

TECHNICAL REPORT from OSLO NORWAY WTE Plant, 24-25/3/2011

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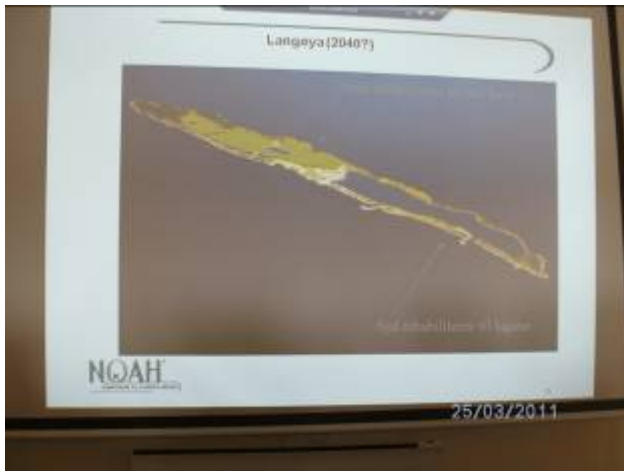
Dr. Efstratios Kalogirou from the Earth Engineering Center, Columbia University and the President of SYNERGIA (WTERT Greece) participated in the ISWA Working Group Energy Recovery, held between 24&25 March 2011 Oslo, Norway (34 technical people participated from 20 countries). Also a technical visit took place in the new operated 3rd line in WTE Plant at Klemestrud (capacity of 150.000 tpa) , which produces CHP, 55,4 MWth (300 GWh annually district heating for 40,000 households) and 10,5 MWe (70 GWh electricity for 20,000 households).



The two older lines have a capacity 10ton/h each. The constructor is Hitachi Zosen Inova (ex- Von Roll Inova).

Technical Details of third new line of WTE Plant:

1. 1 boiler, capacity 20 tph (150.000 tpa)
2. Steam parameters: temperature 360 °C and pressure 40 bar.
3. 300 GWh annually district heating 70 GWh electricity
4. Moving Grates
5. Wet Scrubber to eliminate acidic gases
6. WWTP for the liquid waste from wet scrubber
7. Powder activated carbon injection system



8. Bag filters, ESP
9. DeNOx selective catalytic reduction (SCR) to remove nitrogen oxides (with ouria)
10. The bottom ash (20% in total) is fully recovered and used in as aggregate for asphalt. The fly ash (3% in total) is transferred in big bags and stabilized with sulfuric acid producing gypsum in NOAH at Langøya island (which receives and treats different kinds of hazardous waste and contaminated soil). All waste material is stabilized before being deposited below sea level in a former limestone quarry. The gate fee for the fly ash stabilization treatment in the island is 80 €/ton of fly ash.
11. The Gate fee of the WTE Plant is 50 €/ton. The electricity sale price is 70-90 €/MWh and for the district heating is 20 €/MWh.
12. Investment cost is approximately 95,000,000 €.

