

CASE STUDY

Replacing fossil LPG with renewable biosyngas in tissue production

Decarbonizing one of tissue production's most demanding processes

Tissue production requires substantial and reliable process heat, particularly for paper drying. As mills seek to reduce their reliance on fossil fuels, replacing LPG with renewable energy is an important step towards more sustainable manufacturing. The challenge is to cut emissions while maintaining production efficiency, product quality and operational reliability.

Sofidel's tissue mill in Kisa, Sweden, is a pioneering example of how biosyngas can be integrated into an existing tissue production process. Using Meva Energy's biomass gasification technology, the mill began replacing fossil LPG with renewable biosyngas for tissue drying, demonstrating a practical pathway towards lower-carbon tissue production.

The gasification plant, designed and operated by Meva Energy, has a capacity of 4.5 MW,
enough to supply the thermal energy required for the mill's drying section.

Being the first using biosyngas for tissue drying

Like many tissue and paper mills, the Kisa mill used fossil LPG to generate process heat for tissue drying. However, biosyngas is not a direct substitute for LPG due to its different composition and lower calorific value. The challenge was to introduce this new fuel without compromising production reliability, tissue quality or performance.

In collaboration with ANDRITZ, the existing burner system was adapted with a multifuel burner designed to accommodate both biosyngas and LPG. This enabled the mill to use renewable biosyngas for tissue drying while retaining the flexibility to switch between fuels when required.



Biosyngas is a renewable gas consisting of carbon monoxide (CO), hydrogen (H_2) and minimal methane.

The project at a glance

Site: Sofidel Kisa, Sweden

Application: Renewable gas for tissue drying hoods

Gas production: 4,5 MW

Biochar output: 400 ton/year

Feedstock: Locally generated wood pellets made from sawdust

CO2 reduction potential: 10.600 tonnes CO2/year (including biochar sequestration)

Commissioned: 2023

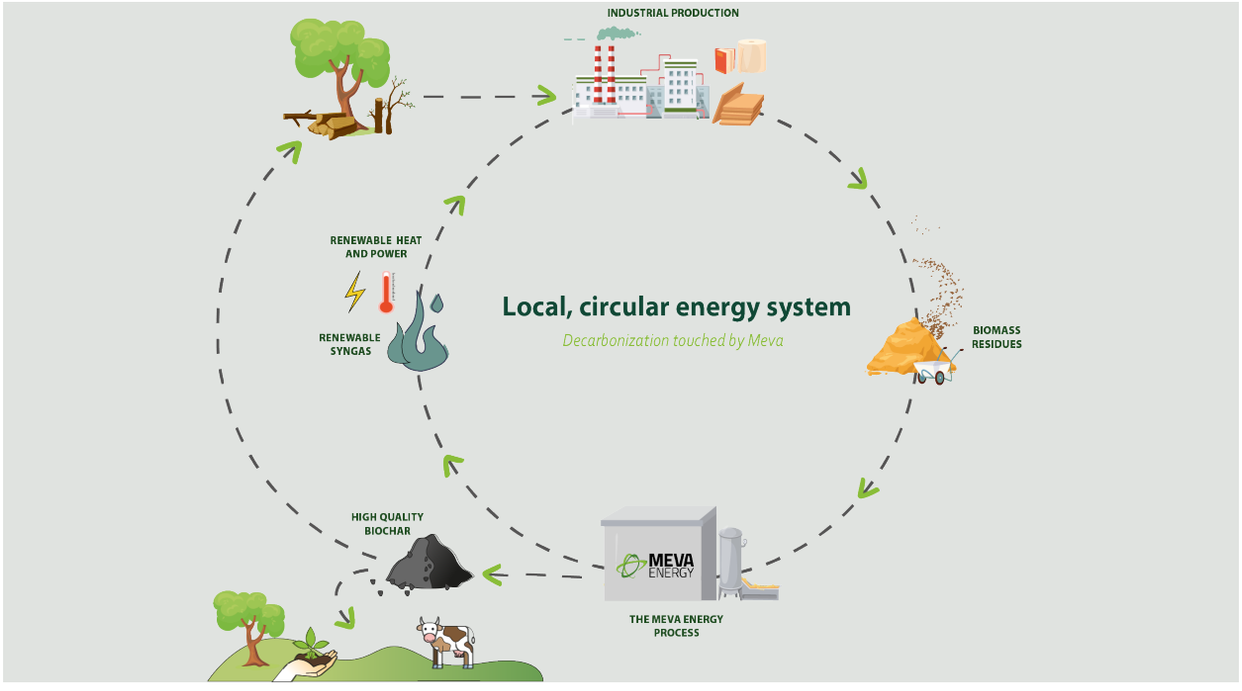
Renewable gas production directly at the mill

The philosophy of the Kisa mill is to produce gas on-site, using with locally generated biogenic waste streams as fuel. By eliminating the need for extensive upgrading of the gas to meet standardized quality parameters, as well as avoiding long-distance transportation of fuels, the system minimizes unnecessary energy losses and reduces overall costs.

In addition to generating renewable biosyngas, the gasification process produces biochar as a byproduct, which contributes to the circular energy system. The biochar not only provides a means of carbon sequestration, helping to offset emissions, but also creates opportunities for agricultural applications by enhancing soil quality. These combined factors enable a local, circular energy system and independence from fluctuating global gas prices.

Renewable gas production directly at the mill enables carbon negative tissue production and independence from fluctuating global fossil gas prices.

Furthermore, the gasification system in Kisa reduces the mill's dependence on external energy suppliers, enabling the facility to be more energy self-sufficient. This, in turn, offers Sofidel greater operational stability and cost predictability in the long term.



Meva Energy aims to create circular energy systems based on the use of locally produced biomass waste to produce renewable gas at the production site.



Biochar is produced as a co-product.

Climate Performance

8,500 *tonnes CO_2/year*

Estimated reduction compared to fossil LPG

10,000 *tonnes CO_2/year*

New climate impact including biochar sequestration

Download our Life Cycle Assessment (1) A-potential-negative-emissions-technology-LCA-results.pdf (mevaenergy.com)

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Performance data and impact figures are based on specific assumptions and operating conditions. Actual results may vary.

Read more about the project at www.mevaenergy/Kisa-plant