

Announcement

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## **Blackwood and Boonstoppel successfully complete research program involving the use of torrefied biomass in small-scale heating units**

Hoofddorp – Blackwood Technology B.V. (“Blackwood”) and Boonstoppel Engineering B.V. (“Boonstoppel”) announce the successful completion of a research program involving the testing of torrefied biomass in small-scale biomass heating boilers. The research program was sponsored by the Province of Gelderland and sought to investigate the use of torrefied biomass as a substitute for wood chips or regular wood pellets in small-scale de-centralized heating units.

The test program confirmed the benefits of using torrefied biomass in smaller-scale heating applications. The better fuel qualities of torrefied biomass were evidenced by improved combustion behaviour and more stable heat output. The higher energy density of torrefied biomass also means that more energy can be kept in the same storage space.

Maarten Herrebrugh, CEO of Blackwood, commented: “Until now, the most obvious outlet for torrefied biomass was the co-firing market where torrefied wood is replacing fossil coal in large-scale power plants. We are delighted that this test successfully demonstrated how torrefaction can also add value in smaller scale biomass heating systems. This opens up a new market for low-grade biomass which can be upgraded using torrefaction and transformed into a homogeneous, solid bio-fuel with a high energy density. We are grateful to the Province of Gelderland which made this successful research program possible.”

Bas van Breugel, CEO of Boonstoppel added: “We carried out testing of torrefied pellets on a conventional wood pellet stove. Aside from minor adjustments we had to make to the feeding screw of the pellets, we were able to substitute regular wood pellets with torrefied pellets and obtained positive results. The torrefied pellets show a stable and complete combustion, resulting in minimal ash and low emissions. They represent a suitable fuel to be deployed for de-centralized heating.”

Gerard Taat, of the Province of Gelderland, explained the benefits of the research program: “The proof that, thanks to torrefaction, inexpensive local biomass can be used in heating applications instead of imported wood pellets is an important step towards the creation of a cost-effective bio-based economy in Gelderland. Today, the test results confirm the business case for the circular use of local, low-grade woody residues in small-scale boilers. In the future, torrefaction as a pre-treatment technology will further enhance the biomass supply chain by enabling other bio-based applications.”

Blackwood and Boonstoppel are now investigating the possibility of building a small-scale torrefaction unit in the Province of Gelderland to supply the market for small-scale de-centralized biomass heating boilers.

### **Torrefaction of biomass**

Torrefaction is a thermal pre-treatment technology to improve the fuel characteristics of biomass. Torrefied biomass is a carbon neutral and high quality bio-fuel. The higher energy density of torrefied biomass results in a substantial reduction of logistics cost in the biomass supply chain. The improved fuel characteristics of torrefied biomass make it possible to replace fossil coal in large power plants and steel mills while using the existing coal infrastructure. In small-scale heating applications, torrefied biomass leads to more stable operation due to improved burning behaviour.

### **About Blackwood Technology**

Blackwood is a Dutch cleantech company, focusing on the torrefaction of biomass. Blackwood's leading and award-winning torrefaction technology was proven at industrial scale in a demonstration plant in Duiven, the Netherlands. Torrefied pellets produced by Blackwood's technology have been successfully co-fired in large scale European power plants as well as in smaller scale CHPs. Blackwood is using a licensing model to roll-out its technology worldwide. As part of this strategy, Blackwood has signed a licensing agreement with South African utility Eskom for the construction of torrefaction plants in the SADC region. Blackwood is the successor of Topell Energy B.V., and as such has taken over Topell Energy's role in this research program.

### **About Boonstoppel Engineering**

Boonstoppel Engineering has 20 years of experience with the design, engineering, coordination, and project management of heating, cooling and ventilation systems. The company specializes in renewable energy technologies and sustainable solutions.

Boonstoppel Engineering's customers include housing unions, nursing homes, project developers, property management associations and municipalities.

### **About the Province of Gelderland**

Gelderland is a province of the Netherlands, located in the central eastern part of the country. With a land area of nearly 5,000 km<sup>2</sup>, it is the largest province of the Netherlands and shares borders with six other provinces and with Germany. The local government of the province of Gelderland actively supports the transition to a bio-based economy.