

SkyClean: Stiesdal Fuel Technologies

Main results / outcomes

- SkyClean, developed by Stiesdal Fuel Technologies, is a high-impact, carbon-negative technology that combines biofuel production with carbon capture and storage.
- At the core of SkyClean is a pyrolysis process, wherein straw and other organic waste from agriculture and forestry are heated to high temperatures without oxygen, resulting in the conversion of the material into biochar, gas, and oil.
- During pyrolysis, half of the carbon in the material is converted to biochar, a stable material that decomposes slowly. This biochar effectively removes half of the carbon from the atmosphere, providing significant carbon storage.
- The other half of the carbon becomes oil and gas as part of the SkyClean carbon cycle.

Practical recommendations

- Minimizing climate emissions from agriculture requires sequestering carbon in the soil, making it crucial for sustainable practices.
- Calculations indicate that the SkyClean pyrolysis technology can achieve significant reductions in CO₂ greenhouse gas emissions at a socio-economic cost lower than other climate alternatives, providing farmers with a viable means to meet future requirements.
- Dry plant material typically contains around 50% carbon, which plants extract from the atmosphere as CO₂.
- In the SkyClean process, half of the carbon content of biomass is converted to biochar. Once stored in the soil, biochar serves as stable carbon, contributing to carbon sequestration efforts.

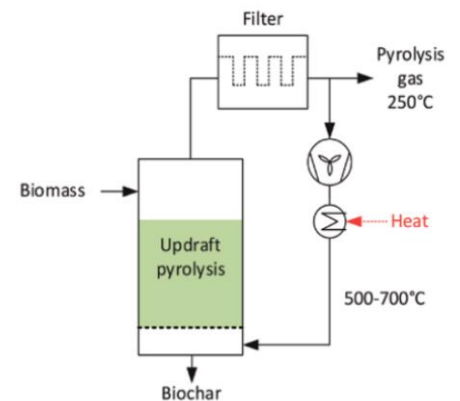


Figure 1: Fully automated 2 MW plant located in GreenLab near Skive, Denmark (Photo, Stiesdal)

Further information

<https://platform.agrofossilfree.eu/en/view/feft/421>

<https://www.stiesdal.com/fuels/skyclean-is-a-game-changing-technology-for-agriculture/>

About this abstract

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AgroFossilFree is a H2020 multi-actor project that will evaluate the current status in EU agriculture regarding energy use and assess existing needs, allowing farmers to optimize agricultural production through more efficient energy use and reduced GHG emissions, resulting in economic, agronomic and environmental benefits. AgroFossilFree will create a framework under which critical stakeholders will cooperate to evaluate and promote the currently available Fossil-Energy-Free Technologies and Strategies (FEFTS) in EU agriculture. The project is running from October 2020 to September 2023.

Website: www.agrofossilfree.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement ID 101000496

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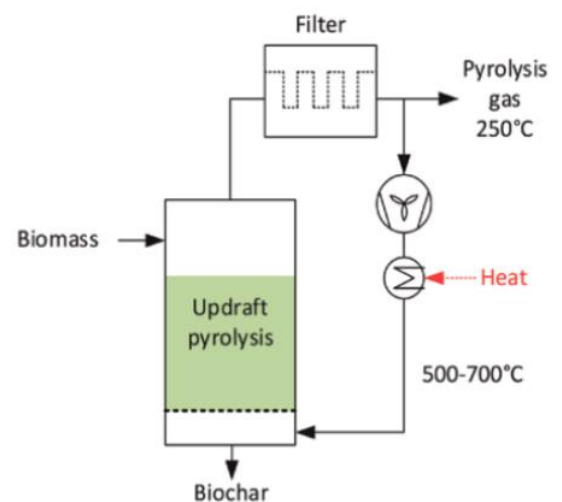
Resultater

SkyClean er en CO₂-negativ teknologi udviklet af firmaet Stiesdal Fuel Technologies. Metoden kombinerer produktion af biobrændstof og kulstofopsamling og -lagring. Kernen i SkyClean er en pyrolyseproces, hvor halm og anden organisk affald fra landbrug og skovbrug omdannes til biokul, gas og olie ved opvarmning til høj temperatur uden tilstedeværelse af ilt. I pyrolyseprocessen omdannes halvdelen af kulstoffet i til biokul, mens den anden halvdel bliver til energi i form af olie og gas. Biokul er et stabilt materiale, der kun nedbrydes meget langsomt, og i SkyCleans kulstofkredsløbet fjernes halvdelen af kulstoffet effektivt fra atmosfæren, hvilket giver en betydelig kulstoflagring.

Praksis og anbefalinger

For at minimere klimaaftrykket fra landbruget er det centralt at binde kulstoffet i jorden. Beregninger viser, at SkyClean-pyrolyseteknologien kan levere en meget stor CO₂-drivhusgasreduktion til en samfundsøkonomisk omkostning, der er lavere end andre klimaalternativer. Metoden kan dermed være et middel for landmændene til at opfylde krav om reduceret klimapåvirkning.

Tørt plantemateriale indeholder typisk cirka 50 % kulstof, som planterne har udvundet fra atmosfæren i form af CO₂. I SkyClean-processen omdannes halvdelen af kulstoffet i biomassen til biokul, og når biokul først er lagret i jorden, er det stabilt og frigives/omsættes kun meget langsomt.



Figur 1: SkyClean 2MW halm pyrolyseanlæg ved GreenLab nord for Skive, Danmark (Foto, Stiesdal)

Yderlig information

<https://platform.agrofossilfree.eu/en/view/feft/421>

<https://www.stiesdal.com/fuels/skyclean-is-a-game-changing-technology-for-agriculture>

Om dette abstrakt

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AgroFossilFree er et EU Horizon 2020 projekt, der skal evaluere den nuværende status i EU's landbrug med hensyn til energiforbrug og vurdere eksisterende behov, således at landmændene får mulighed for at optimere landbrugsproduktionen gennem mere effektiv energianvendelse og reducerede drivhusgasemissioner. Dette vil resultere i økonomiske, agronomiske og miljømæssige fordele. AgroFossilFree vil skabe en ramme, hvorunder centrale interessenter kan samarbejde om at evaluere og fremme de aktuelt tilgængelige fossil-frie energiteknologier og -strategier (FEFTS) indenfor EU's landbrug. Projektet løber fra oktober 2020 til september 2023.

Website: www.agrofossilfree.eu



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