Power-to-Methanol at Small-Scale

FlexMethanol
10 & 20 MW Module
Our Vision

Mankind has always dreamed about endless energy sources produced from air and water which also save the climate. Already today we can tap natural resources like wind and solar power to provide unlimited liquid energy with pure CO₂ and H₂ from water electrolysis. The CO₂ and power from renewable sources are by far unused resources. Methanol, however, is a product that is already used as fuel. A mass market with premium prices has been established for this application. H₂ will then be electro-chemically produced when power is cheap. In consequence, FlexMethanol with a modularized construction increases the value of power in existing stations by transforming power to a liquid form.

FlexMethanol means profitable at all times

FlexMethanol will enable economically viable transformation of excess current and off-gas CO₂ into the chemical energy storage in small-scale and delocalized production units. Core of the plant is the tailor-made catalyst of BASF to convert CO₂ without a cost intensive prior water-gas-shift reaction. FlexMethanol consists of 4 industrially available process steps (electrolysis, CO₂ scrubbing, methanol synthesis, distillation) as 10 and 20 MW module. The modules are scalable up to 100 MW and thermodynamically interconnected with the existing asset. This increases the total efficiency of the process, FlexMethanol stabilizes the revenues significantly by operating in two ways depending on the power price. If the price is above the internal marginal price the plant feeds into the grid. Otherwise the plant uses the excess current to produce H₂ through discontinuous electrolysis. In a second step, methanol is produced from CO₂ and H₂ thus leading to a valorizing of excess current and CO₂ off-stream gas. In the second process step, BASF’s catalysts will be used for the methanol synthesis step. Those catalysts have been further tuned and adapted for this specific process to enable the most efficient production of methanol. Methanol is one of the most important basic chemicals used in numerous industrial applications. For example, it is used in the biodiesel production or blended into gasoline. Did you know that in China, 201 million cars run with methanol blends? How about 150 million cars in Europe with methanol as antiknock agent?

In cooperation with

- Provider of unique CCUS technology
- Just Catch - standard and modular design
- Robust and environmentally friendly solvent
- Verifi ed performance on waste incineration, cement, coal and gas fi red power plants

www.akersolutions.com

- World leading chemical company
- Pioneer of methanol synthesis
- Largest catalyst company worldwide

www.catalysts.basf.com

- Business Developer
- Engineering and process provider
- Plant integration
- Exclusive BASF - Catalyst supplier

www.bse-engineering.eu

- Most complete portfolio of distillation components
- The leading expert and solutions provider for continuous, single/multi-stage distillation
- Tailor-made design of highly effi cient separation process

www.infraserv-knapsack.de

- Over 180 engineers
- Over 100 years experience
- Process development
- Conceptual design
- Basic, detail engineering

sulzer.com

We are an experienced & strong consortium who works with passion & skills to provide the best solution for your business.
Low carbon economy has to circle more carbon to become resource efficient. FlexMethanol brings reindustrialisation for:
- Waste incineration plants
- Paper mills
- Heat driven process
- Fossil power plants

More Sustainability
Less Carbon Dioxide.

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