

Performance of three reconstructed boilers at AVR

WP 2.6 Boiler Optimisation

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Objectives and Targets

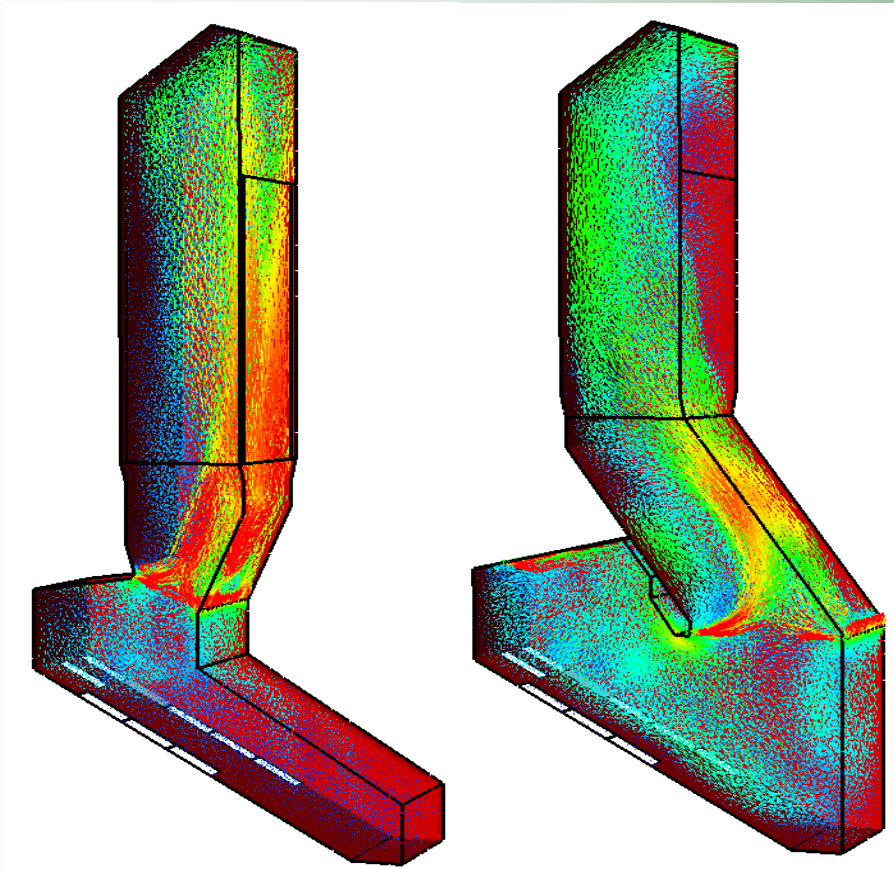
Evaluation on Performance of three reconstructed boiler lines at AVR

Retrofitting of the combustion chambers of the three boilers – expected benefits:

- Increase of throughput (steam production 10-15%)
- Increase boiler efficiency from 84% to 85%
- Comply with CO emission targets

Backgrounds on Retrofits (1)

From counter current flow to co-current flow



→ Increased throughput
and higher boiler efficiency

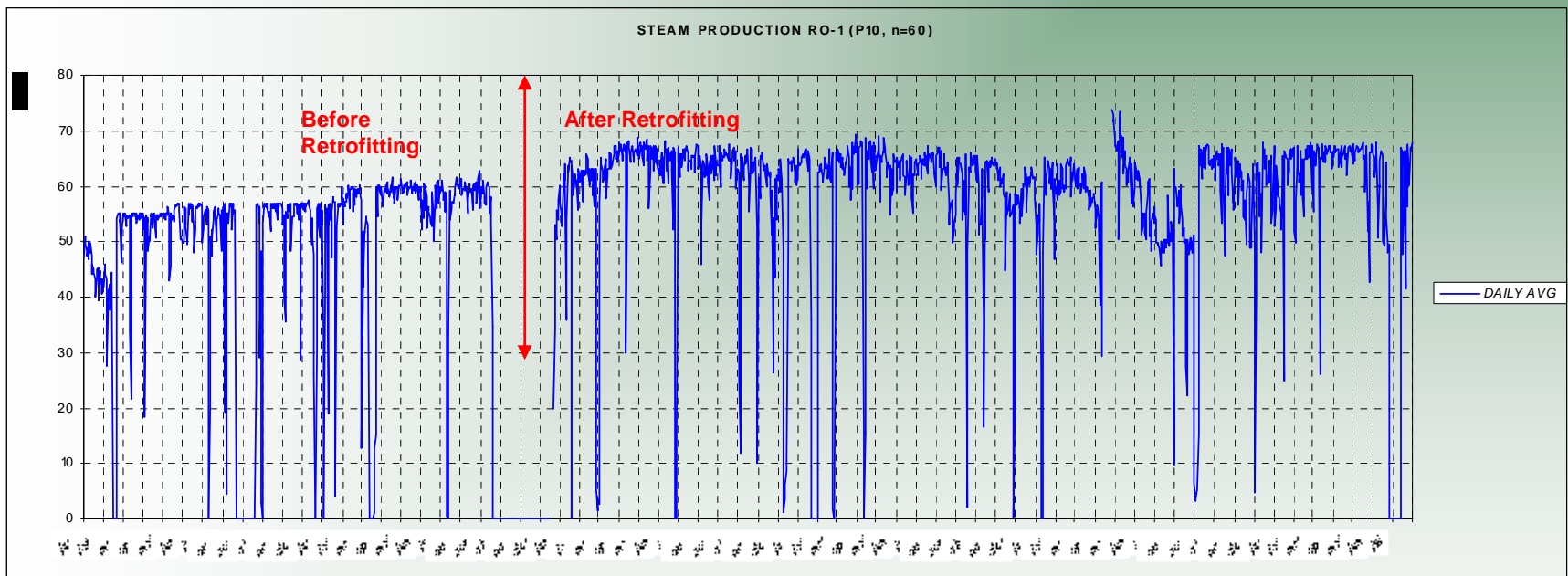
Backgrounds on Retrofits (2)

Reconstruction of the secondary air injection system
Reconstruction of waste feeding system

→ Better control of and less CO emissions

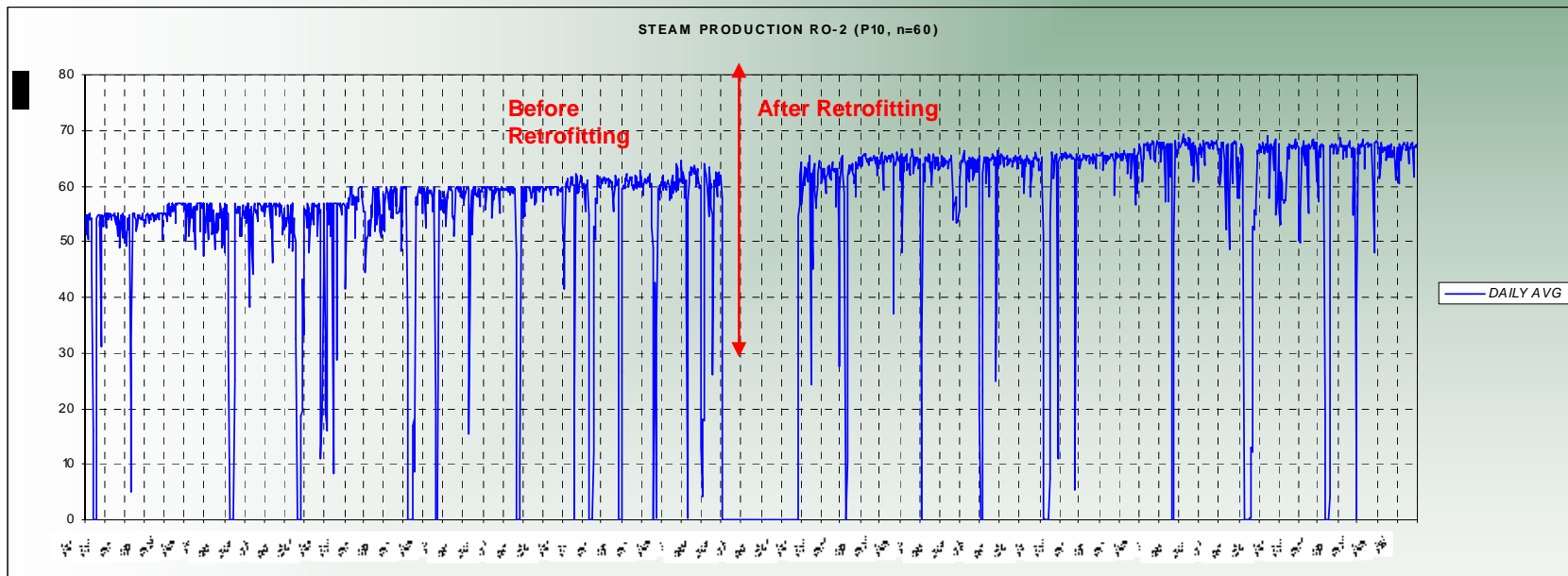
Results increase throughput (1)

Steam production boiler 1: increase 3%



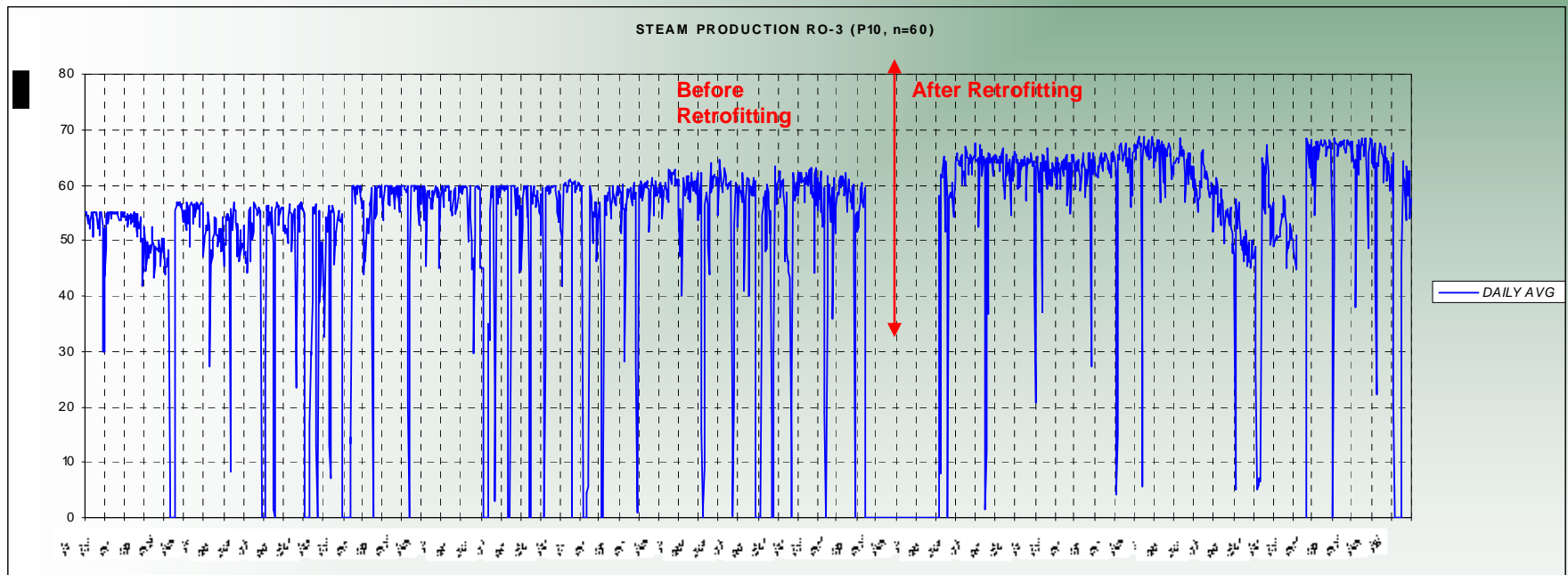
Results increase throughput (2)

Steam production boiler 2: increase 13%



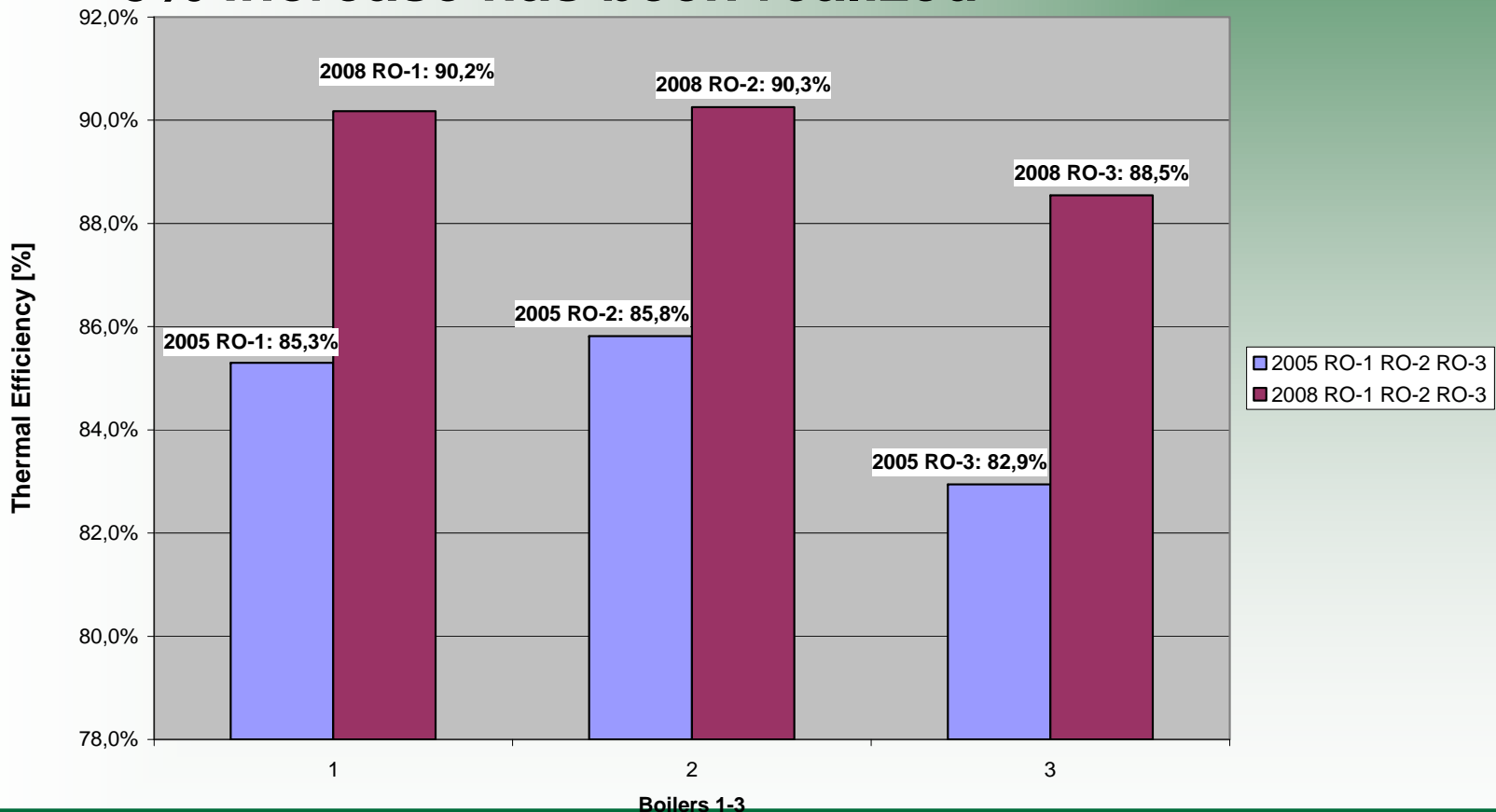
Results increase throughput (3)

Steam production boiler 3: increase 8%



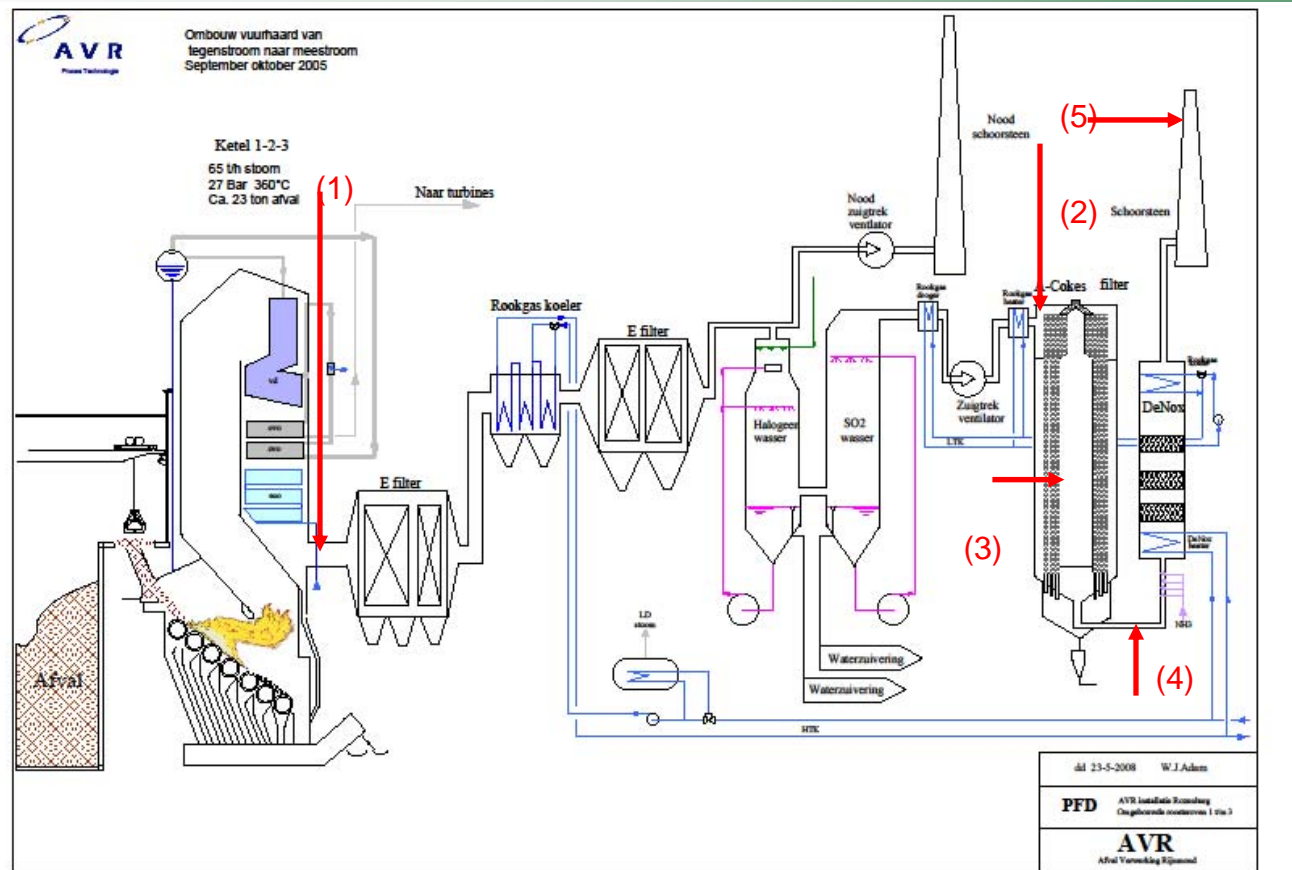
Results Thermal Boiler Efficiency

**Effect retrofits on thermal efficiencies boilers 1-3:
5% increase has been realized**



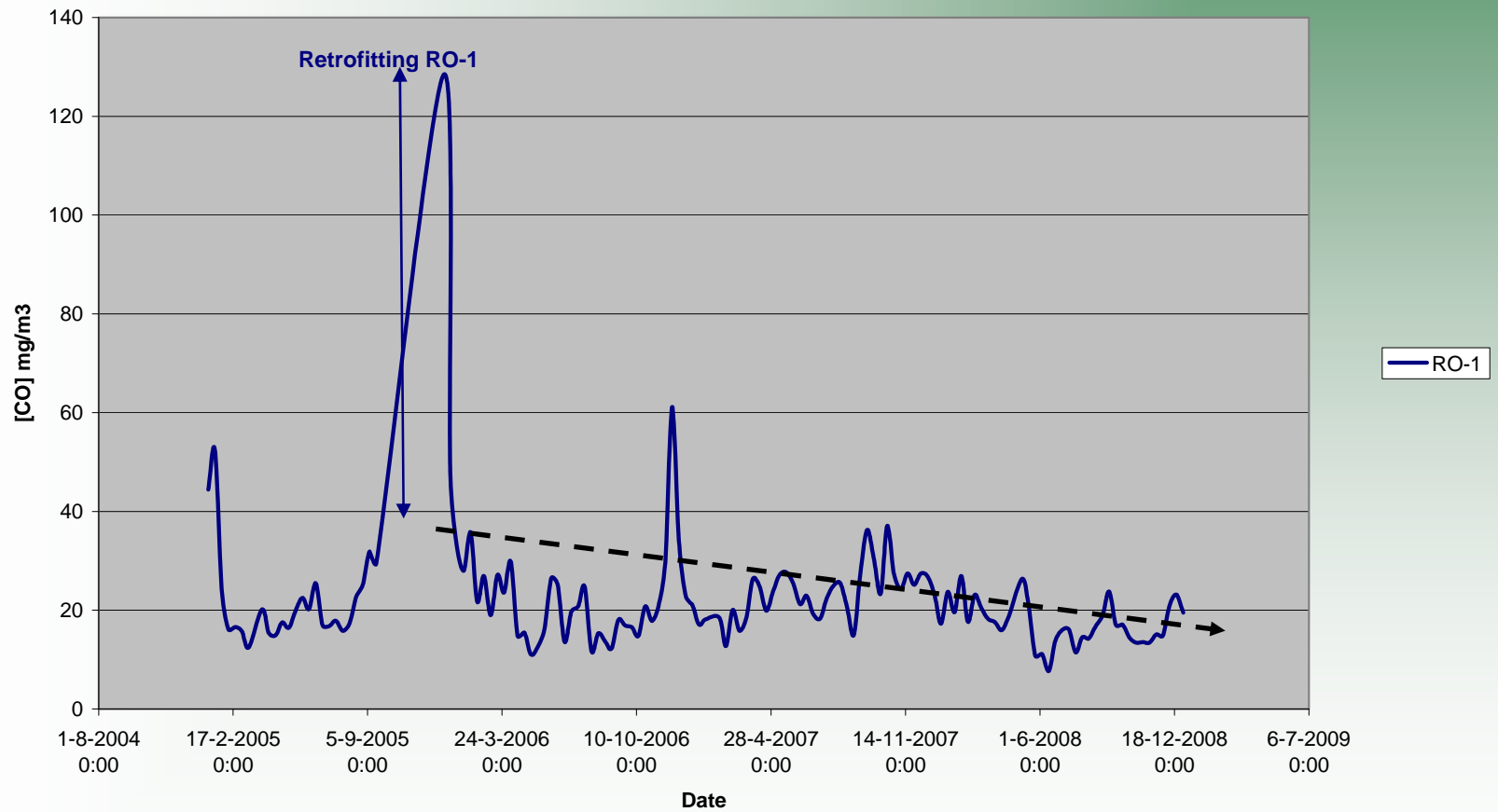
Results on CO emissions (1)

Measurement locations for CO emissions



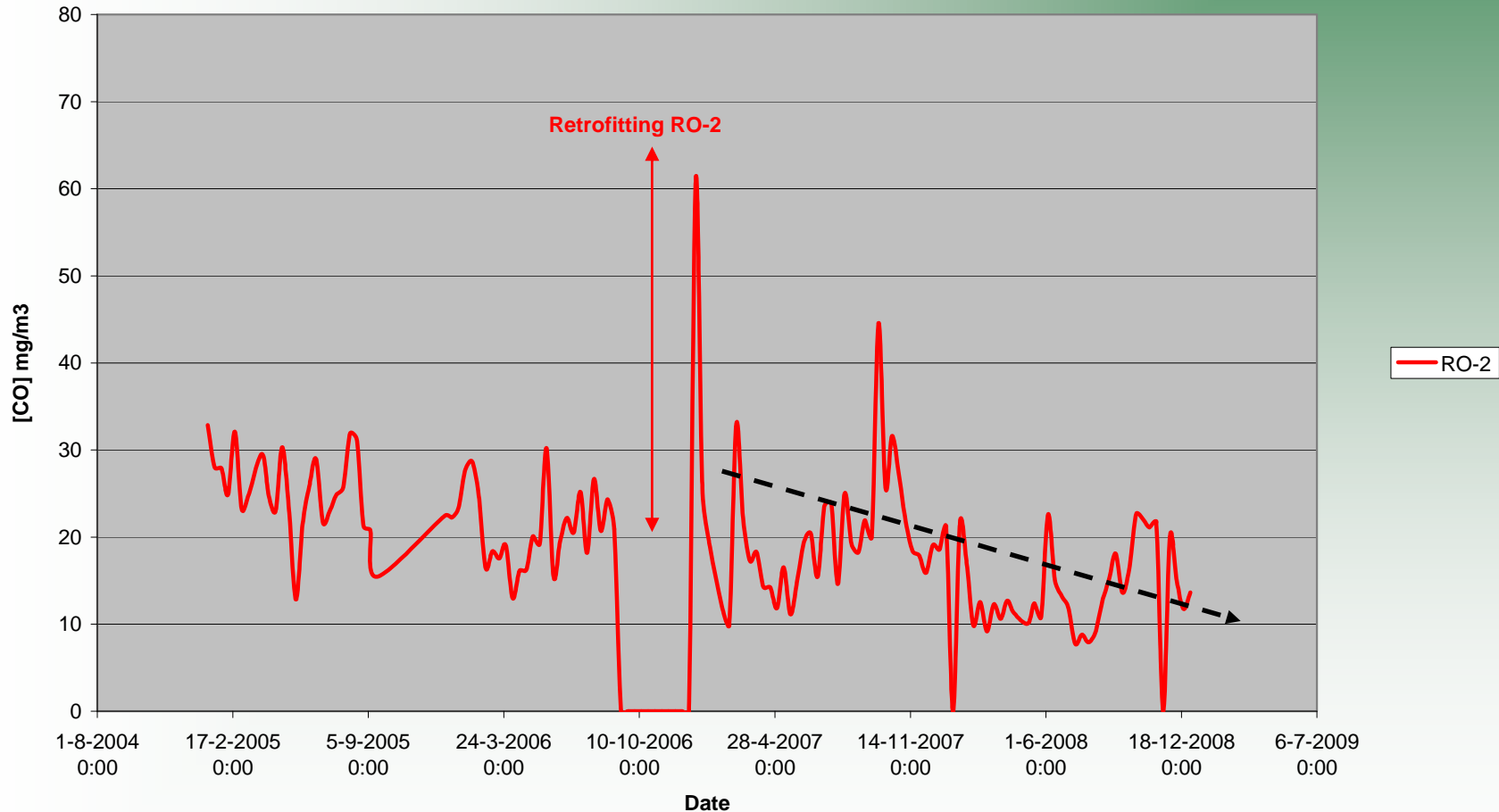
Results on CO emissions (1)

Average CO concentration boiler 1 after reconstruction



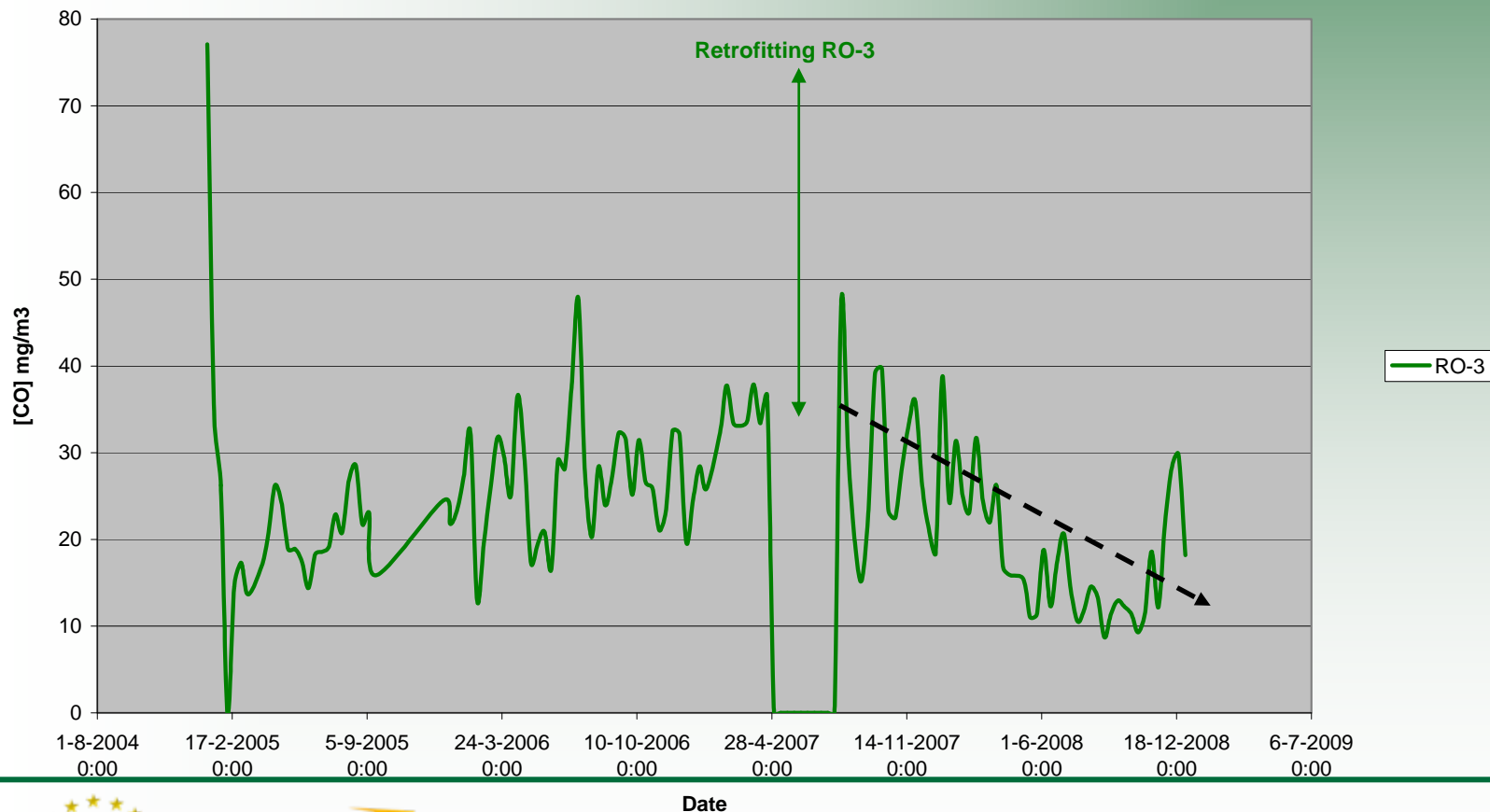
Results on CO emissions (2)

Average CO concentration boiler 2 after reconstruction



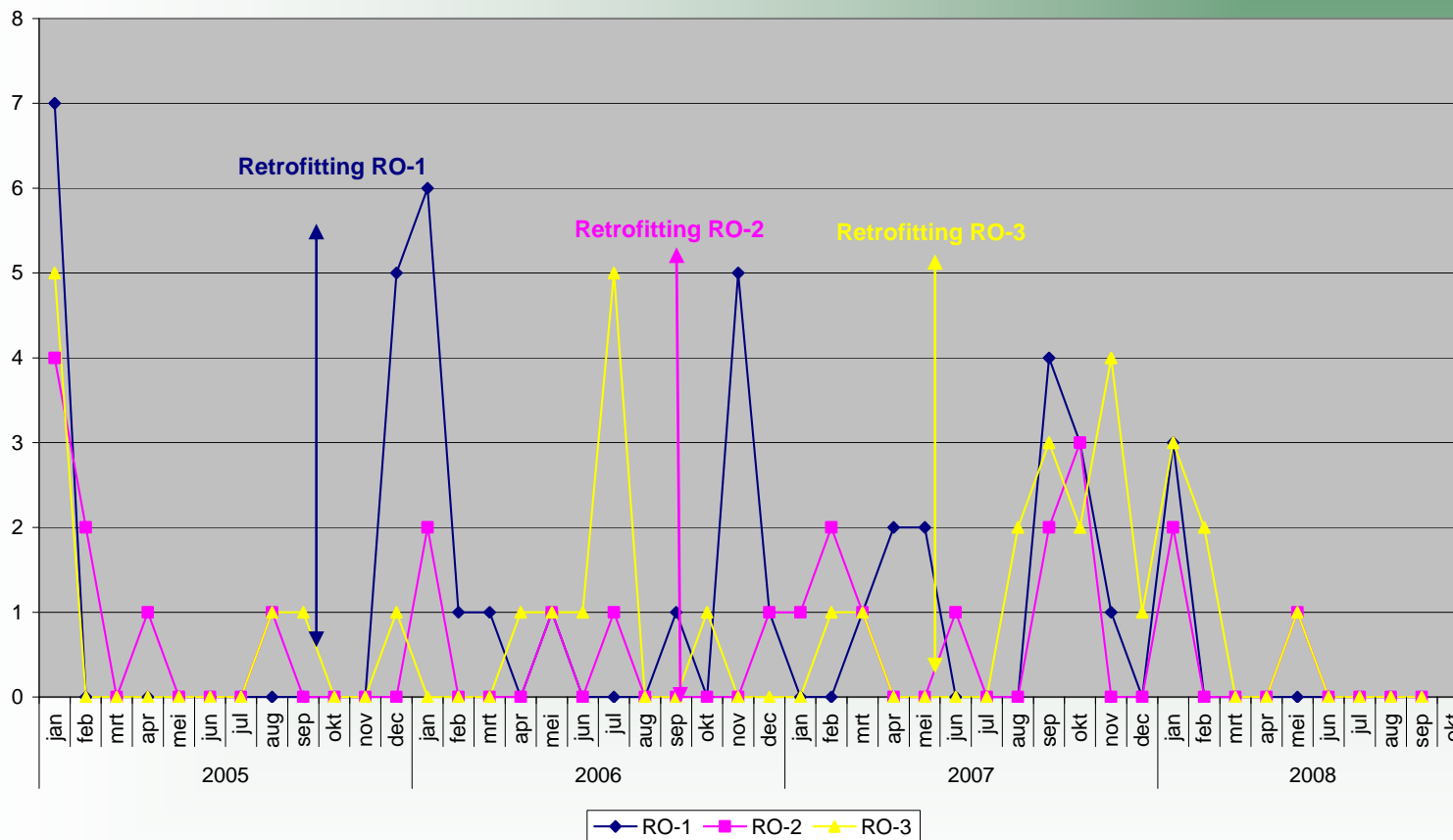
Results on CO emissions (3)

Average CO concentration boiler 3 after reconstruction



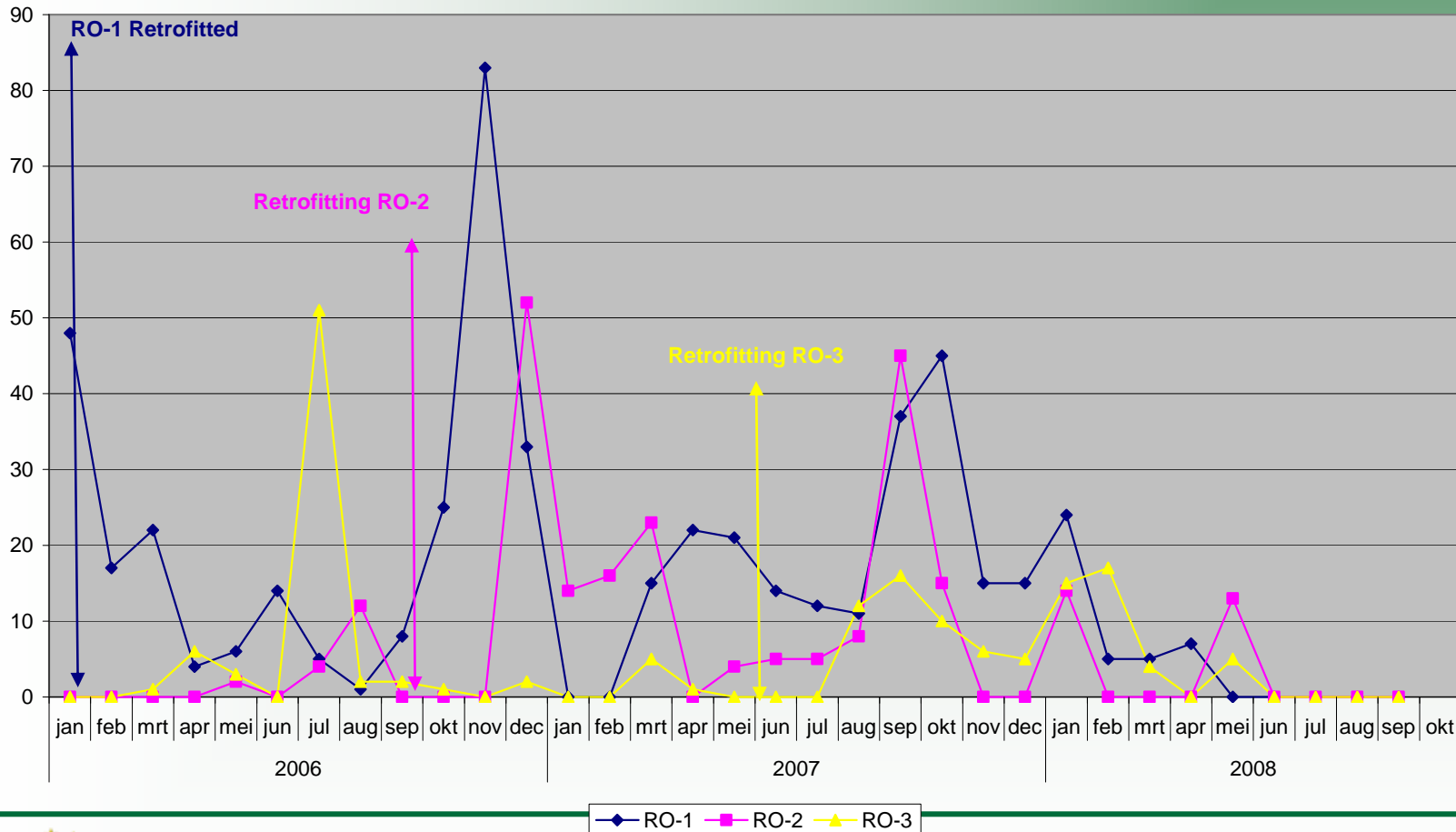
Results on CO emissions (4)

CO Exceeding limits on daily average



Results on CO emissions (5)

CO Exceeding limits 10/30 minutes



Conclusions

After both retrofitting and optimization of the control parameters for the boilers, CO emissions have diminished and meet the targets

The throughput has increased significantly (3% RO-1, 8% RO-1, 13% RO-3, target 10-15%)

Thermal Boiler Efficiencies have increased with 5%, target: 1%. Compensation of lower increase in throughput than expected