

Definition of reFuels

Difference between electricity-based and waste-based reFuels

reFuels or SynFuels made from renewable sources



Electricity-based reFuels as e-fuel or PtL

- **synthetic fuel** produced from electricity-based sources
- Production in mostly southern, very sunny and windy countries (favourable locations) => **Analogy: Orange**
- E-fuels are produced from "green hydrogen", which is produced by electrolysis of water.
- E-fuel is produced from water, CO2 and solar/wind energy
- Use of CO2 removed by air extraction (CO2 capture) or separation of unavoidable CO2 from the chemical industry.
- Use included, it is almost 100% CO2-neutral.
- E-fuels can be produced unlimitedly at favourable locations.



Waste-based reFuels (HVO, HEFA, HCVO, BtL, Renewable Diesel etc.)

- It is a **synthetic fuel** made from residues and waste materials of biogenic origin.
 - The production of HVO requires very little electricity and can also be realised in northern countries with few green energy => **Analogy: Appel**
 - The EU calls it "advanced biofuels". In Germany, they are also called second-generation biofuels.
 - The chemical name is paraffinic diesel and paraffinic aviation fuels.
 - "Biofuel" is a very similar expression like biodiesel (FAME), to describe HVO for example. But HVO is not biodiesel (risk of confusion!).
 - CO2 capture from the atmosphere indirectly via plants as a source of residues and waste materials.
 - The name HVO comes from the first products based on hydrogenated vegetable oils
 - HVO is currently synthesised in the EU exclusively from used fats, used cooking oils, waste biomass and carbon-containing waste materials.
 - Today's HVO contains minimal grey H2 (approx. 90% CO2 reduction).
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- **Both, E-Diesel** (E-Fuel) and **HVO100** are reFuels. And both meet the DIN EN 15940 standard for paraffinic diesel fuels. But they are produced from different raw materials.
 - Petrol, diesel and aviation fuel can be produced from **electricity** or from **residues and waste materials**.
 - **Residues and waste materials** or **CO2 and electricity-based green H2** are the basis of the two different production processes.