

The KSW CLIMATE PROTECTION PLANT

KSW Bioenergie GmbH has developed and patented a decentralized “hybrid energy plant” (power plant and biorefinery) in the form of a two-stage process (KSW-Process®).

The aim is **carbon recycling** through thermochemical conversion of biogenic organic residues and waste materials as a **highly efficient climate protection measure**. Here, **CO₂-neutral, baseload, controllable electrical energy** (including grid stabilizing as a supplement to volatile wind and solar energy), heating and cooling as well as **3rd generation bio-fuels** (e.g. bio-OME) and optionally **hydrogen** are produced.

Bio-OME (Polyoxymethylenedimethylether) as a “clean fuel” can be used in “normal” **diesel engines without conversion** and in any mixing ratio. It burns **soot-free** and **reduces nitrogen oxide (NOx) by up to 90%**. The biofuels are produced as a "by-product" in the KSW-Process® and therefore allow cost-effective production.

KSW is a member of the **DIN technical committee for the standardization of OME** as a standard fuel (DIN 51699) and is represented here by Mr. Schneider.

As decentralized CHP systems with approx. 80% overall efficiency, **KSW Climate Protection Plants (Klimaschutzwerke)** relieve and stabilize the power grid. They are built with demand-oriented electrical outputs between 10.0 MW_{el} and 50.0 MW_{el} per module. The operation takes place within the framework of regionally adapted drainage and supply concepts. All types of carbonaceous, organic materials from one region, such as **Biogenic residues and waste materials from agriculture and forestry, the organic content of household waste or sewage sludge** are used as fuel ("carbon recycling").

Due to the decentralized system concept and the high flexibility, the KSW-Process® has the potential as a "**lighthouse technology**" to become one of the essential **basic components** of the national as well as the **global energy transition**.

The currently energetically unused **biomass potential** in Germany is approx. 580 TWh. Used in decentralized climate protection plants according to the KSW-Process®, this corresponds to an installed electrical output of approx. 30,000 MW.

Advantages of the KSW Process®

- Innovative, economical system concept with proven technology and reliable main and secondary components (e.g. pyrolysis, gasifier, 2-stroke marine diesel engine) that have been industrially tested for many years.
- High availability, low maintenance costs.
- Sustainable, climate-neutral products: electricity, heating / cooling, bio-fuels (e.g. OME) as a diesel substitute with highly flexible fuel use, exclusive use of NONFOOD material

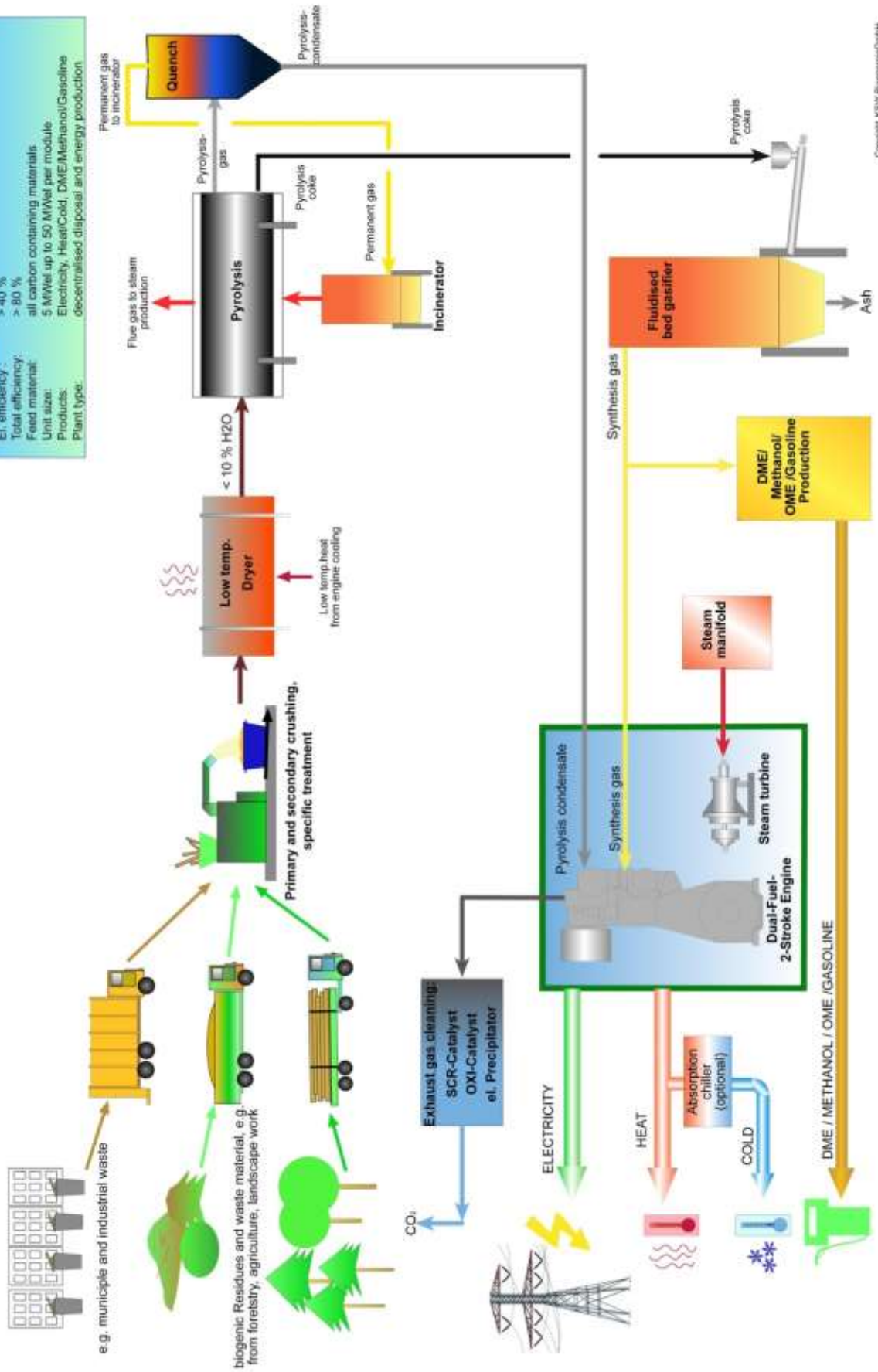
Application examples

- Munciple project, municipal waste, sewage sludge
 - CO₂-neutral, soot-free, nitrogen oxide-reduced operation of municipal vehicles such as Buses with OME
 - decentralized, **earthquake-proof**, stable power generation and supply
 - Heat supply for households via disitric heating
- Private sector, Regional biogenic residues and waste materials from agriculture and forestry
 - Inexpensive, CO₂-neutral delivery of process heat
 - CO₂-neutral, soot-free, nitrogen oxide-reduced operation of company vehicles (trucks, etc.)

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The KSW-Process®

Performance data:
 • E_t efficiency: > 40 %
 • Total efficiency: > 80 %
 • Feed material: all carbon containing materials
 • Unit size: 5 MW_{el} up to 50 MW_{el} per module
 • Products: Electricity, Heat/Cold, DME/Methanol/Gasoline
 • Plant type: decentralised disposal and energy production



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