Heat Management

Hungarian mill

Application: CFB boiler
Efficiency solution: HISS®
Cleaning area: Superheater, economizer and air preheater

General info

Mill: Paper mill
Boiler: Valmet CFB Boiler (2016)
Fuel: Containerboard rejects and sludge (60 %), wood chips (40 %)
Capacity: 158 MW

Installation

Type: HISS® Advanced
Year of installation: 2024

Situation description

In 2024, Heat Management partnered with a Hungarian paper mill to support the optimization of their boiler operation. The fuel mix contributes to a high risk of fouling and slagging, particularly in the second pass of the boiler, which can compromise heat transfer efficiency and increase the need for sootblowing.

The customer's primary objective was to **reduce the amount of steam used per sootblower activation**, thereby improving overall energy efficiency. At the same time, they aimed to **increase the sootblowing frequency specifically in the second pass**, where ash buildup was limiting performance.

A key constraint in this effort was to **avoid accelerating tube erosion**, which can occur with excessive or poorly controlled sootblowing.

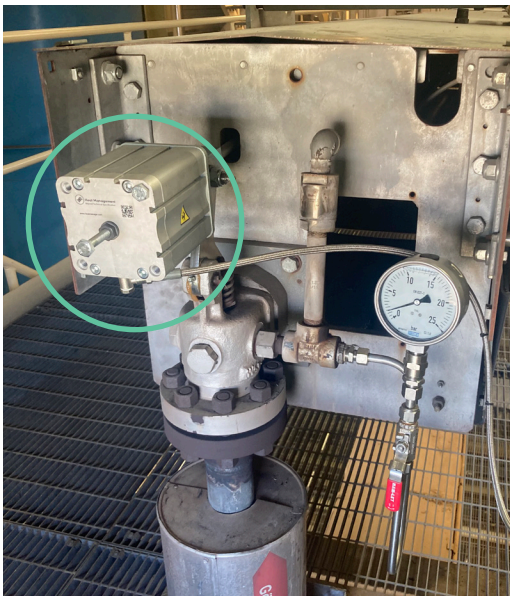


Figure 1. HISS actuator mounted on poppet valve.

To address these requirements, the High Impact Sootblowing System (HISS®) from Heat Management was implemented. This solution allowed for more effective sootblowing with significantly reduced steam consumption, while maintaining the mechanical integrity of the boiler tubes. The deployment of HISS® marked a strategic step toward improving cleaning efficiency, extending equipment lifetime, and supporting more stable and cost-effective boiler operation.

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Results

- **Sootblowing frequency was increased** from 4 to 6 times per day.
- **Average steam consumption per hour reduced** from 1.3 t/h to 1 t/h, 23 % decrease.
- **Flue gas outlet temperature has decreased** from 157 C° to 152 C°.
- **0.3 % increased boiler efficiency**, due to decreased outlet temperature.
- **Fan load when using HISS® is 5 % lower at the same boiler load**, indicating cleaner heat exchangers.

"The investment in Heat Management's HISS® sootblowing solution has helped us improve boiler cleaning while reducing boiler wear per sootblowing cycle. When we opened the boiler during the outage we were happy to see that there was much less fouling than previous seasons. The ease of installation and short payback time made this investment a no-brainer."

- Customer's Head of Technology, June 2025.

Following the implementation of HISS®, the sootblowing frequency was increased from 4 to 6 times per day in order to keep the boiler as clean as possible. Despite the increased frequency, the average steam consumption for sootblowing was reduced from approximately 1.3 to 1.0 tons per hour. There may be potential to lower steam consumption even further by reducing sootblowing in the economizer (ECO), but the customer's primary focus is to maintain maximum cleanliness. As a result, they are currently sootblowing more in that area, even though data indicates that cleanliness in the ECO section is already very good.

Below Figure 2 shows the 23 % decrease in sootblowing steam consumption.

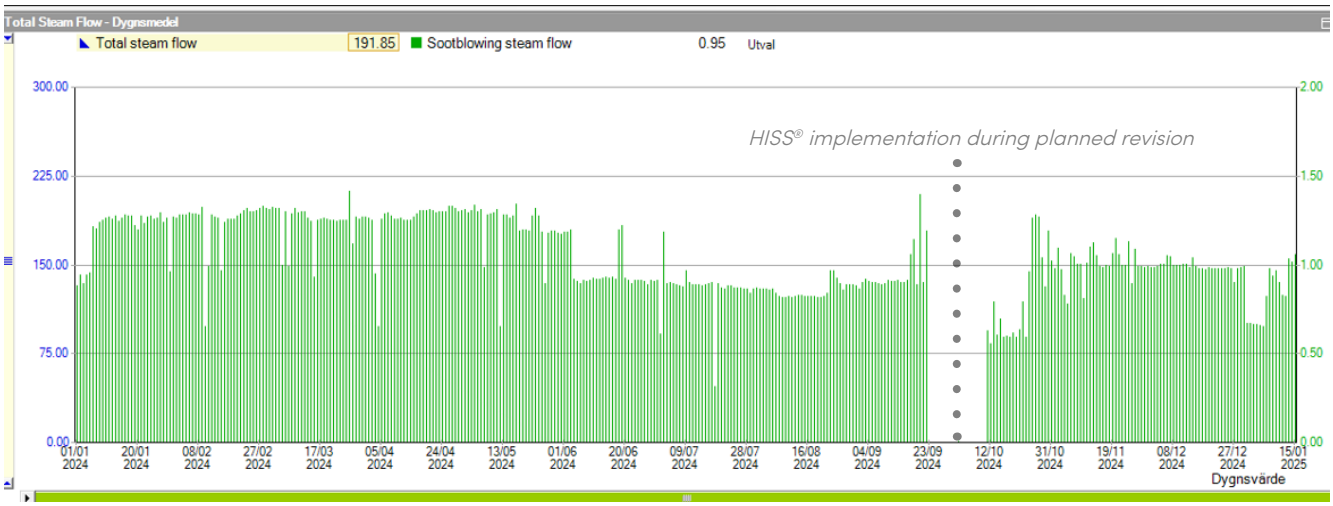


Figure 2. Sootblowing steam flow (t/h), from 2024-01-01 to 2025-01-15.

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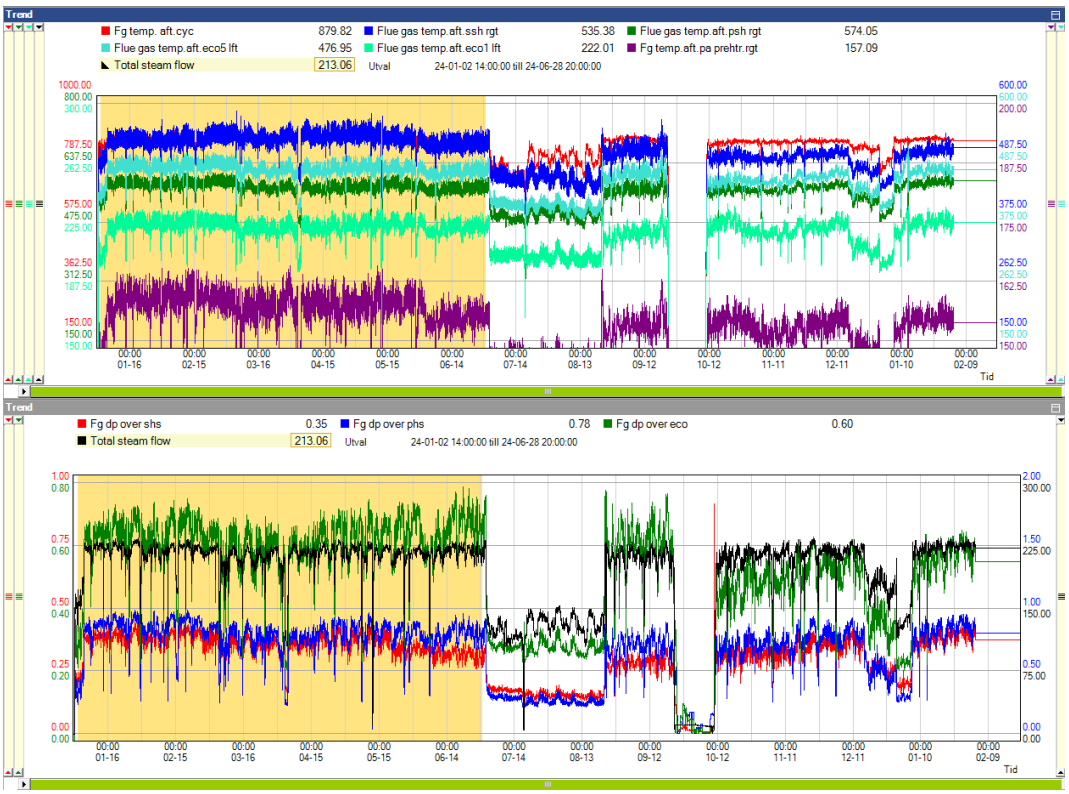


Figure 3. Flue gas temperature and differential pressure before HISS®, yellow area.

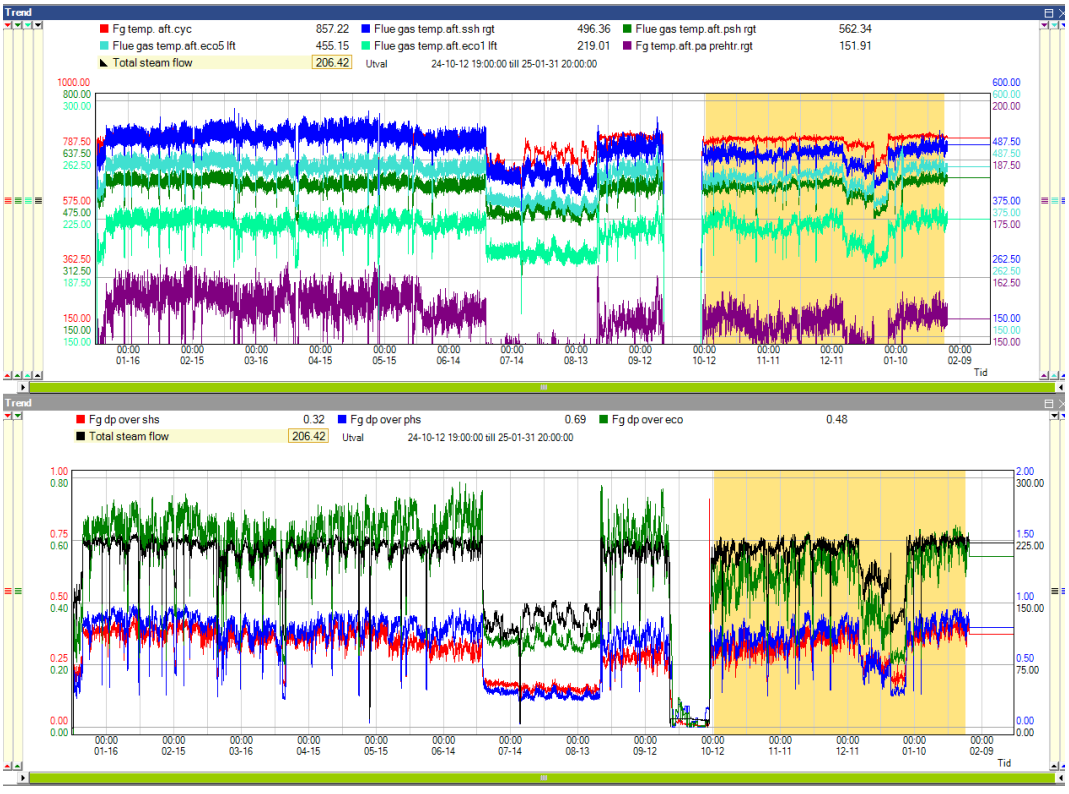


Figure 4. Flue gas temperature and differential pressure after HISS®, yellow area.

Above Figures 3 and 4 show that with the HISS® system, there is a lower differential pressure across the heat exchangers and also a lower flue gas outlet temperature. Boiler efficiency has increased by approximately 0.3%, as the flue gas outlet temperature has decreased from 157 °C to 152 °C.

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