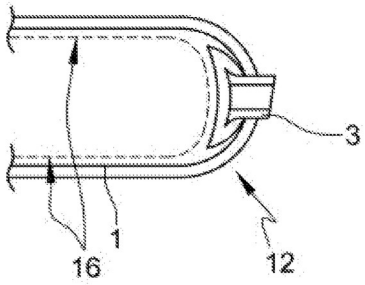
TANK FOR CRYOGENIC PROPELLANTS

Technological advantages

Efficient system :

- Light weight compared to metal
- Robust and watertight
- Compatible with pressurized cryogenic gases
- Compatible with flammable gases (fuel / oxidizer)
- Low sensitivity to thermal constraints



Schematic view presenting the composite tank

(1) internal liner
(16) outer reinforcement shell
(3) Connecting valves
(12) Composite material based tank

Invention synthesis

The invention deals with the design and the manufacturing of composite material based tanks to store pressurized liquids or gases.
The tank is composed of a cylindrical section with two hemispherical ends. One or two (opposite) connecting valves are located within the hemispherical section.
The tank is made of a liner and a shell in a composite materials with carbon fibers (composite textile) and a thermosetting polymer (such as polyurethane). This presents reduced risks of delamination and improves watertightness at the interface. Both materials have the same nature allowing for a strong bonding, but the materials properties differ (different manufacturing). The internal liner may have a fluorinated coating (such as Teflon, compatible with LOX and GOX).

Commercial benefits

- Attractive pricing, lighter than traditional metal based tanks. Large compatibility with liquid and gas mixtures (wide pressure, temperature range), even with flammable mixtures.
- Large domain of applications.

Potential applications

- Applications in the space domain, in the aeronautical domain and for terrestrial vehicles.

Patented invention - under license.

For more information :

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