

## Liquid Organic Hydrogen Carrier (LOHC) – enabling large scale hydrogen distribution and sectoral integration

*Dr. Caspar Paetz, Hydrogenious Technologies GmbH*

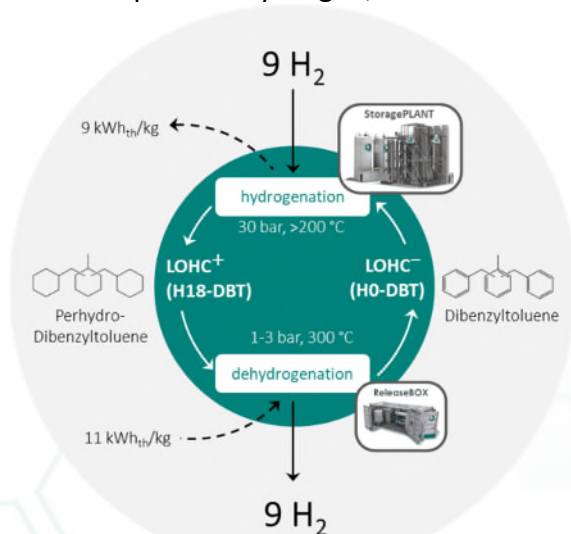
*Abstract for 23rd Kalorimetrietage, Braunschweig*

A hydrogen based economy allows for a drastic reduction of local emissions in mobility applications. Furthermore, it is an important building block on the way to integrated energy handling and distribution between the main sectors electricity, mobility applications and heat demand. We believe hydrogen to become the energy carrier of the future.



*Scheme 1: components of hydrogen storage and distribution technology via LOHC.*

The LOHC technology of Hydrogenious Technologies allows for a very efficient and safe hydrogen transport in a non-explosive, hardly flammable oil that is not classified as a hazardous good and that can be handled in the existing infrastructure for liquid fuels. Thus, hydrogen refueling stations may be supplied with large amounts of hydrogen at competitive costs, which is not possible nowadays with the established high pressure hydrogen transport concepts. Additionally, storage of large amounts of hydrogen at the refueling station site is possible with much lower restrictions due to safety issues and a much higher energy density than compressed hydrogen, which allows for a much smaller footprint.



*Scheme 2: reaction cycle for DBT as LOHC.*

Catalyst technology plays an important role within this technological approach as the hydrogen gas itself has to be released on-site from the hydrocarbon carrier liquid. Within this presentation we will show details on the technological concepts for LOHC hydrogen refueling stations as well as examples for current projects and influences of catalyst technology on the underlying process. Actual data from plants operated in Erlangen, Germany and Charleston, Tennessee, U.S., will be shown to give insight to large scale application of LOHC technology.