

INDUSTRY: PULP & PAPER | CUSTOMER: ASIAN P&P COMPANY | LOCATION: ASIA

### ISSUE

Fouling disrupted the black liquor evaporation process and led to decrease in production efficiency and output, as well as increase in energy consumption.

- The temperature of the black liquor after the heater needs to be at least 150 °C to maintain an efficient production process, however, the temperature was difficult to maintain due to the decrease in heat transfer efficiency caused by fouling.
- The amount of extra energy needed to be increased with fouling, as more and more steam needed to be fed into the pipe to maintain production efficiency.
- Scaling issues of the black liquor was a major bottle neck in maintaining process efficiency.
- Decrease in the flow rate of liquid was a clear sign of fouling.



Altum's COD (Clamp-on Device) with ultrasonic transducers

Without a properly functioning heater the whole process stops

### SOLUTION

Multichannel solution installed with multiple COD belts.

The transducers were attached to the inlet pipe upstream to the heater to induce sonocrystallization effect as a fouling prevention method.

### RESULTS

- More stable flow rate and overall improvement of flow rate over 5 %.
- While sonication was on, temperature stayed stable and stayed around 150 °C. When sonication was stopped, temperature could not be kept at 150 °C.
- Steam valve opening degree remained below 80% during sonication for over 8 weeks, meaning no extra steam was required to maintain original production efficiency – without sonication the opening degree reached 100% in 4 weeks.



€500K / YEAR  
WORTH OF  
PRODUCTIVITY  
ENHANCEMENT



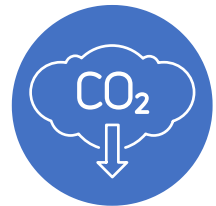
€235K / YEAR  
WORTH MORE  
OPERATION UPTIME



€480K / YEAR  
SAVINGS IN  
ENERGY COSTS



OVERALL BENEFIT  
EXCEEDS  
€1M PER YEAR



OVER 400 TONS OF  
CO2 SAVED PER YEAR

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Over 1 650 000 kilometres  
driven by an average  
gasoline-powered  
passenger vehicle