



ECO-innovation
WHEN BUSINESS MEETS THE ENVIRONMENT

CleanSmoke

Contract ECO/11/304332

Deliverable 4.7

Monitoring of ecological and economic impacts

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Start date of project: 04/03/2012

Duration: 36 month

D 4.7 Monitoring of ecological and economic impacts

Ecological impacts:

Watching the results that were gathered from the two installations first ecological impact that has to be mentioned is related to the landfill. Waste such as tar and ashes produced in place by burning wood chips in the production factory is decreased to zero when using purified primary smoke products (smoke condensates) with CleanSmoke smoke generation. The reason is that purified primary smoke doesn't contain any waste:

Landfill: - 100% compared to combustion smoke

The water consumption needed for processing the traditional combustion smoke generators (inhibiting fire and cooling smoke pipes) are decreased to zero as well when smoking with CleanSmoke:

Processing water: - 100% compared to combustion smoke

With CleanSmoke, the volume of water needed for cleaning the smoke generators and the smoking chambers was reduced at an average of about 88% compared to the traditional combustion smoking technology:

Cleaning water (Ø): - 88% compared to combustion smoke

Based on calculation and considering the entire production and shipping chain CO₂ emissions are reduced by more than 80% when using the CleanSmoke technology for smoking instead of traditional combustion smoking technics. Woodchips are centrally burned in Red Arrows' production facility under controlled conditions at a high efficiency and protection of resources:

CO₂: - 83% compared to combustion smoke

As no woodchips are burned in place in the production facility with the CleanSmoke technology, the dampers of the smoking chambers can be closed completely during smoking steps. Therefore no measureable exhaust emissions were able to be protected also in the two roll out installation within the project:

Exhaust emissions: - 100% compared to combustion smoke

Driven by the reduced cleaning effort and therefor water need but also by the fact that smoke generated from purified primary smoke product does not contain tars, the demand on high-pH cleaning detergent was able to be reduced by more than 80% compared to traditional smoking.

Cleaning detergent (Ø): - 68% compared to combustion smoke

The chemical analysis of the wastewater from cleaning the smoke generators and the smoking chamber an important decrease of the critical substance was obvious in the comparison the CleanSmoke way of smoking with the traditional combustion smoking methods:

(All data compared to combustion smoke)

PAH (Ø): - 84%

COD (Ø): - 60%

BOD (Ø): - 67%

N-Total (Ø): - 70%

HC-Index (Ø): - 43%

Phenols (Ø): - 60%

Economic impacts:

Especially the effort for smoke generation in combination with the exhaust cleaning (gas-fired afterburner) was standing in the main focus when looking for cost comparison between the two smoke generation methods in this project. Additionally the cost saving for disposal of tar and ashes led to the following impacts compared to combustion smoke:

Costs for Cleaning including Detergent and disposal (Ø): - 87%

Energy costs for smoke generation and exhaust air cleaning (Ø): - 90%

Total operation costs per kg Salami product (Ø): - 28%