

Germany

Hybrid heating systems: Liquid energy sources and renewable power – the ideal combination

Why?

An essential component in Germany's climate and energy policy is the integration of renewable energy sources. An optimal coupling of the electricity and the heating markets can be part of the solution. Green power supply and demand do not always match, due to fluctuating electricity production and insufficient grid expansion. Hybrid heating systems that integrate green power into home heating increase the share of renewables and lower the greenhouse gas emissions in the building sector. Dynamic electricity prices would make it more attractive for homeowners to install such a system.

Outcome

- Proven combination of heating oil and green power at the Wolfhagen “innovation house”: www.zukunftsheizen.de/innovationshaus
- Significant increase of renewable energy use when power and heating sectors are effectively coupled.
- Hybrid heating systems and dynamic electricity prices offset the impact of fluctuating solar and wind power generation.
- Simplified use of green power in hybrid heating systems thanks to digitalisation of equipment technology.
- Minimised running cost due to intelligent control devices selecting the most affordable energy source.

What?

The city Wolfhagen in Germany covers its power demand with a significant supply of wind and solar power – including dynamic electricity prices: Energy is cheap when production levels are high. As part of a demonstration project, the Institute for Heat and Oil Technology (IWO) converted a 25-year old house into an “innovation house” in cooperation with local public utilities and a heating equipment manufacturer. The hybrid heating system combines an electric heat pump and a highly efficient oil condensing boiler. The heat pump only runs when green power is available either from the own photovoltaic system or at low costs from the grid. Otherwise, the efficient oil condensing boiler takes over. Lately, special heating oil with reduced greenhouse gas emissions has been delivered to the tank. This last step shows how single-family houses can participate in the energy transition – not only in rural areas.

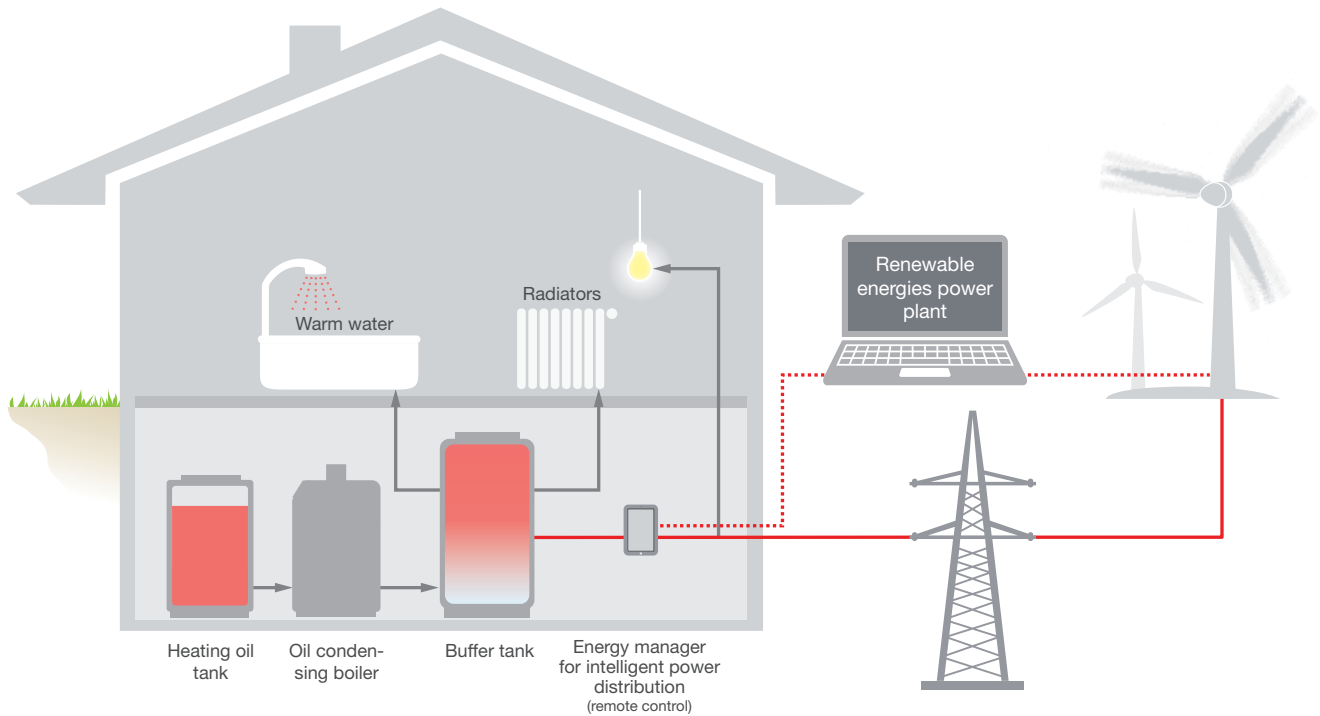
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Use of wind and solar power in oil hybrid heating

Surplus renewable power replaces a part of the liquid energy source in the tank



Power generation in Germany in 2017

Proportions produced conventionally and renewably

