Division Energy – Topics and competencies at a glance:

Benefit from 20 years experience in fuel processor development for stationary, mobile (aviation, maritime, ground transport) and portable applications! At Fraunhofer IMM, we take the whole chain of production in our own hands – starting from self-developed catalysts, reactor design and construction, in-house manufacturing, and set-up of complete power systems, we also include automation, control, and safety requirements in our services.

The system design and manufacturing techniques are tailored to match your specific application in terms of

- specific market requirements (specialized niche or mass production)
- specific environment (mobile or stationary)
- power range (100 Watt to 10 Megawatt)
- fuel cell type

Talk to our experts to get the optimal solution for your system!

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Fraunhofer IMM

IMM compact reformer technology

Hydrogen carrier methanol

Why hydrogen carriers?

Gaseous hydrogen, while crucial for the future energy landscape has several drawbacks:

- low volumetric energy density
- transport and handling under demanding conditions (i.e. high pressure and/or low temperatures)
- limited availability of infrastructure

Why methanol?

- Green methanol, produced from renewable sources, is readily available.
- High power density and easy transportation makes it suitable for mobile use.
- The hydrogen content of reformed methanol (reformate) is the highest of all fuels (75 percent dry base).
- Multiple feedstocks for Methanol synthesis – from biomass to carbon dioxide from industrial processes.
- Its conversion to hydrogen (named reforming) works under mild conditions compared to other hydrogen carriers.

What are possible application scenarios?

Our current development efforts are concentrated on the fields of transport, logistics, and the manufacturing industry. Leveraging our extensive expertise in system design, process simulation, catalyst development, reactor design, system control, integration, and testing, we address various aspects and deployment scenarios. This encompasses studies, reactor development and the construction of system prototypes.

» Any open questions? We will consult you to find the tailor-made solution for your applications.«

Your benefits with our technology

- robust catalyst, no pre-treatment necessary, no performance drop after longer shutdown.
- higher activity compared to conventional technology allows minimum catalyst demand and cost.
- optimal heat integration and system efficiency thanks to plate heat exchanger technology
- low-cost fabrication steps: embossing, screen printing and laser welding allow cost reduction for product ramp-up

Why IMM reformer technology?

Simple: Because we are better.

Fixed bed reforming reactor with conventional catalyst:

- attrition under vibration
- pyrophoric in contact with air
- high carbon monoxide formation under partial load

IMM microstructured reactor with IMM catalyst:

- none of the problems above
- superior catalyst activity
- more homogenous heat distribution
- higher hydrogen productivity, smaller size
- higher efficiency due to integrated heating via off-gas combustion