

Oil refinery - Orlen Lietuva

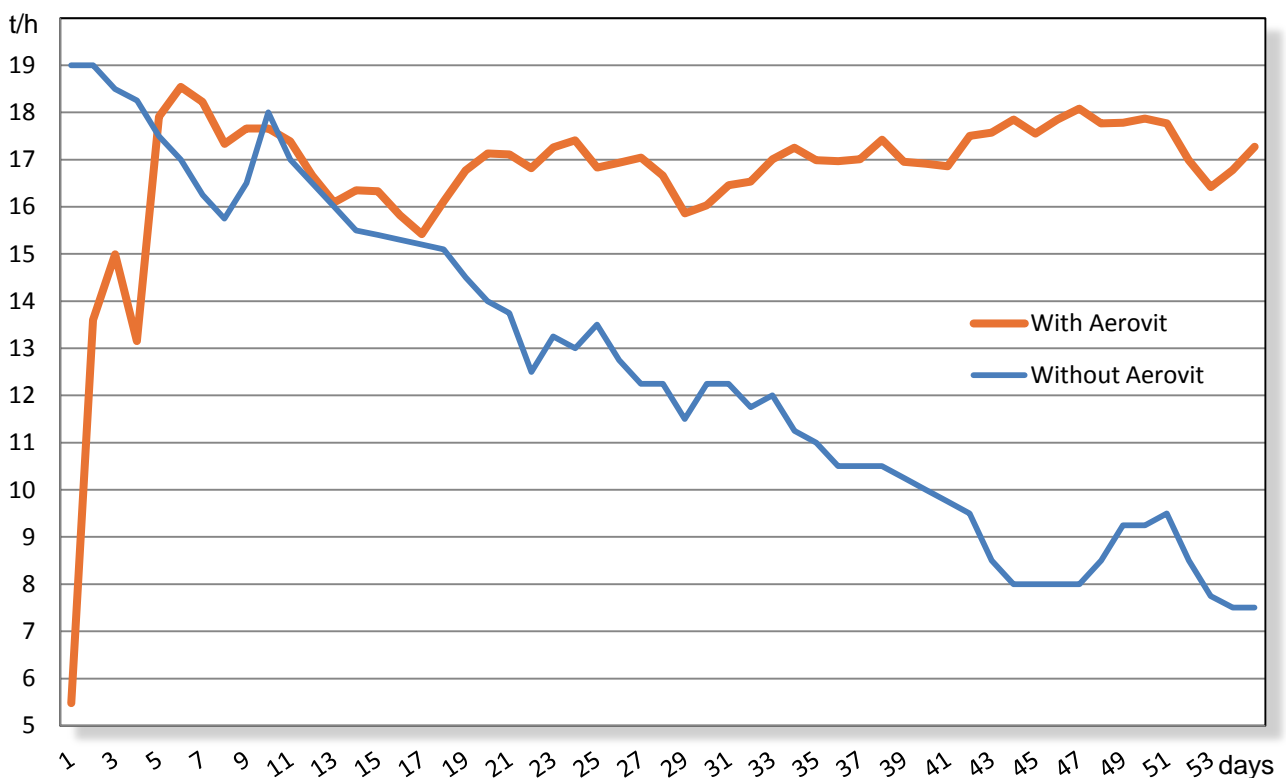
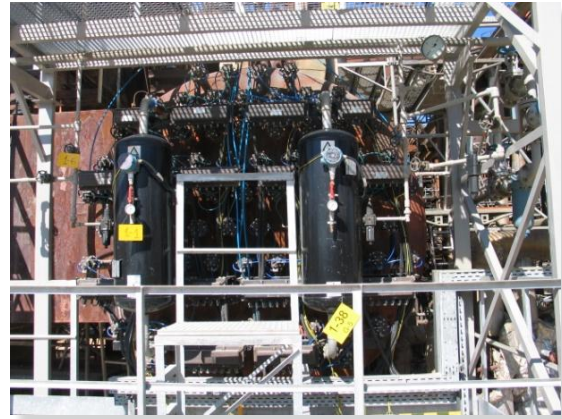
Situation BEFORE Aerovit installation

Orlen Lietuva Refinery has two boilers which are losing a considerable amount of heat due to catalyst dust build-up in the tubes.

After two month of operation the boilers tubes are fully covered by catalysts dust, but Orlen´s technicians cannot stop them for manual cleaning because it would imply the whole refinery to shut down.

The diagram shows the steam production of one boiler: after a manual cleaning session the steam production is about 19t/h and after two months it is only 7,5t/h.

The final result of the dust accumulation process is a critical reduction of the steam production, which after two months of operation decreases to 15t/h for both boilers.



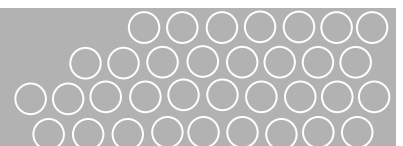
Situation AFTER Aerovit installation

AEROVIT is installed in April 2011 on both boilers with immediate results. The steam production of each boiler remains stable around 17t/h, which means 34t/h for both boilers. Orlen´s gain therefore is 19t/h for both boilers.

In order to produce these 19t/h steam on an oil boiler, Orlen should use around 11,6 mio. Litre of oil/year.

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Calculations for 1 boiler

Steam Pressure:	10bar(o)		
Temperature:	180°C	→ Energy	= 2.780 kJ/kg
Watertemperature after de-aerator:	105°C	→ Energy	= 440 kJ/kg
		Energy	= 2.340 kJ/kg

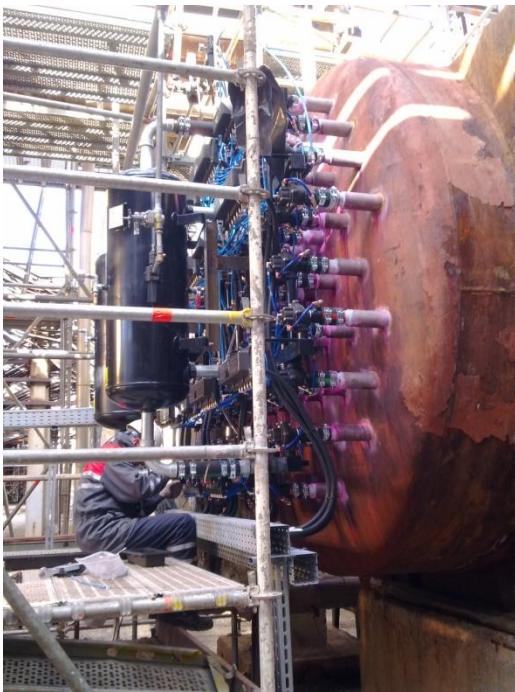
Steamproduction on clean boiler:	19 t/h	→ Flow	= 5,28 kg/s
Steamproduction on boiler without Aerovit:	7,5t/h	→ Flow	= 2,08 kg/s
Steamproduction after Aerovit installation:	17 t/h	→ Flow	= 4,72 kg/s

Output after Aerovit installation:	= 11.045 kW
Output on boiler without Aerovit:	= <u>4.867 kW</u>
Increased Output	= <u>6.178 kW</u>

If "the increased output" had been produced on a backup boiler

Efficiency of backup boiler	94%	→ Thermal Input	= 6.572 kW
Number of operating hours	8760 h	→ MWh	= 57.570 MWh

If 57.570 MWh had been produced on a backup boiler it would equal the uses of approx. 5,8mio Litre of oil.



Statement from Deputy General Director for Operations Mr. Viktoras Vasilavičius:

„As part of the modernization program, AEROVIT soot blowers were installed in the Fluid Catalic Cracking Unit at the Refinery and placed in operation as of May 2011. The said soot blowers are used to remove catalyst dust from the pipes of the heat recovery boilers KU-401/1, 2. Use of the soot blowers for the KU-401/1, 2 led to higher steam production rates (as much as 50 to 60 percent) with a 3-month payback time for the investment.

We are happy to say that the project has been succesfully implemeted and appreciate our cooperation with the company AEROVIT.“



Viktoras Vasilavičius