



Halmstad Energi & Miljö

Halmstad, Sweden

Aerovit SC-Jet at Halmstad Energi & Miljö helps saving money and increase boiler efficiency.

The Challenge

Keeping the heat exchange surfaces in the boiler clean is crucial for producing steam and hot water at a co-generation plant like Kristineheds. To ensure efficient heat transfer, a water shower cleaning system was installed in the empty passes 2 and 3 back in 2006.

After some years, soot deposits began to build up more frequently, which required an increase in the number of soot cleanings to as much as three times per day, yet only a minor decrease in flue gas temperature was achieved.

The maintenance team then sought a solution and discovered the rotating SC-Jet nozzle head. They began by testing the nozzle head attached to the existing water shower cleaning system and immediately experienced a significant cleaning effect along with a clear decrease in flue gas temperature.



€21.000
Annual savings



86%
Reduced water



65°C
Flue gas
temperature
reduction



SOLUTION

In 2021, the Kristineheds co-generation plant decided to implement the fully automatic Aerovit SC-Jet system in passes 1 and 2 and a semiautomatic Aerovit SC-Jet system in empty pass 3, which yielded great results.

The frequency of soot cleaning in the empty passes decreased from 3 times per day to just 3 times per week which saved 86% of water. In addition they experienced noticeable drop in average flue gas temperature by approximately 65°C.

Since the introduction of the Aerovit SC-Jet, the boiler has been able to operate seamlessly throughout the entire year without requiring any cleaning shutdowns.

Furthermore, this implementation has resulted in a remarkable enhancement of the boiler's efficiency. Consequently, the boiler now generates a significantly higher output of megawatts per year, thereby increasing its overall productivity and reliability.



"We find Aerovit's water soot cleaning system user-friendly and reliable. The rotating nozzle provides a more comprehensive spread on all boiler walls, significantly reducing our soot-blowing frequency compared to the previous system," stated the plant operations manager.

Marcus Nilsson
(Team manager daytime operation KHD)



How does Aerovit SC-Jet Shower Cleaning work?

The Aerovit SC-Jet Shower Cleaning solution is an online system capable of operating effectively at high temperatures. At the Kristineheded co-generation plant, boiler cleaning is initiated when the boiler temperature exceeds 540°C.

Cleaning is performed by lowering the SC-Jet nozzle head down into the boiler empty passes 3 times a week in just a few inlets due to its reach, up to 5 meters. During full-load operation of the incinerator, an optimal quantity of water is precisely sprayed onto the boiler walls, effectively removing the slag deposits. This process ensures efficient performance and is executed with precision.

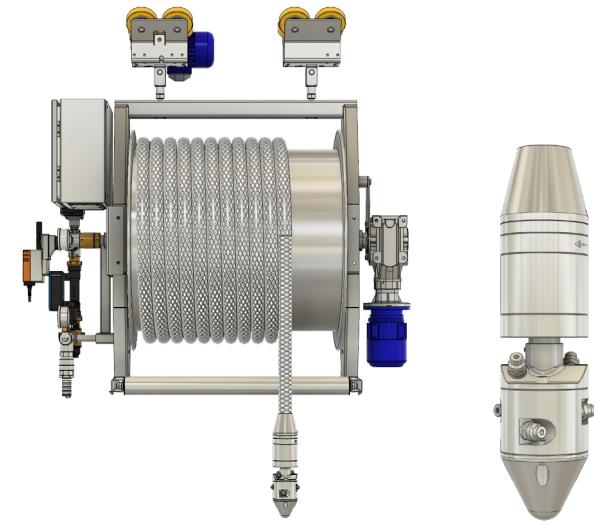
It is designed to fit new installations or retrofitting on existing equipment with a minimum of inlets in the boiler roof.

Features:

- Water jets that spray more than 5 meters
- Nozzle sends 4-6 concentrated water jets
- Unique nozzle head
- PLC controlled injection
- 100% automatic operation

Advantages:

- Increased boiler efficiency 3-5%
- Reduction of flue gas temperature at the radiation boiler outlet with 50-80°C
- Minimum inlets through the boiler roof
- One system for multiple lines
- Decreased boiler downtime
- Low maintenance costs



The result



Flue gas temperature reduced by approximately 65°C

The installation of the SC-jet system has led to a significant decrease in smoke gas temperatures. Previously, the flue gas temperature ranged between 600-640°C. Now the temperature stays consistently between 530-580°C. This reduction in temperature contributes to overall efficiency and reduces the strain on the boiler system.

The SC-Jet system has significantly improved water usage efficiency in the cleaning process. It reduces water running into ash deposits and enhances evaporation, effectively removing soot from boiler walls. The cleaning frequency in the empty passes dropped from three times per day to just three times per week, saving 86% of water.

Saving € 21.000 annually on explosive blast cleaning

Previously explosive blast cleaning was used 10-12 times annually, incurring costs of approximately 3,500 EUR per instance. With the introduction of the Aerovit SC-jet system, the frequency of explosive blast cleaning has been reduced to 4 times a year, saving in total €21.000 a year.



Reduced cleaning times by 75%

By cutting the number of water cleaning cycles from approximately 400 to 100 due to more efficient Aerovit nozzle head, the time spent on sweeping was reduced by about 75%. As a result of going from semi-automatic to fully automatic system around 150 man-hours of work were saved.

Increased maintenance efficiency by 75%

The SC-Jet system has improved water usage efficiency. Previously, changing the hose required 4 man hours, but now it only takes 1 man hour. This represents a 75% reduction in maintenance time. This leads to an estimated savings of 100 man-hours.

Higher Output

The boiler now generates significantly more megawatts per year, boosting overall productivity and reliability.

Overview

The Co-generation plant Kristineheds in Halmstad is located in the southwest of Sweden, providing district heating and electricity to the city of Halmstad. Its fuel source consists of 120,000 tons of combustible waste per year. The plant produces approximately 270,000 MWh of heat and 80,000 MWh of electricity annually.