# A. Obenhauf GmbH & Company Manufacturing Plant

The dense forests of Germany's enchanting Harz Mountains have been a stunning backdrop for countless captivating stories – from the classic fairytale Snow White to the real-life chronicle of 135-year-old manufacturer A. Obenhauf GmbH & Company.

Established as a cardboard manufacturing plant in Bad Harzburg in the 19th Century, Obenhauf has methodically adapted its factory over the decades to keep pace with the times. Originally, trees from the nearby forest were used to create pulp. Today, recycled waste paper is the base of its pulp, paper, and board manufacturing processes, which are powered by four Capstone C65 MicroTurbines®.

When the time came to replace its conventional burner, Obenhauf researched a myriad of options to power its production lines. A power source that could sustain high temperatures throughout the extensive drying process was a must. "We looked at other products, but they did not deliver the high temperatures needed," said Tobias Neidhardt, CEO of A. Obenhauf GmbH & Company. "We searched a long time, but other systems – like gas motors – had the heating energy on the wrong temperature value for us. Because we need consistently high temperatures for our drying systems, we chose the Capstone microturbines."

Installed in a combined heat and power (CHP) application, the four natural gas C65 microturbines supply 600kW of thermal power for the drying process and 250kW of electricity to the cardboard manufacturing plant.

As the reclaimed waste paper is processed it is made into pulp, formed into sheets, and dried. The method requires enormous

## At a glance

**Location**

Bad Harzburg, Germany

**Commissioned**

April 2011

**Fuel**

Natural Gas

**Technologies**

- Four C65 Capstone microturbines.

**Customer**

- A 135-year-old cardboard mill in Germany utilizing recycled waste paper for its paper and board manufacturing processes.

**Results**

- Four Capstone C65 microturbines installed in a CHP application supply 600kW of thermal power to the plant's drying system and 250kW of electricity for the production line.
- Exhaust system can be used to heat the facility when the production line is idle.
- The C65's ability to sustain high temperatures meets the drying system's demanding performance requirements.
- Ultra-low emissions from the microturbines help the plant meet Germany's strict emission requirements as well as the company's commitment to preserve the environment.
- Flexibility of the C65 provides the plant the ability to use the microturbines where they are needed most, and can be alternated between the two production lines and heat exchanger.

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energy consumption. Obenhauf executives selected the Capstone microturbines for their reliability in providing uninterrupted power and waste heat throughout the process because consistent drying temperatures lead to a strong, high-quality end product.

During the drying process, the water-laden paper web (more than half its weight is water), passes over rotating cast iron cylinders heated by the microturbines' thermal energy. Most of the remaining water is removed through evaporation.

"The drying process consists of a big oven circulation system where we blow hot air on the cardboard to get the water out of the cardboard," Neidhardt said. "The oven is directly heated with gas burners in the regulation system."

"We take the exhaust of the gas turbines direct to the drying systems and produce a part of the heating energy with the microturbines," Neidhardt added.

In a country that today boasts the European Union's highest waste collection rates (80 percent for paper and cardboard), Obenhauf has found a way to honor Germany's growing commitment to the environment with ultra-low emission Capstone microturbines.

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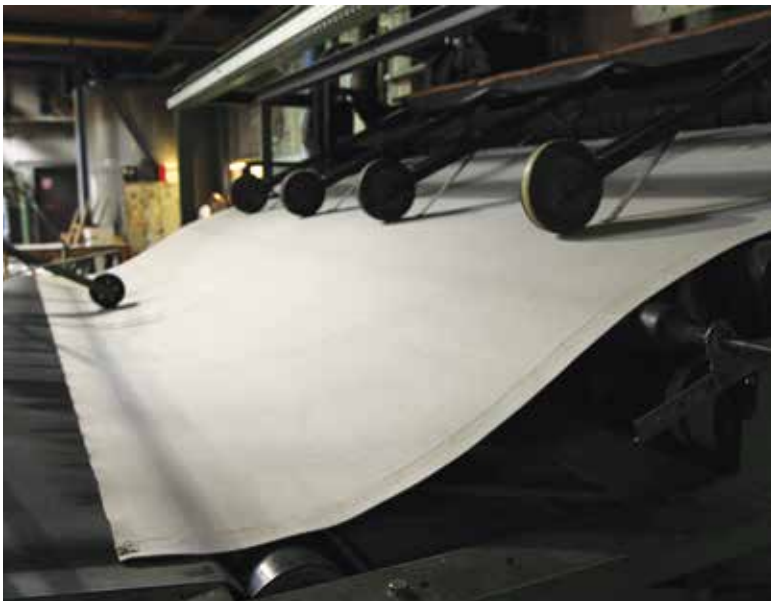
*— Tobias Neidhardt, CEO*
*A. Obenhauf GmbH & Company*

"The clean exhaust of the microturbines and the temperature level of the drying unit is extraordinarily suitable for drying purposes," said Sven Fransen, Capstone's Director of Business Development - Marine and LNG. "The electricity came as a bonus, and they use that in their process in the factory."

"We can change between two production lines and heat exchangers so that we can be flexible where we use the gas turbines," Neidhardt added. "We can heat the whole factory with the gas turbines if the production line is not running."

*Four Capstone C65 microturbines installed in a CHP application supply thermal power and electricity to the cardboard manufacturing plant.*

"The installation of the Capstone microturbines shows the high efficiency of the microturbine technology for the drying process," said Capstone's Fransen.

The C65 delivers reliable electrical/thermal generation from natural gas with ultra-low emissions. With only one moving part, maintenance and downtime are minimal.

Visitors to the A. Obenhauf GmbH & Company factory are greeted by a sign that reads "more than cardboard." With its ability to evolve with the times, innovate its business, and be a trailblazer for the country's deep commitment to preserve the environment, the Obenhauf story truly stands out. ■

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