Heat Management

Södra Cell Värö

Application: Black Liquor Recovery Boiler
Efficiency solution: High Impact Sootblowing System (HISS™)
Cleaning area: Superheater (SH), boiler bank (BB), economizer (ECO), and flue gas cooler (FGC)

General info

Plant: NBSK pulp mill
Boiler: Andritz
Fuel: Black liquor
Capacity: 4 950 ton DS/day (4200 ton DS/day design)
Floor: 160 m^2

Installation

Type: HISS™ Advanced
No of sootblowers: 108
Year of installation: 2021

Situation description

In 2020 Södra Cell Värö initiated the Expansion 2.0 project, to increase production from 710 000 ADMT/year of NBSK pulp to 780 000 ADMT/year. The identified bottleneck was the recovery boiler. HISS™ was installed to increase the online cleaning capacity and to maintain high availability at the continuous load of 4 800 tDS/day without rebuilding the boiler. The boiler design load is 4 200 tDS/day.



Figure 1. Recovery Boiler

"We entered into a sustainability partnership with Heat Management to reduce our production costs and increase the generation of renewable power from our pulp mill. The investment in HISS™, allowed us to safely explore the process limits and take it beyond technical specifications, to reach our production goal of 850 000 ton/year. The recovery boiler is now operating on a 12% higher liquor throughput compared to before. The investment was in line with Södra sustainability and decarbonization goals." – **Anders Wiman, Power and Recovery Manager, SCV**

Wave Impact Heat Management AB
E-mail: info@heatmanage.com
Phone: +46 8-661 33 10

Results

HISS was seemlessly integrated in the mill's DCS system 2021, controlling 108 sootblowers, and generated the following results:

- 12,2% (+522 tDS/day) boiler load increase (4 808 tDS/day) compared to the previous season (4 286 tDS/day) (see Figure 2).
- Increased furnace load from 26,8 tDS/day/m^2 to 30,1 tDS/day/m^2.
- 9% increased mill production output (850 000 ton/year), the goal was 780 000 ton/year.
- 13,9% average steam production increased (22,2 kg/s), (see Figure 2).
- Production records were reached and the mill is now one month ahead of the production schedule.
- With higher production comes more output of renewable power to the grid. This effectively offsets power generation from fossil power stations.
- Leading to 20 MWe locally generated and sustainable power for the Swedish SE3 region, **reducing emissions by 21 000 ton CO2eq annually.**
- **Update May 2024:**
- Värö is now the **worlds' highest loaded** recovery boiler, operating for 12 months campaigns at 4 950 tDS/day (as fired) and a furnace of 160 m^2, meaning **31 tDS/day/m^2.**

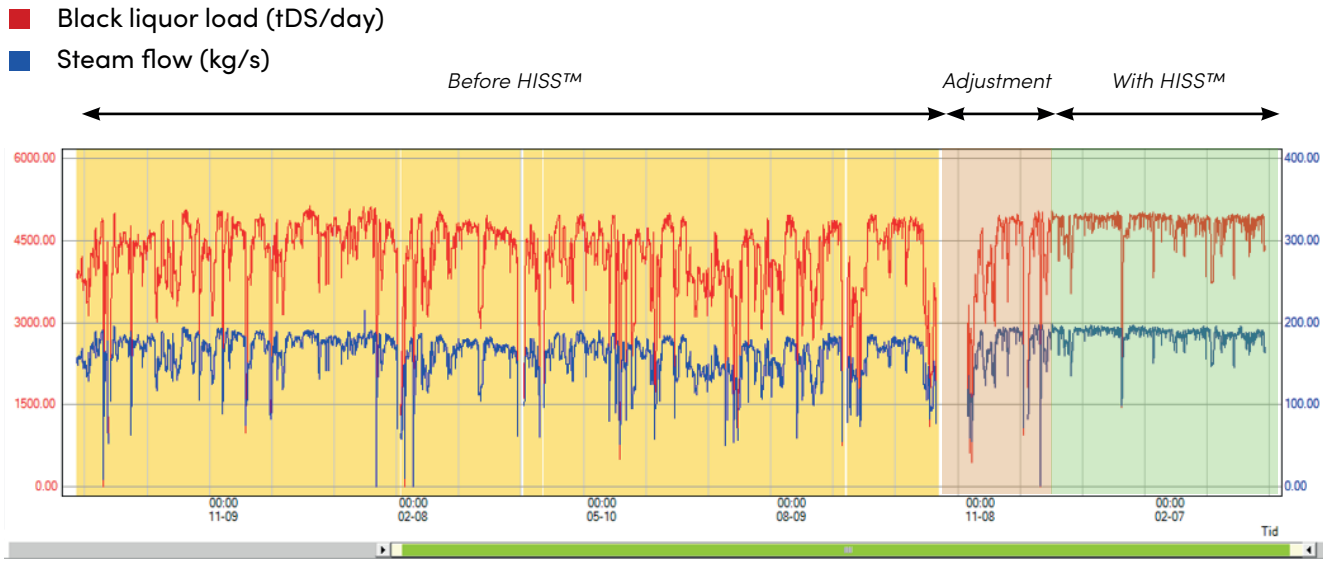


Figure 2. Trends before and after the HISS™ installation

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