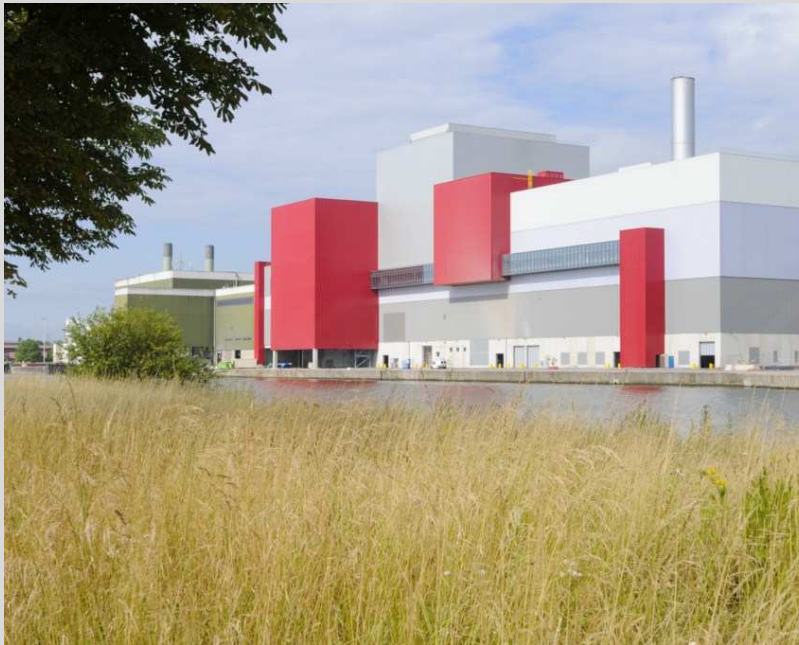




When our waste become source of energy





Our story



1) Incineration plant:

Builder: INOVA France

Furnace VON ROLL (Au)

➡ Fume treatment VINCI (Fr)

➡ Control command ROCKWELL (U.S.)



- **Start construction civil work:** September 26th, 2006
- **First flame:** beginning of march 2009
- **Stop old incinerator:** mai 1st, 2009
- **Industrial Commissioning:** September 6th, 2009
- **Final acceptance:** february 2013

Probationary operation by the builder INOVA during 3 years:
from september 2009 to september 2012

Full operation taken over by UVELIA from INOVA beginning of
september 2012.

2) The Hallembaye landfill site:

UVELIA take over the operation of the landfill center on
January the 1st, 2010





Our location

1) Incineration plant





Our location

2) Lanfill site



To
Liège



To
Maastricht -
Holland



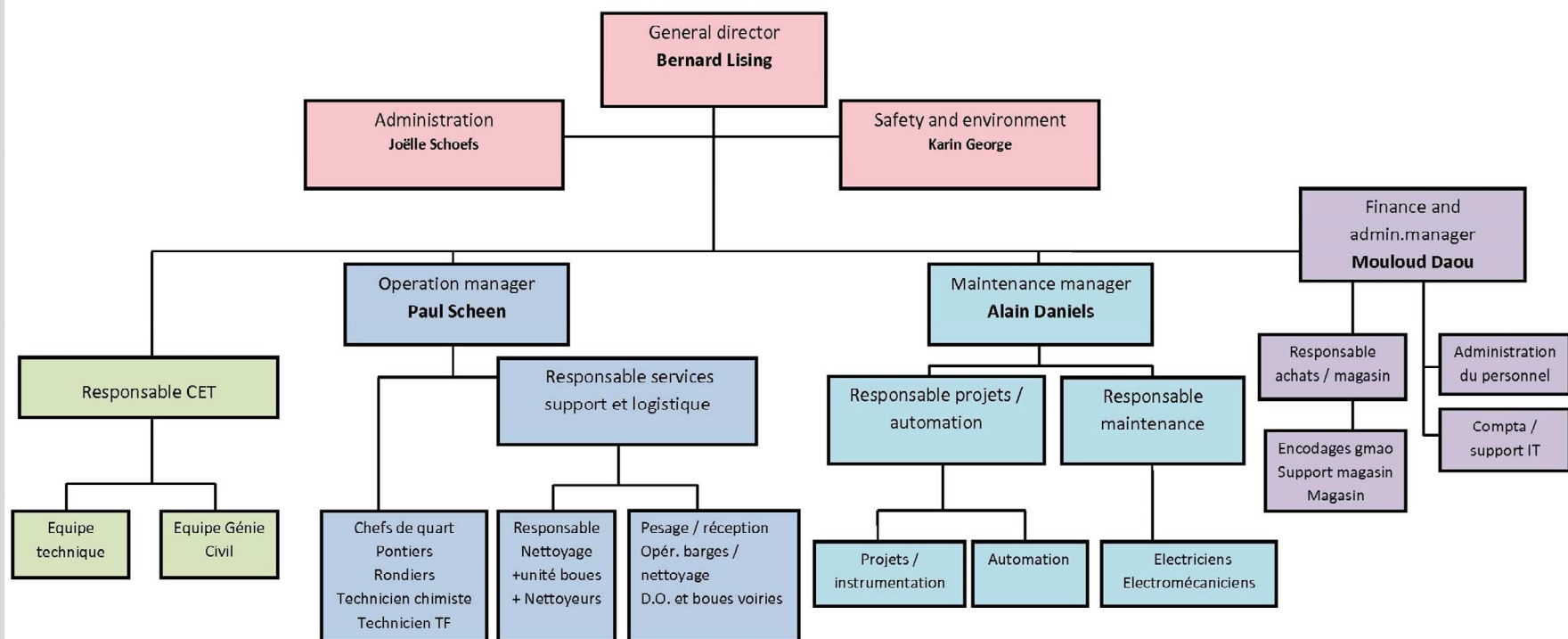


Our organization

Our incineration plant runs 24 hours a day every days of the year
(except for our annual maintenance stoppage about 15 days per line).

Our landfill site runs on day shift, 5 days a week.

UVELIA operates with 73 employees organized follow:





Our capacities

Capacity: 350.000 tons of waste per year

- house hold waste
- bulky waste (schredded or not)
- waste from industry
- medical waste

+ 20.000 tons of sludges from water treatment plants (up to solid content of 23%)

Total 370.000 To/year = \pm 46 To/ hour (23 To/h per line)

Réception and flows:

- ❖ 3 reception bunkers(7.000 To, 800 To, 600 To)
 - ❖ 1 schredders for bulky waste
 - ❖ 1 dyscharging equipment for barges
- ➡ Automatic transportation systems to the main bunker.





Our performances



Production:

- 2 incineration lines
- 160 To/h of steam at 40 bar and 400°C.
- 240.000 MWh produced by year (\pm = annual consumption of 55.000 families).



For comparaison, this is roughly equivalent to 50 windwill.

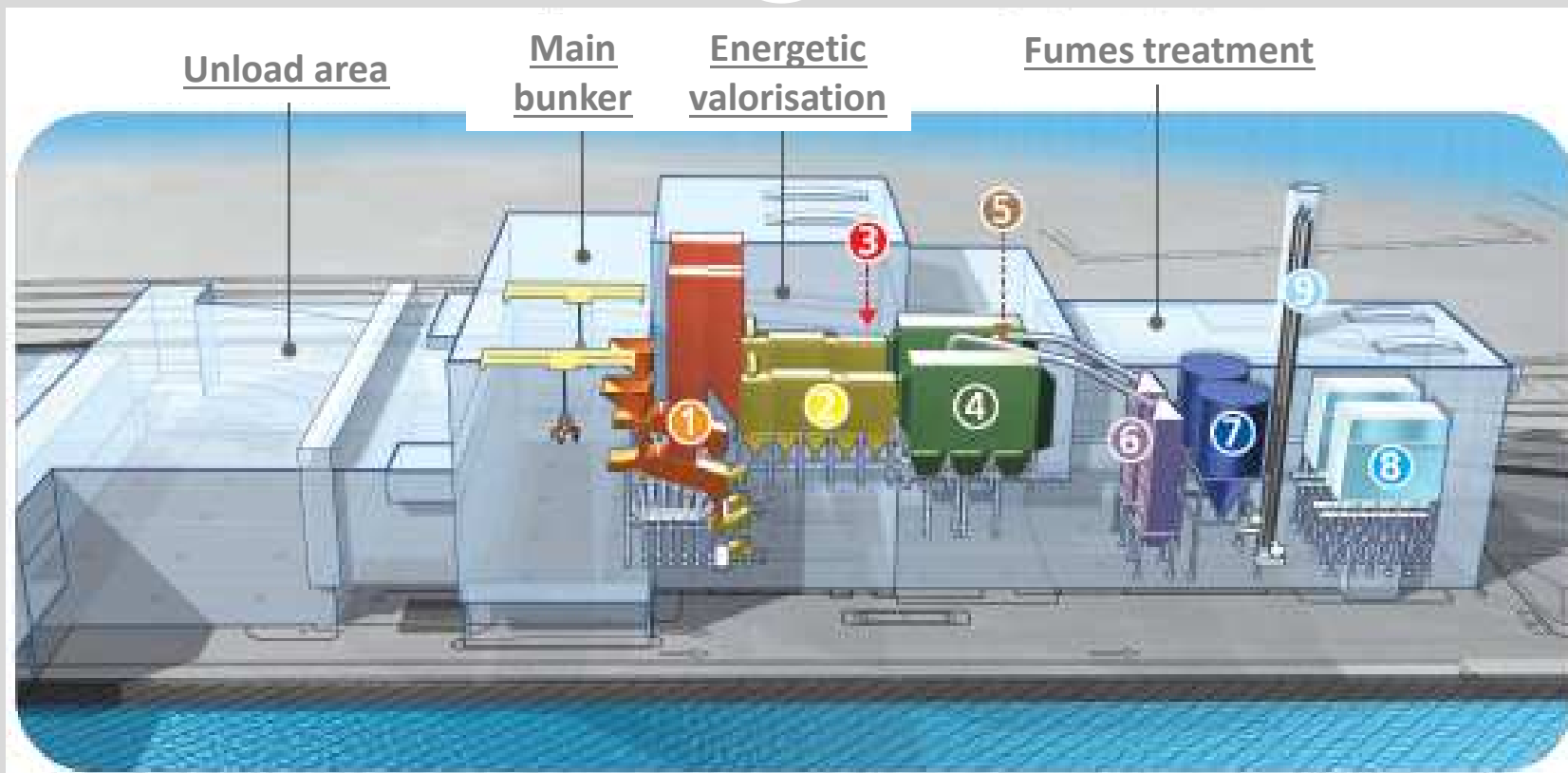
- Our average electricity production ratio is about 640 kWh/T incinerated.

Output waste:

- 70.000 To botton ash for wich recycling is externalized to specialized companies (= 20% of the total waste input)
 - 7.000 To fly ash
 - 8.500 To refioms
- } This residual waste enter into a stabilisation process before beign landed in our landfill site.



An open vieww of the UVELIA process



- ①. Furnaces
- ②. Ovens
- ③. Power generator
- ④. Electrostatic precipitator
- ⑤. SRC (Selective catalytic reduction)
- ⑥. Econos
- ⑦. Reactor
- ⑧. Bag filter
- ⑨. Chimney



1. Furnaces



- 2 Von Roll furnaces. Nominal capacity of:
21 To/h of waste for a LCV of 11.500 KJ/kg
+ 2 To/h of sludges (from water treatment plants)
- Grid splitted in 5 zones; watercooled for the 2 firts ones.

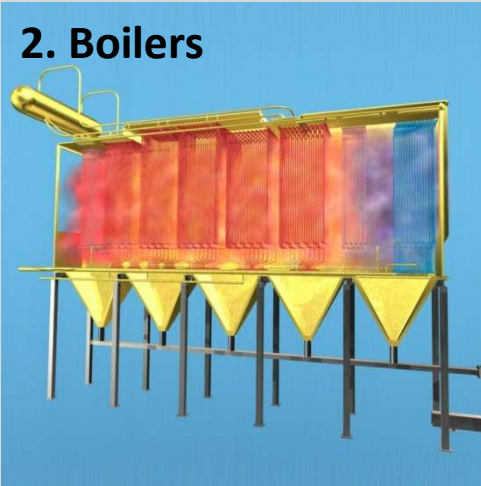
The waste is spread over the grid by the pusher where they enter into conbustion for about one hour at about 1.000°C.

The output combustion waste, called bottom Ashes, are collected and recycled for road and building fondations.





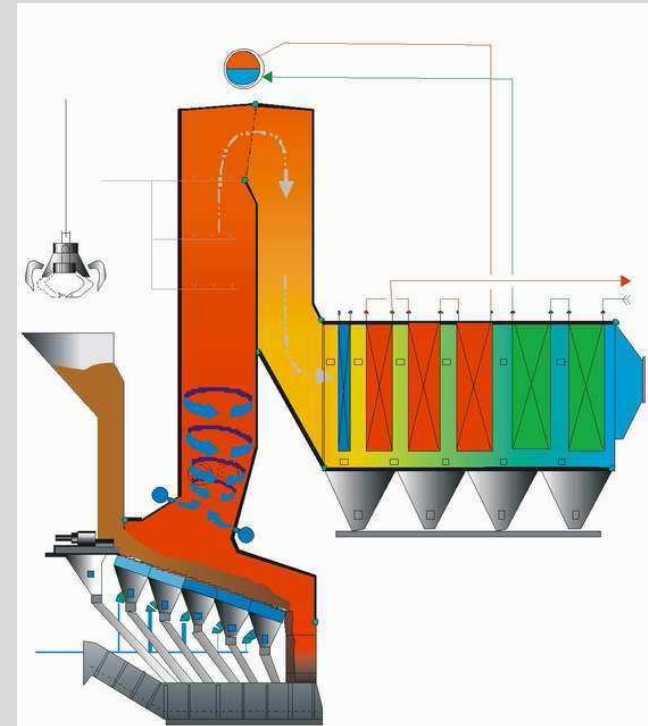
2. Boilers



Fumes coming from waste combustion are driven through the boiler.

For each line, we have 2 vertical paths and one horizontal path.

The nominal steam production is 80To/h at 400°C.





3. GTA



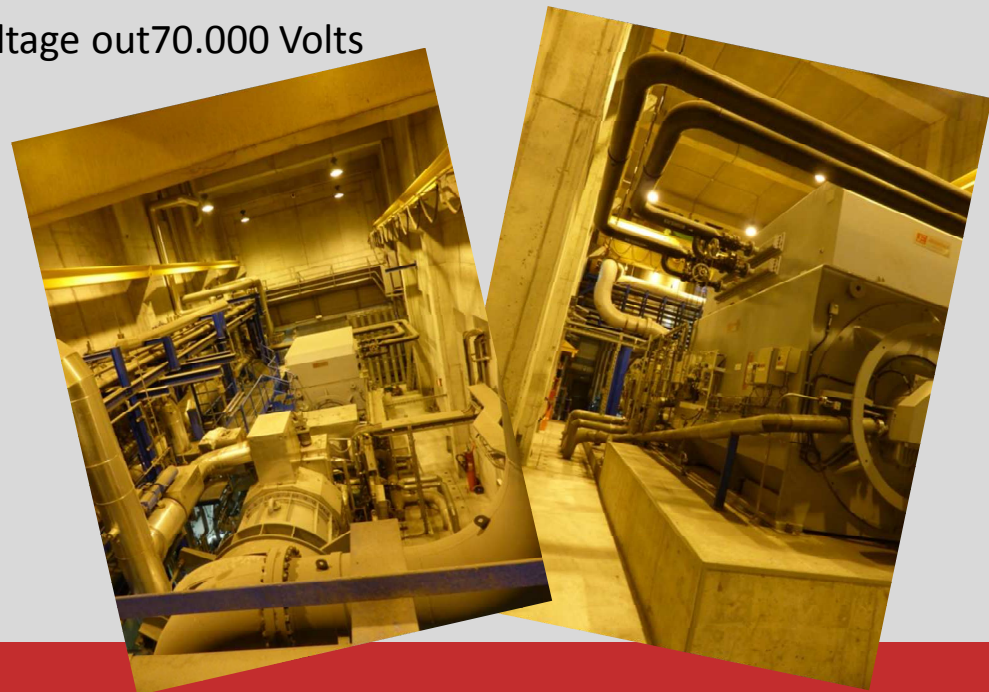
Power generation:

Turbine: THERMODYN – Condensate turbine

- 4.500 Tr/min – 37MW
- Steam 400°C – 40 bar – 160 T/h

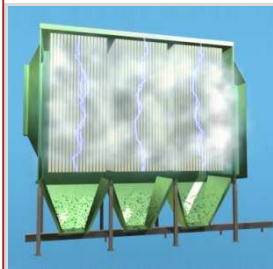
Generator: JEUMONT – Voltage out 15kV – 1500 Tr/min – 50 Hz

Transformer: Voltage out 70.000 Volts



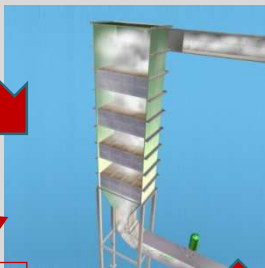


From ES precipitation to the chimney



Electrostatic precipitation: 3 steps to capture about 99% of the fume's dust

At the exit, dust content $< 15 \text{ mg/Nm}^3$



SRC (Selective Catalytic Reduction): reducing Nitrogen compound (NO_x) by dosing ammoniac solution.

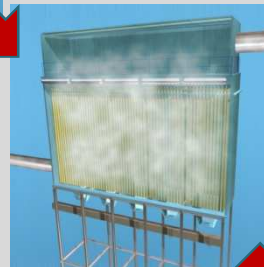
NH_3
($\pm 2 \text{ kg/To inc.}$)

Lime milk
($\pm 17 \text{ kg lime/To inc.}$)

Active COAL
($\pm 0,3 \text{ kg chaux/To inc.}$)

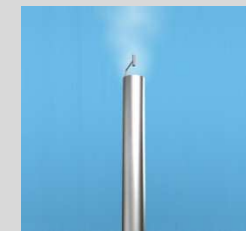


Reactor: acids neutralization and dioxines + furanes capture with the help of active coal.

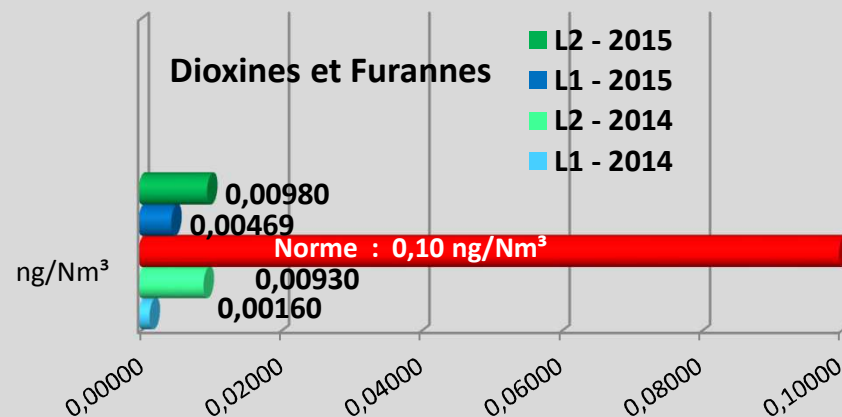
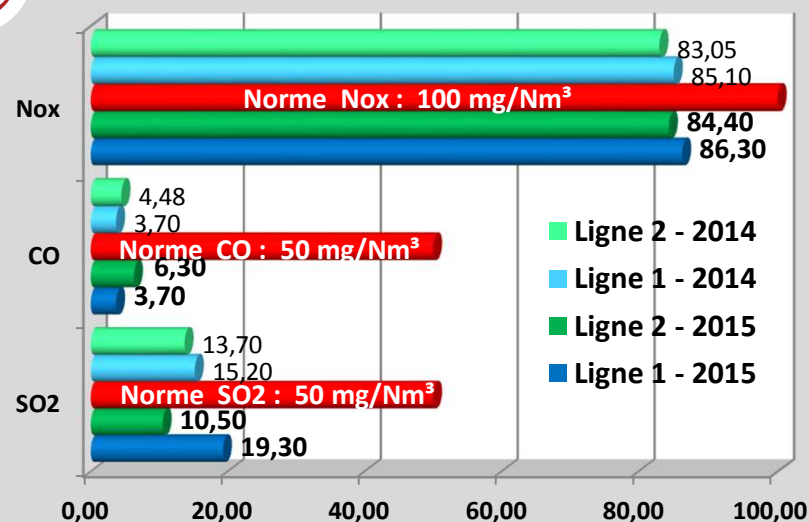
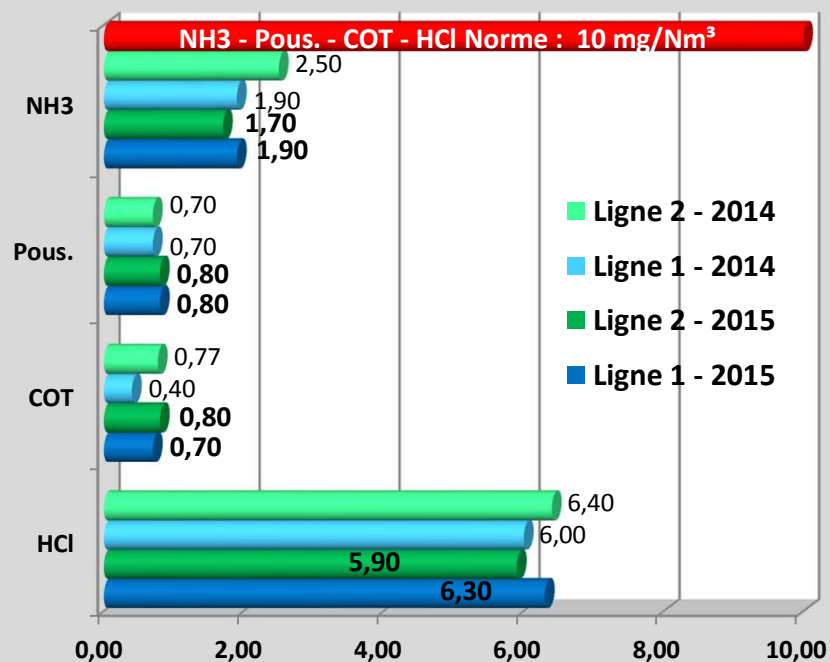


Bag filter: Capture all residues from the fume treatment.

Chimney ($< 2 \text{ mg/Nm}^3$)



Atmospheric emissions





UVELIA, a factory dedicated to sustainable development





UVELIA protects the air : UVELIA respect all the european requirements in terms of atmospherics émissions (1/2 EU norm for NOx).



UVELIA protects the water:

The water necessary to run the plant is pumped from the Albert chanel. All the waste waters are reused in the process.



UVELIA avoid odor pollution:

The air necessary for the combustion is suked at the bunker level. Autiomatic rapid doors contain odors inside the waste unloading area before being suched trough main bunker.



UVELIA limits road haulage:

50.000 tons of house hold waste coming from Namur (city at 150 kms from Liège) are transported by barges. This transport mode allows us to avoid 5.000 of additional trucks on our roads.

