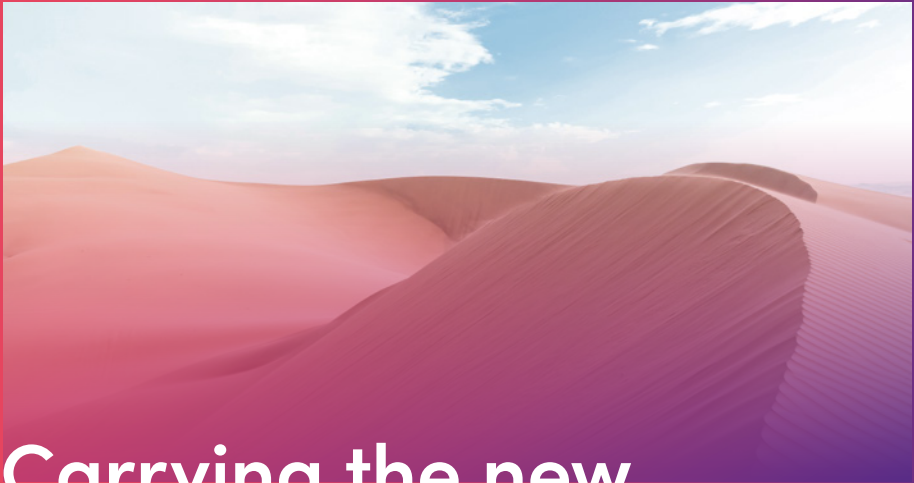


Hydrogenious<sup>LOHC</sup>  
Emirates



# Carrying the new energy world.

Our LOHC. Superior in safety and  
flexibility. Enabling viable hydrogen  
supply chains globally.

# We are Hydrogenious LOHC Emirates.

Bringing together the right expertise, we – Hydrogenious LOHC Technologies and Emirates Specialized Contracting & Oilfield Services (ESCO) – formed a strong joint venture to realize a viable hydrogen infrastructure. We are the ideal solution provider for hydrogen storage and transport at any distance and scale – with a product portfolio of Liquid Organic Hydrogen Carrier (LOHC) based hydrogenation and dehydrogenation turnkey plants, O&M and LOHC logistics services. To accelerate the hydrogen market ramp-up, we develop joint benchmark projects with regional partners.



# Adding the missing link to hydrogen supply chains.

We connect sustainable hydrogen sources in the Arab world with consumers locally and overseas – no matter whether through deserts, across oceans or mountains.

We enable the energy industry to overcome complex supply routes as well as previous constraints regarding hydrogen safety and handling.



# Superior LOHC applications. Innovation made in Germany.

Hydrogenious<sup>LOHC</sup>  
Technologies

Hydrogenious' proprietary and ingenious LOHC technology allows to build up sustainable and viable value chains globally. Binding hydrogen to the non-toxic and hardly flammable carrier medium benzyl toluene (short: LOHC-BT) with a chemical catalytic process, the German pioneer allows for handling the gas in a flexible and superior safe, efficient and economic way. Notably, existing fossil fuel infrastructure can be reused for storing and transporting hydrogen under ambient conditions.



[www.hydrogenious.net](http://www.hydrogenious.net)

# Our LOHC-BT technology is disrupting hydrogen infrastructure.



## Superior safety

- > No handling of molecular hydrogen
- > Hardly flammable with flash point 130 °C, non-explosive, even when loaded with hydrogen
- > Hazard potential even smaller than for diesel and thus clearly superior to ammonia



## Enhanced flexibility

- > Conventional liquid fuel infrastructure usable
- > Handling at ambient temperatures and pressure during storage and transport
- > No self-discharge over time – multi-month storage without losses



## High efficiency

- > Competitive volumetric storage density of 54 kg hydrogen per m<sup>3</sup> LOHC
- > Carrier material commercially available and reusable hundreds of times
- > Fuel cell grade hydrogen purity according to ISO 14687 by using off-the-shelf purification technology

### Hydrogen storage in our LOHC

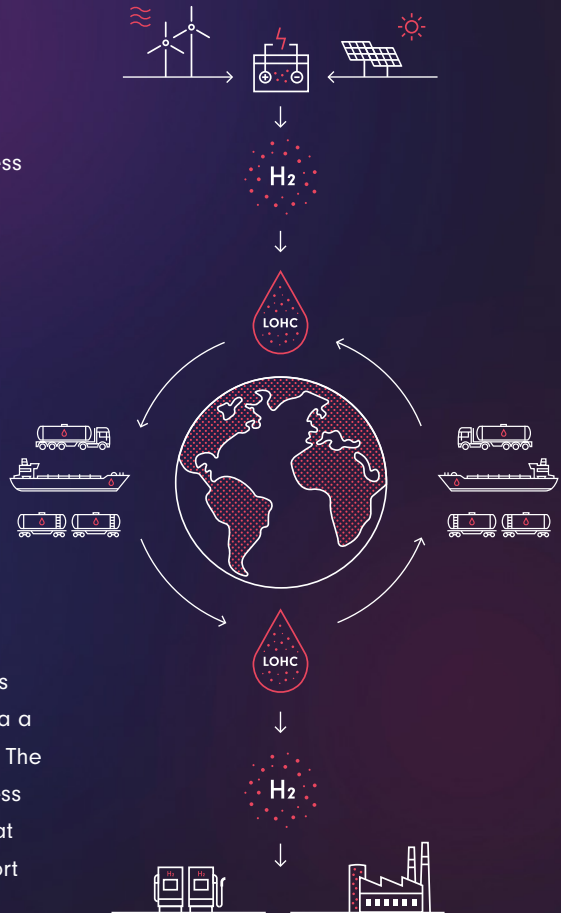
Hydrogenation. The hydrogen molecules are chemically bound to the LOHC via a catalytic reaction in a continuous process. The hydrogenation is an exothermic process generating approx.  $10 \text{ kWh}_{\text{th}}/\text{kgH}_2$  heat at approx.  $250 \text{ }^\circ\text{C}$ .

### Hydrogen transportation in our LOHC

Easy and cost-efficient logistics utilizing the existing infrastructure for fossil fuels via ship, barge, train or truck.

### Hydrogen release from our LOHC

Dehydrogenation. The hydrogen molecules are chemically released from the LOHC via a catalytic reaction in a continuous process. The dehydrogenation is an endothermic process that requires approx.  $11 \text{ kWh}_{\text{th}}/\text{kgH}_2$  heat at approx.  $300 \text{ }^\circ\text{C}$ . Afterwards: return transport and reuse of our LOHC.



# Thinking outside the barrel. Unleashing the power of hydrogen in the Arab world.



Emirates Specialized Contracting & Oilfield Services is a leading provider of specialized, periodic support services to the offshore oil & gas sector including drilling, production, and processing. ESCO supplies the most comprehensive range of products and services, from exploration through production and integrated solutions for hydrocarbon recovery that optimize reservoir performance.



Get in touch.

12/2022

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