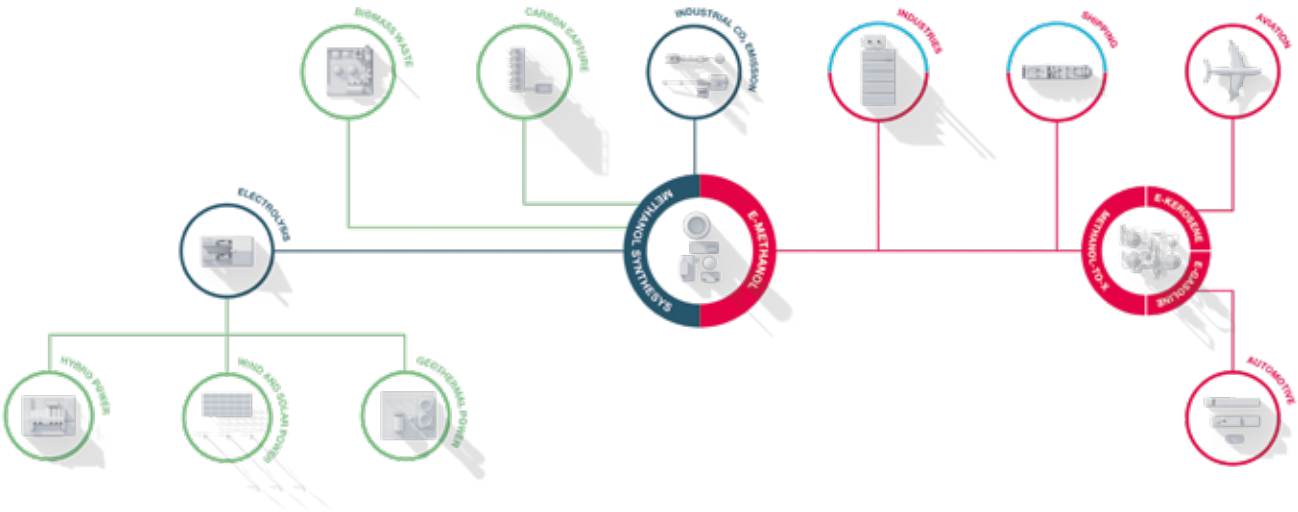
DWE
Power-to-Methanol solutions



Benefits at a glance

- E-methanol is a clean-burning and cost-effective liquid fuel
- Using e-methanol reduces carbon emissions by 95 %
- E-fuels can be used in existing infrastructure
- No waste generated thanks to synthesis of pure gases

Everllence

Decarbonized fuel production

General

Converting renewable energy sources into carbon-neutral fuels allows the defossilization of sectors that cannot be electrified. Everllence provides the technology necessary to turn power into methanol, transforming green hydrogen and CO_2 into e-methanol and its variants, which can then be used for transport and industrial feedstocks.

Comprehensive experience

Everllence, based in Deggendorf, is one of the leading providers of reactors for liquefaction processes. We have more than 60 years' experience in manufacturing salt-operated tubular reactors and water-, air- and oil-cooled tubular reactors.

We offer industry owners, EPCs, and technology providers our expertise, core components, and complete solutions at all scales for the production of e-methanol and its derivatives. From skid-based solutions for smaller applications to projects on a global scale, we can provide basic to detailed engineering, procurement and manufacturing, shipping, and support from construction to commissioning.

Customers benefit from our in-depth experience in electrolysis of green H_2, carbon capture and usage, methanol synthesis, and the engines that run on these fuels. Our reactors have been used for decades by major licensors for fossil-based methanol projects and have now been expanded to CO_2-based fuels.

Demand for green hydrocarbons

Decarbonization requires renewable energy in the form of fuels that can be stored and transported. Green hydrogen is the basis for gaseous fuels, the chemical fuel ammonia, and liquid fuels like e-methanol, e-gasoline, and e-kerosene. These liquid variants have the potential to decarbonize sectors such as sea, road, and air transport.

The ideal liquid energy carrier is not only carbon-free but can also be used directly in existing engines. Production must be increased to satisfy growing demands. Established energy companies and startups are investing in production plants, especially in places where renewable energy from the sun and wind is abundant.

DWE Power-to-Methanol process

In the Power-to-Methanol process, green hydrogen is made by splitting water into H_2 and oxygen using electrolysis powered by green electricity. We use our patented water-cooled reactors tailored to customer requirements for e-methanol synthesis. This is produced at temperatures between 230 – 270 °C and a pressure of 40 – 100 bar with H_2 obtained from renewable energies and captured CO_2.

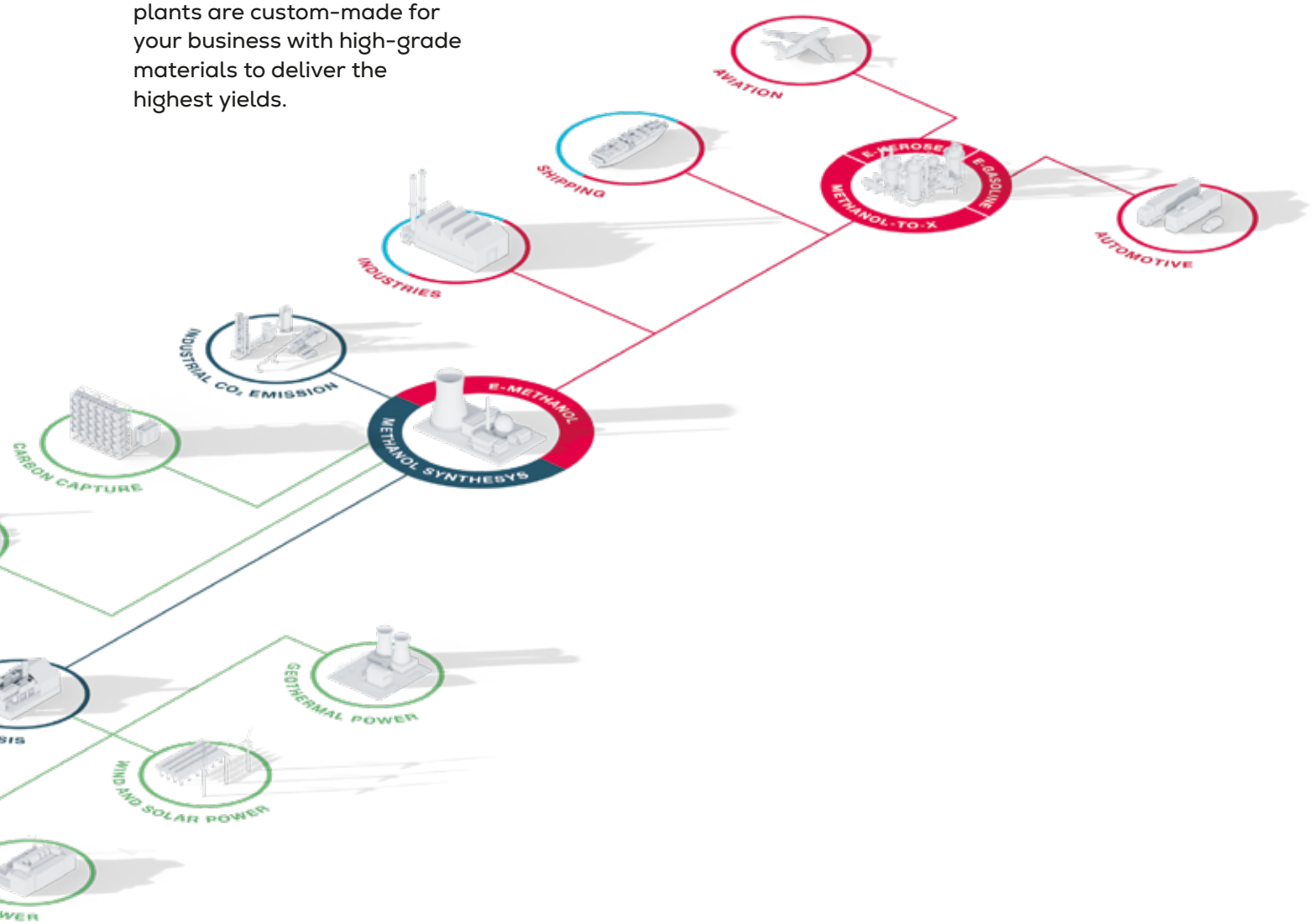
System solutions

E-methanol modules
Our e-methanol module is available for annual production ranging from 10,000 to several 100,000 tons using modular solutions. The modules consist of a complete methanol plant in the form of skids provided by Everllence in collaboration with external partners. The skids include all components for H_2 and CO_2 transfer, distillation, and processing, as well as a gas control line and synthesis unit.

E-methanol plants
Our medium and large e-methanol production plants are tailor-made to produce 300,000 – 1,500,000 tons. Our water-cooled reactors are at the core of the plant. The plants are custom-made for your business with high-grade materials to deliver the highest yields.

Methanol-to-gasoline
Climate-neutral e-methanol is already playing an important role in shipping. Salt-operated DWE reactors can give it a higher energy density by turning it into e-gasoline. The resulting fuel is a drop-in alternative to fossil-based gasoline, and another way of decarbonizing road transport. Everllence has been working on synthetic gasoline for more than ten years together with Chemieanlagenbau Chemnitz (CAC), with over 46,000 liters produced to date. It meets the European fuel standard and has been tried and proven in motorsport events.

Methanol-to-kerosene
The aviation sector also needs low-carbon fuels. The conversion of methanol to jet fuel consists of three steps: converting methanol to olefins, then oligomerization, and finally hydrofinishing. It is more complex than making gasoline, but ASTM certification is planned. E-kerosene has a lower aromatic content, which reduces vapor trails by up to 50 %. Another benefit is that its by-products are carbon-neutral diesel and gasoline.



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