

Germany

Future fuels in practice: The future of liquid energy sources

Why?

Reducing greenhouse gas emissions is a central objective of Europe's climate policy: By 2050, the European Union and its Member States are aiming for at least 80-95 percent reduction in their carbon emissions – even possibly net zero emissions. These objectives will substantially affect the energy demand in the building sector. Therefore, intensive work is being carried out to develop fuels with a reduced greenhouse gas footprint.

New liquid fuels can play a crucial role, providing oil heating systems with a climate-neutral perspective. A promising development are the so-called “e-fuels”, which are generated by using green power. These e-fuels could supply the roughly 5.6 million oil heating systems in Germany, as soon as they are produced on a commercial scale. Another type of new liquid fuel, made out of biological waste, is already available on the market.

Outcome

- High performance of new liquid fuels with reduced greenhouse gas emissions, which can be used in oil heating systems without any problems.
- Limited need for consumer investments, due to the continued use of existing infrastructure for heat supply.
- Greenhouse gas emissions reduction of up to 89 percent already achieved in the demonstration projects.
- No competition with food production.
- Climate-neutral perspective for oil heating systems
- Further information on research and development projects in Germany on www.zukunftsheizen.de/forschungsradar.

What?

The new liquid fuels are already in use in 11 demonstration projects supported by the German Institute for Heat and Oil Technology (IWO). They can be stored in the existing tank – mixed with conventional heating oil. (more information on www.zukunftsheizen.de/praxisbeispiele). The houses have been renovated and fitted with modern oil condensing heating systems. Insulation works and the use of new liquid fuels have substantially reduced greenhouse gas emissions. Emission reductions of up to 89 percent could be achieved, making these houses already fit for the future.

Alternative liquid future fuels are produced from different regenerative sources (X-to-Liquid, XtL): biomass (“Biomass-to-Liquid”, BtL) or renewable power sources (“Power-to-Liquid”, PtL), which are used to generate hydrogen. Different regenerative liquid energy sources are examined and assessed in the study “Production of GHG-reduced liquid fuels”, which you will find on www.eurofuel.eu/study.

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Different types of renewable liquid fuels

Generation	Feedstock	Product
1st	Corn, sugar beet, seeds, fruits	Biodiesel (FAME), bioethanol
2nd	Biomass without competition in usage	Ethanol, synthetic fuels (BtL)
3rd	Biomass without use of crop plants	Bio oil, ethanol, hydrogenated vegetable oil (HVO)
Future fuels	Electricity from sun or wind, carbon from the atmosphere or other sources	Fischer-Tropsch product (PtL)

Climate-friendly oil products as a replacement for crude oil

(Power-to-Liquids)

