

Alternate CO₂ emission reduced fuel and propulsion solutions in aviation

Are renewable energy sources inexhaustible??

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Propulsion alternatives

- **Batteries:** high weight and capacity limits the usage in A/C
- **Hydrogen:** the volume of hydrogen is a limiting factor and the required cooling. enormous conversion of the tank infrastructure.
- **SAF** (Sustainable Aviation Fuels) can be used in existing engines on short, medium and long-haul routes.

SAF considered the most promising immediate option for decarbonizing aviation.

„As it stands, there are seven biofuel production pathways that are certified to produce SAF, which perform at operationally equivalent levels to Jet A1 fuel. By design, these SAFs are drop-in solutions, which can be directly blended into existing fuel infrastructure at airports and are fully compatible with modern aircraft.“

<https://www.iata.org/en/programs/environment/sustainable-aviation-fuels/>

Power to Liquid.

(renewable) electrical power is used to produce hydrogen (electrolysis).
2nd synthesis step: eFuel is produced with the addition of CO₂ from industrial exhaust gases, biogas production or directly from the atmosphere via a synthesis gas.

Solar to Liquid

Solar-thermal is used as energy supply directly.
water and CO₂ are converted directly into a synthesis.
The next steps correspond Power to Liquid pattern.

Both methods requires renewable energy to make is sustainable

Interesting !

Airtraffic worldwide

3,5% CO₂ emissions

Server worldwide

4,0% CO₂ emissions
expected to 8% nearterm

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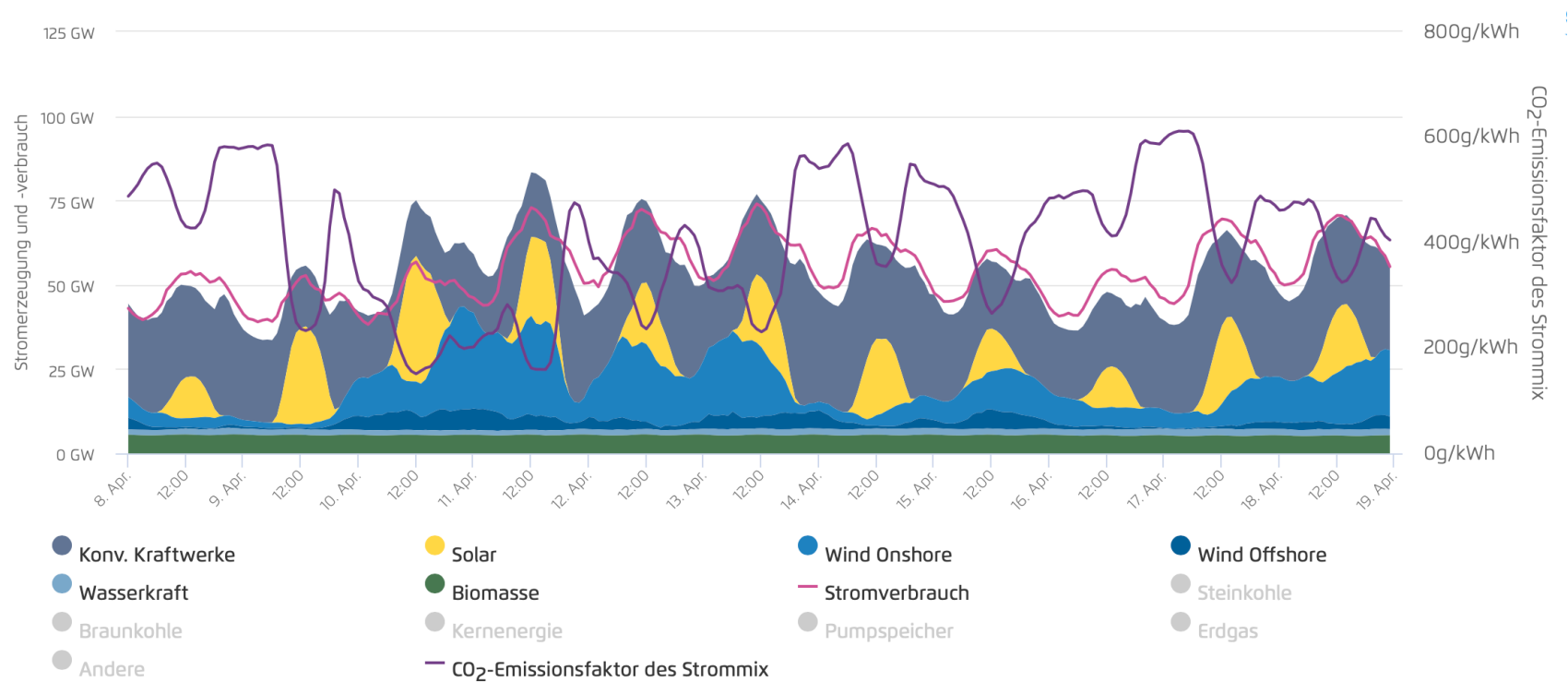
Daten verursachen mehr Treibhausgase als der Flugverkehr

VON JUSTUS BENDER - AKTUALISIERT AM 26.04.2023 - 09:40



Success of renewable power production !

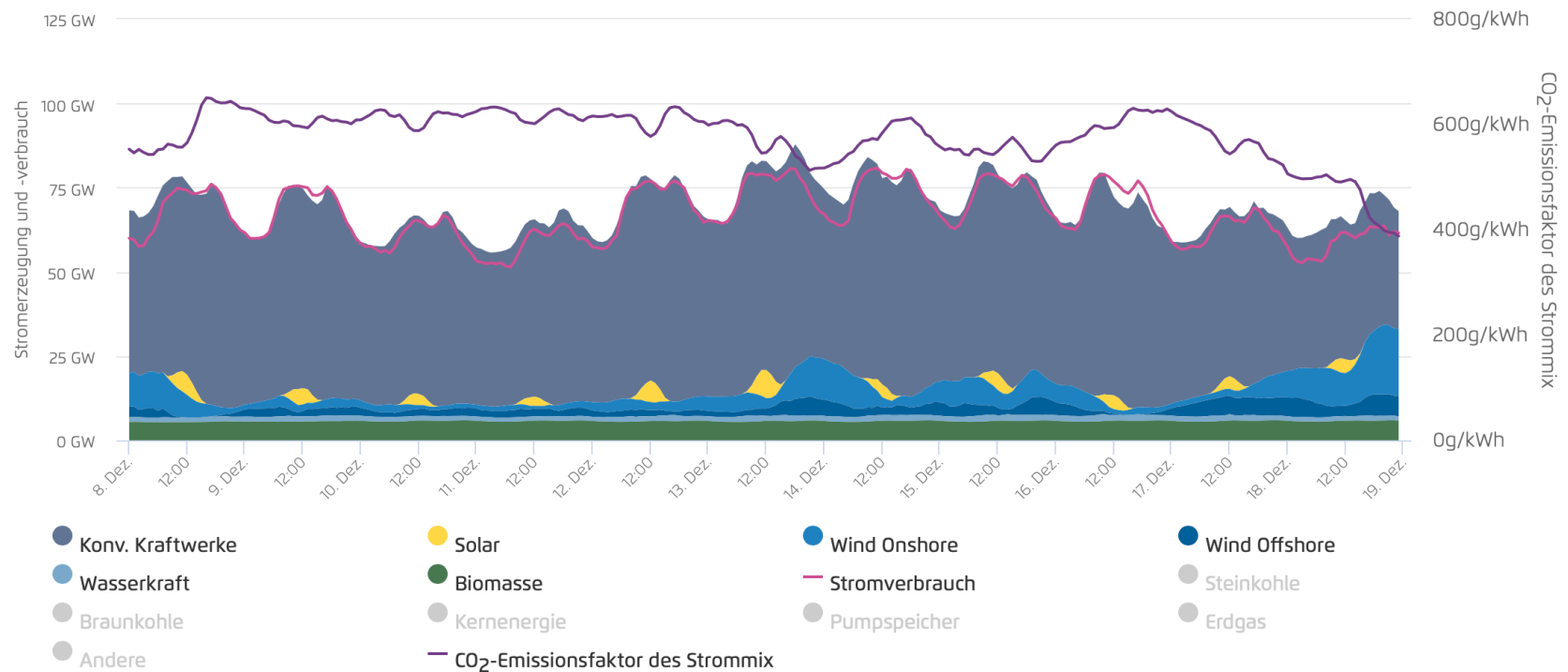
Stromerzeugung und Stromverbrauch



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Success of renewable power production ?

Stromerzeugung und Stromverbrauch



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