Liquid Hydrogen Tank & Filling Systems for Vehicles

Note of the Editor: For this paper only transparencies were available. Please find enclosed the table of contents, a selection of figures and conclusions.

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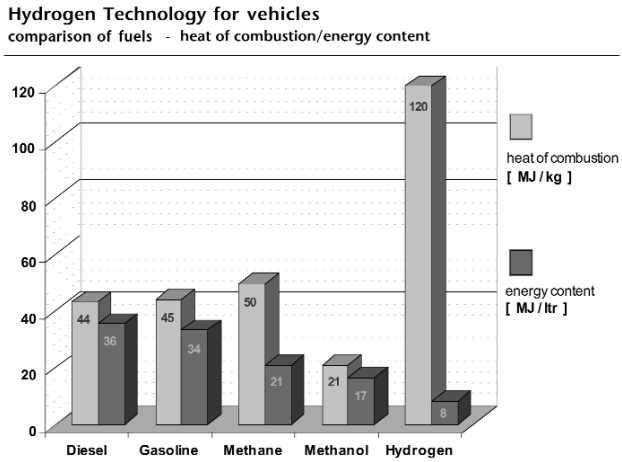

Figure 1
Energy content and combustion heat of different fuels

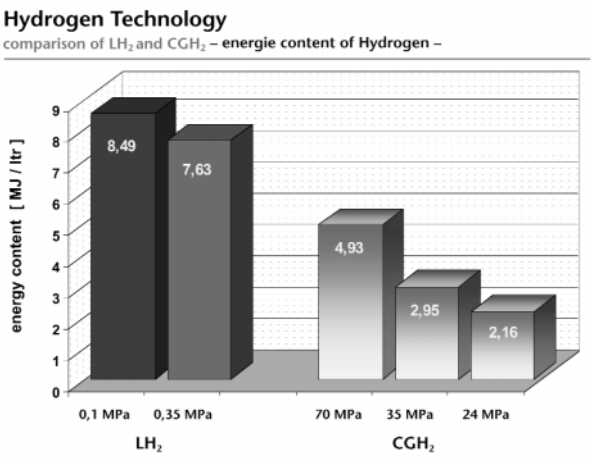

Figure 2
Energy content of hydrogen

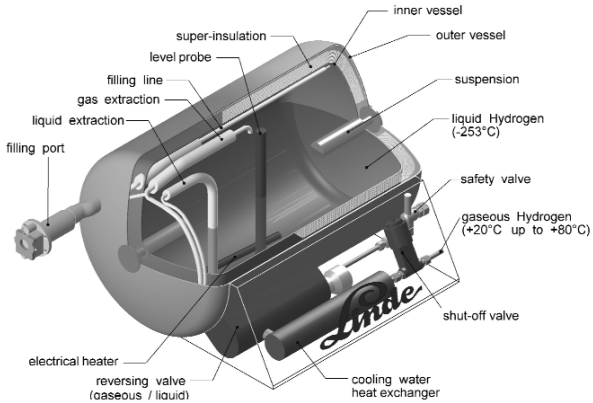

Figure 3
LH_2 Tank – Improvement of autonomy

Figure 4
Public LH_2 filling station at airport Munich

Conclusions:

Infrastructure and filling stations of a hydrogen technology for vehicles have to fulfil the following requirements:

· Competitive
The costs of the energy carrier hydrogen must be comparable to the costs of conventional fuels.
The costs of a hydrogen infrastructure must be comparable to the investment for a conventional infrastructure.

· Compact & Capable of Being Integrated
A hydrogen filling station must be capable of being integrated into an existing conventional fuel station. That means a hydrogen filling station must be compact and must be operable without additional professional personnel.

· Universal
The hydrogen filling station must be able to deliver pressurised hydrogen (CGH_2) as well as deep cold liquefied hydrogen (LH_2).

· Flexible
A hydrogen filling station must be flexibly reactive with respect to long-term trends as well as to daily fluctuations of the hydrogen consumption.

· Compatible
The logistic for hydrogen filling stations must fit to the concept of the gasoline companies.

· Forward looking
The initial overall concept must ensure a direct and cost saving transfer from fossil to regenerative generated hydrogen.