LIFE EXTENSION WITH NEW FUEL PREP AND COMBUSTION LINES

The modernization of the Västhamnsverket biomass-fired combined heat and power (CHP) plant in Helsingborg, Sweden, marks a significant milestone in sustainable energy production. Through the collaboration between Öresundskraft, Mitsubishi Power Europe, and Tietjen Verfahrenstechnik GmbH, the plant's lifespan has been extended by an additional 20 years, while its operational efficiency has been significantly improved.

Originally commissioned in 1982, the Västhamnsverket plant has a total capacity of 210 MW and uses wood pellets as fuel. The pellets are ground on site into a wood powder that is used in powder burners. As part of this modernization project, Mitsubishi Power Europe was responsible for an overhaul of the entire combustion system which included the delivery of a new pellet grinding mills, DST burners for wood powder, intermediate storage silos for wood powder, and new conveying systems.

Tietjen pellet preparation system

Mitsubishi Power Europe selected Tietjen for the planning, delivery, installation, and commissioning of the fuel preparation system. The Tietjen delivery included pellet storage, grinding modules with the GDL 25 hammer mill, the air-gravity separator AGS as a feeder for the hammer mill and pneumatic transport and total separators, central distribution to buffer silos, dosing to twelve powder burners, spark detection and suppression as part of a constructive explosion protection concept (ATEX), and required steel structures.

– Tietjen was our partner for the entire scope of fuel preparation, including the grinding system, storage, and dosing. We experience Tietjen as a reliable and highly professional partner with excellent technical expertise and outstanding communication – great people with quick response times in every situation. A great partner, commented Henning von Krosigk, Project Manager at Mitsubishi Power Europe.

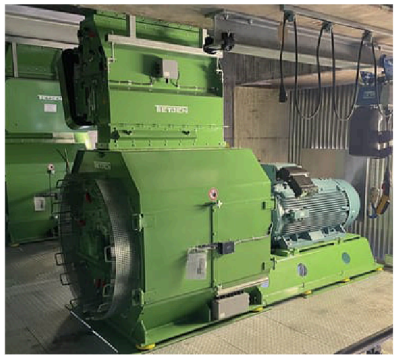
Three independent modules

The fuel preparation system consists of three independent grinding modules, with one module always on standby. These modules grind the wood pellets into a powder of a defined particle size. The powder is then transferred to a central trough chain conveyor, which distributes it to the buffer silos in front of the burners. These silos ensure continuous burner operation, even during interruptions in pellet supply.

Adjustable particle size

The particle size can be adjusted according to the plant's load requirements by selecting different screens. In low-load operation, a finer screen is used to minimize the particle size of the wood dust, thereby reducing the residue of unburned material in the ash. The choice of the GDL mill with quick screen change ensures a high level of flexibility during load changes without compromising efficiency or reducing the overall performance of the plant.

Another feature is the system's design concept itself. The independence of fuel preparation from combustion ensures maximum availability. The failure or maintenance of a single grinding line does not result in the shutdown of the entire burner system.



The Tietjen GDL 25 hammermill is at the core of the fuel preparation line (photo Tietjen).

The explosion protection concept, which includes spark detection and suppression, significantly enhances operational safety. It actively protects against potential explosions and ensures continuous plant availability by preventing fires within the fuel preparation system.

– We all at Öresundskraft appreciate Tietjen's way of working. They are reliable and do their job in a good way. We have had very good experiences with Tietjen; they have always done their best to find solutions and complete the project, remarked Alf-Erik Ragnarsson, Project Manager at Öresundskraft.

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