



Utilizing waste materials safely and cleanly

Turnkey SAACKE plant increases energy efficiency and economy

Saving energy and transport costs and conserving fossil raw materials while increasing capacity and efficiency in production – ANGUS Chemie GmbH, a company working in the field of specialty chemicals, asked SAACKE to be its plant engineer to satisfy these requirements. The result after nearly two years of construction: a new plant that is based on the principle of recycling waste chemical production material for energy recovery. Instead of using large quantities of natural gas to generate process steam, as has been the case until now, by-products that have been previously unused are utilized in the more efficient residue incineration method – before that a complicated process had to be employed to remove this waste. The material flows of the plant are variable and fluctuate strongly in terms of quantity, heat value and composition – from potentially explosive vent gases to liquid residues.

Turnkey solution from a single source

Collaboration between ANGUS and SAACKE dates back to the 1970s, but so far, it was limited to the development and delivery of individual combustion components. In this project, however, the customer wanted the plant to be built by a general contractor that provides a turnkey solution, from engineering to commissioning. An area of competence where SAACKE has many years of experience and is capable of taking on comprehensive project management from a single source.



“The plant significantly increases our competitiveness due to the closed production cycle. They met all our requirements and stayed on budget.”

Martin Oelgeklaus, Project Manager, ANGUS Chemie GmbH

ANGUS Chemie GmbH

Combustion plant for recovering residual materials

STAN (Steamboiler Thermal Treatment Unit ANGus)

Construction as general contractor

Task

Construction of an efficient combustion plant based on the recycling of waste chemical production material for energy recovery in compliance with the emission limits. Project implementation as general contractor.

Solution

Plant design and construction based on optimized two-stage combustion for reduced demand for natural gas and with the involvement of an innovative boiler cleaning system, including complete project management.

The SAACKE solution in detail

The 11-megawatt plant includes a fully automatic and commercially available control system, valve and pump stations, two combustion chambers, a two-pass large-volume water boiler, an exhaust gas filter system and a 30-meter high stack. However, the heart of the system is a rotating flame burner of type SSB-GL 100. The combustion air enters it tangentially before mixing with waste materials and recirculated air. Natural gas is required only as a support and start-up fuel. Another core element of the SAACKE design is the two-stage combustion, with a special focus on the primary combustion chamber: here, the NO_x that is caused by nitrogenous residues is reduced during sub-stoichiometric combustion. The double-shell cooling of the combustion chambers, developed by SAACKE, also ensures increased efficiency. A further benefit for the client: ANGUS previously had to shut down both burners every six weeks and clean the boilers. The plant could then only be started up by consuming a great deal of energy and after a downtime of three days. This now takes place automatically during operation using a finely adjusted air-pressure gun.

Conclusion

SAACKE is known worldwide for very-high-quality combustion solutions. The integration of these individual components into an overall system, as well as the development and completion of entire new systems as a general contractor, are also core competences. This is proven by the reliable commissioning before the deadline, the compliance with the budget and the high level of customer satisfaction only a few weeks after the start of production.

Technical data: STAN

Plant capacity / burner	11 MW / SSB-GL 100
Fuels	Liquids with a low heat value, vent gases, natural gas
Emissions	< 100 mg/m ³ (for optimum conditions, even 40 - 50 mg/m ³ without SNCR/SCR)
Boiler	12,5 t/h capacity, 14 bar pressure, 1,350 °C combustion temperature

All benefits at a glance

- ✔ Intelligent planning and plant architecture, as well as engineering and project management from a single source
- ✔ Natural gas savings of up to 85 % in steam generation and NO_x levels far below legal regulations due to two-stage combustion (without SNCR/SCR)
- ✔ Efficient residue incineration for a virtually closed production cycle minimizes waste transport costs
- ✔ Flexibility with regard to the fuels and quantities (both vent gases as well as liquid waste material)
- ✔ High plant availability of 98 % and a short ROI period due to low support fuel requirement
- ✔ Innovative, fully-automatic boiler cleaning system during operation
- ✔ Reliable commissioning ahead of schedule
- ✔ Customer support even after the completion of the project (training, control migration and maintenance)
- ✔ Service life of the plant: at least 25 years, non-stop operation, maintenance once per year



Behind the flaps: 290 boiler pipes that are cleaned fully automatically at 7-8 bar using an air-pressure gun.



Simultaneously fires liquids, vent gases, natural gas and other residues – the SSB-GL 100.

