WHEN THE PRESSURE IS ON

A logistical challenge and pioneering technology: the Waste-to-Energy plant at Aschaffenburg is a success story drawing on a wide range of ANDRITZ competencies, including the flexibility to manage a very compact site.

When DS Smith and E.ON partnered on a Waste-to-Energy plant at DS Smith's Aschaffenburg mill near Frankfurt in Germany, they were looking for optimum performance while minimizing the environmental impact. The board mill required an increase in sustainable energy output but without a corresponding increase in emissions. And crucially, the site in question is very compact, with minimal laydown area. This called for a solution that would deliver optimum results while accommodating these challenging site conditions.

In January 2022, E.ON chose ANDRITZ's high-efficiency EcoFluid boiler technology. E.ON required a full-service partner - reliable, efficient, and able to bring innovative solutions to the table. This is how ANDRITZ came into play: references worldwide, able to handle all site-specific challenges, and with state-of-the-art technology to enable efficient sustainable board production.

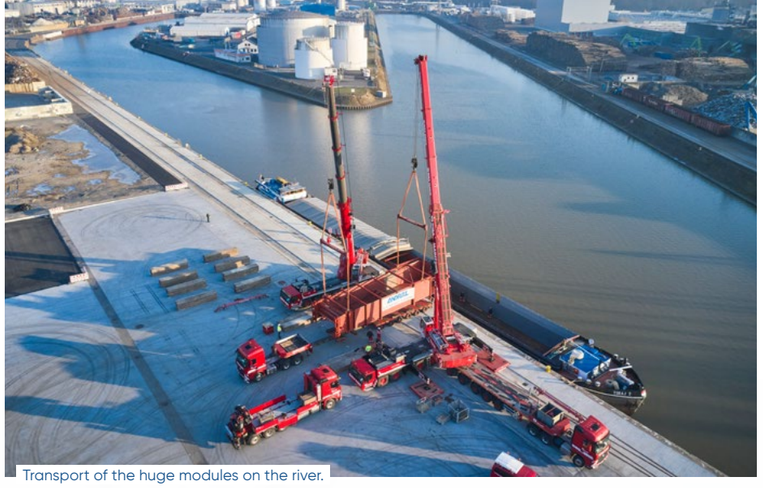
In its exceptionally-broad scope of supply, ANDRITZ has provided solutions throughout the project, from engineering and erection to commissioning and including, notably, both the flue gas cleaning and combustion elements. The pressure parts were manufactured at ANDRITZ TermoEnergetskaPostrojenja (ATEP), a boiler expert company that joined the Group in 2023.

BALANCING PRIORITIES IN LOGISTICS

The logistical challenge of delivering the components from the workshop of ATEP in Slavonski Brod, Croatia to the brownfield site at Aschaffenburg, Germany in January 2024 was significant. The boiler modules are huge, and while one option was to minimize the module sizes, ANDRITZ concluded that, with the restricted laydown site and the need to avoid extended lifting sequences and large crane areas, it was preferable to deliver larger modules directly to their final location.

ANDRITZ Project Manager Power Boilers, Wolfgang Pichler, explains, "Our adept handling of heavy, large modules required careful planning and execution, navigating challenging transport

The boiler installation began in January 2024 with commissioning due to take place starting in September 2024 and handover scheduled for March 2025.



Transport of the huge modules on the river.

"For this installation, we have pioneered a two-stage dry sorption system based on sodium bicarbonate with two reduction steps."

Thomas Strasser
Director of Sales Power Boilers, ANDRITZ

conditions, a very compact site, and using all of our considerable experience in this area of operations. Leveraging our expertise in pressure-part manufacturing and erection, we maximized module size while ensuring safe and efficient transport. Upon arrival, our pre-assembled concept facilitated fast installation, optimizing both erection time and quality. We have a large proportion of production facilities for pressure parts in Europe so we keep control of the quality."

The boiler installation began in January 2024 with commissioning due to take place starting in September 2024 and handover scheduled for March 2025. In addition to the 30 MW (thermal power) bubbling fluidized bed boiler, ANDRITZ has supplied all supporting equipment and a flue gas cleaning plant with two bag filters, including steel structure, and a Selective Catalytic Reduction (SCR) system including all components and auxiliary systems, and automation, too.

The boiler will burn refuse-derived fuel (RDF), in addition to light rejects, paper sludge, and sludge from the sewage treatment plant at the Aschaffenburg site. Once fully operational, the plant will reduce dependency on natural gas by 25% – enough to heat a town of 85,000 inhabitants - and save 50,000 tonnes of CO_2 annually in the process.

The new tailor-made ANDRITZ plant will secure the best possible utilization of residues at state-of-the-art thermal efficiency. The steam flow generated will be up to 36 tons/hour at a temperature of 420°C and 40 bar pressure.

TECHNOLOGICAL ADVANTAGES

ANDRITZ technology brings a number of advantages. ANDRITZ Sales Director Power Boilers Thomas Strasser says, "The combustion system is very flexible in terms of dealing with contaminants, including corrosive fuel. It can handle fuel with calorific values from as low as 6.4 MJ/kg up to 14.2 MJ/kg, which means the plant is flexible and fit for future demands for changes in fuel composition. It will also contribute to the lowest possible environmental impact with flue gas values that correspond to the benchmarked best available technology (BAT) in Germany."

The flue gas cleaning system is one particularly innovative feature in its combination with the ANDRITZ BFB boiler. Strasser continues,"While common practice is to use hydrated-lime, we chose a different path. For this installation, we have pioneered a two-stage dry sorption system based on sodium bicarbonate with two reduction steps. The fact that we don't have to continuously add water avoids loss of latent heat, which saves energy as well as lowering emissions. In addition, we can run the dry sorption at a higher temperature, avoiding reheating of the fluegas that would result in loss of efficiency. In short, we can produce more steam from a given energy input and reduce the need for fossil fuel."

ANDRITZ's proven project execution capability, vision for the challenging site conditions, professionalism, and exceptionally-broad technology portfolio were certainly defining factors in its selection by E.ON as partner for this project, and for the success of the project's implementation.

"At ANDRITZ we have great confidence in the effectiveness and quality of our value chain," concludes Strasser, "and the deep collaboration drawing on such a wide range of ANDRITZ competencies at Aschaffenburg is the perfect example of ONE ANDRITZ in action."

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Project Manager Power Boilers, ANDRITZ