CASE STUDY

KPAGRO
ALWAYS YOUR FRIEND

# Aerovit ShockClean System eliminates manual cleaning and increases production continuity.

KP Agro, Thailand

## The Challenge

The corn seed drying process at KP-Agro relies heavily on two hybrid boilers. These boilers, consisting of a vertical combustion chamber and fire tube heat exchangers, use a mix of 90% corncob and 10% woodchip as fuel. One boiler should operate for 3-4 months per production season, providing the necessary hot water for the drying process. Due to heavy fouling they need to shut down the boiler for manual cleaning and start up the second boiler to produce hot water and maintain plant production. However, KP-Agro faced significant challenges due to the nature of their fuel.

The corncob fuel tended to cause severe fouling on the boiler heating surfaces. This fouling blocked flue gas passages in the fire tube section, acting as thermal insulation, which reduced heat transfer efficiency and increased flue gas exit temperatures to 250-300°C.

The boilers required premature shutdowns every 7-14 days for manual cleaning to remove the fouling. This cleaning process took 3-6 hours and involved strenuous labor and exposure to harmful ash dust, leading to poor health, safety, and environmental (HSE) conditions.

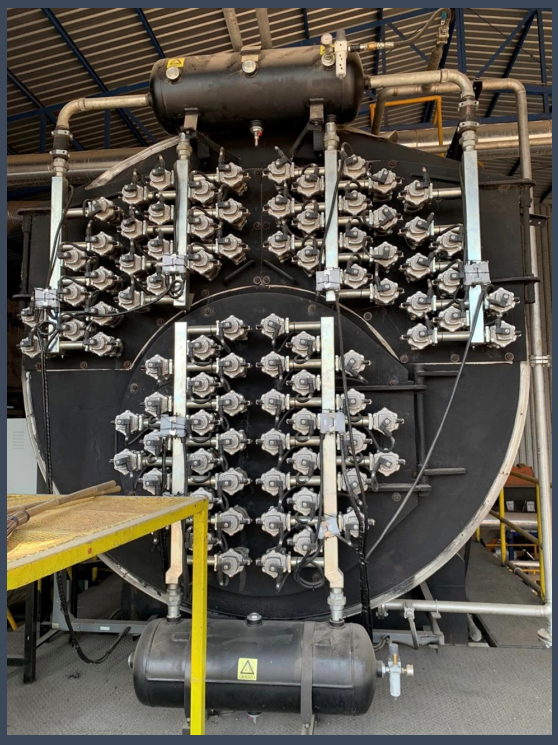
The need for frequent shutdowns to clean the boilers disrupted the continuous supply of hot water essential for the drying process, negatively impacting overall production.

Boiler operation extended by
**66 days**

Flue gas exit temperature reduced by
**200°C**

Eliminated Manual Cleanings

CASE STUDY



## The Solution

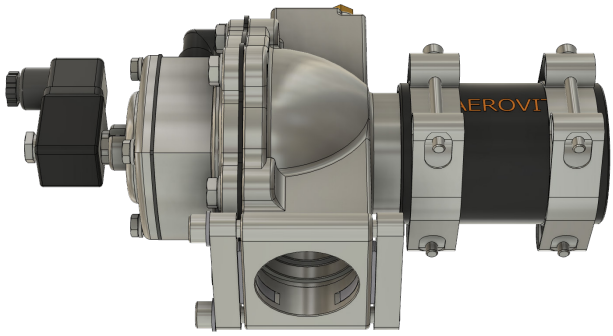
To address these issues, KP-Agro installed the Aerovit ShockClean System at the inlet of the fire tube section of their boilers. The Aerovit system uses a series of valves that sends shockwaves through the boiler tubes to dislodge and prevent ash deposits from blocking the flue gas passage and maintenance downtime.

### Features:

- Customized system designed to match the specific boiler design and fuel type
- Unique cooling system that protects the valve from high temperatures and corrosive flue gas
- Special sound silencer
- Low maintenance costs

### Advantages:

- Payback time in 3-24 month
- Proven higher efficiency and boiler output
- Reduce manual cleaning and thus boiler shutdowns with 80-100%
- Reduce fuel consumption per produced MW
- Lower CO2 emission
- Robust design with few moving parts



## The Result

### Extended boiler operation

With the Aerovit system, the boilers could operate continuously for the entire production season (15 February 2023 – 6 May 2023) without the need for manual cleaning. This extended operation period from a maximum of 14 days to 80 days

### Enhanced Efficiency

The system maintained the flue gas exit temperature at an average of 90-100°C, significantly lower than the previous 250-300°C. This indicated improved heat transfer efficiency.

### Improved Cleanliness

Post-season inspections revealed that the boiler tubes and fireboxes were very clean, with no significant deposits. This confirmed the effectiveness of the Aerovit system in preventing fouling.

### Elimination of manual cleaning

The Aerovit ShockClean System eliminated the need for manual cleaning, reducing labor intensity and improving HSE conditions for plant personel.

### Increased production continuity

By ensuring the boilers remained clean and operational, KP-Agro could maintain a continuous supply of hot water for the drying process, thereby enhancing overall production efficiency and reliability.

## Overview

KP-Agro is one of the largest corn seed processing plants in central and northeastern Thailand. The plant is responsible for the preparation of corn seeds, which involves removing corn kernels from the husk and drying them. This process is crucial for maintaining the quality and viability of the seeds for future planting.