



Biomass torrefaction and cleaning

CENER has developed a technology to produce reliable and competitive solid biofuels from cheap residual biomass (agricultural residues, forest residues, etc.) with high chlorine and potassium contents. The product is focused on the decarbonization of industrial sectors with intensive thermal energy consumption. The technology combines torrefaction of residual biomass with processes seeking to remove unwanted inorganic elements and the use of additives that improve the high temperature behavior of the mineral fraction. The result is a solid biofuel with high calorific value, very high energy density, low energy demand to perform the milling therefore generating a very low particle size distribution, low level of emissions (aerosols) and a high ash melting temperature. Production cost is in the range of 27-30 €/MWh.

Through the integrated combination of different technologies, the following results have been achieved with wheat straw residues:

- Reduction of 67 % of potassium content (based on the energy content of the fuel; that is, in mg/kWh), >95 % in the case of chlorine and 57 % in the case of sulfur.
- Increase in the energy content of the product, in terms of net calorific value of 20 % up to 20 MJ/kg. If the energy density of the product (MWh/m³) is also considered, it increases by 700 % reaching approximately 3.9 MWh/m³ which has a very positive impact on logistics costs.
- The fusibility of the bottom ash from the boiler increases by 300°C until it reaches values above 1,100°C, thus matching the behavior of woody biomass.
- Reductions of 70% in the volatilization of KCl have been obtained.



KEY WORDS

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COUNTRY

Spain

AUTHORS

Maidier Gomez (Circe)

mgomez@circe.es

Daniel García (Avebiom)

Pablo Rodero (Avebiom)

Alicia Mira (Avebiom)

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BRANCHES

BOOSTING RURAL BIOECONOMY NETWORKS FOLLOWING MULTI-ACTOR APPROACHES



Paja de Trigo picada



Astilla de Pino

Coordinator: Johanna Routa - (Luke) johanna.routa@luke.fi

Dissemination: itabia@mclink.it

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ABOUT BRANCHES

BRANCHES is a H2020 "Coordination Support Action" project, that brings together 12 partners from 5 different countries. The overall objective of **BRANCHES** is to foster knowledge transfer and innovation in rural areas (agriculture and forestry), enhancing the viability and competitiveness of biomass supply chains and promoting innovative technologies, rural bioeconomy solutions and sustainable agricultural and forest management.



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THE PARTNERSHIP

