



WASTE TO ENERGY STUDY TOUR FEEDBACK



ISWA WASTE TO ENERGY EXPERIENCE

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INTRODUCTION

- International Solid Waste Association (ISWA) hosted Waste-to-Energy Study Tour in Austria – 22nd to 27th June 2014.
- Practical seminar including visits to 10 Operating Plants based on Best Available Techniques (BAT's)
- Opportunity to learn from operators, suppliers and designers
- Study tour spanned across Austria and included Czech Republic

THE QUEST TO STAY INFORMED

- South Africa's current “bankable” waste management option = Landfill?
- Legislation Impacts
- Diminishing landfill airspace
- Learn & Apply WtE experience to quest for sustainable waste management



GLOBAL PERSPECTIVE ON WASTE MANAGEMENT

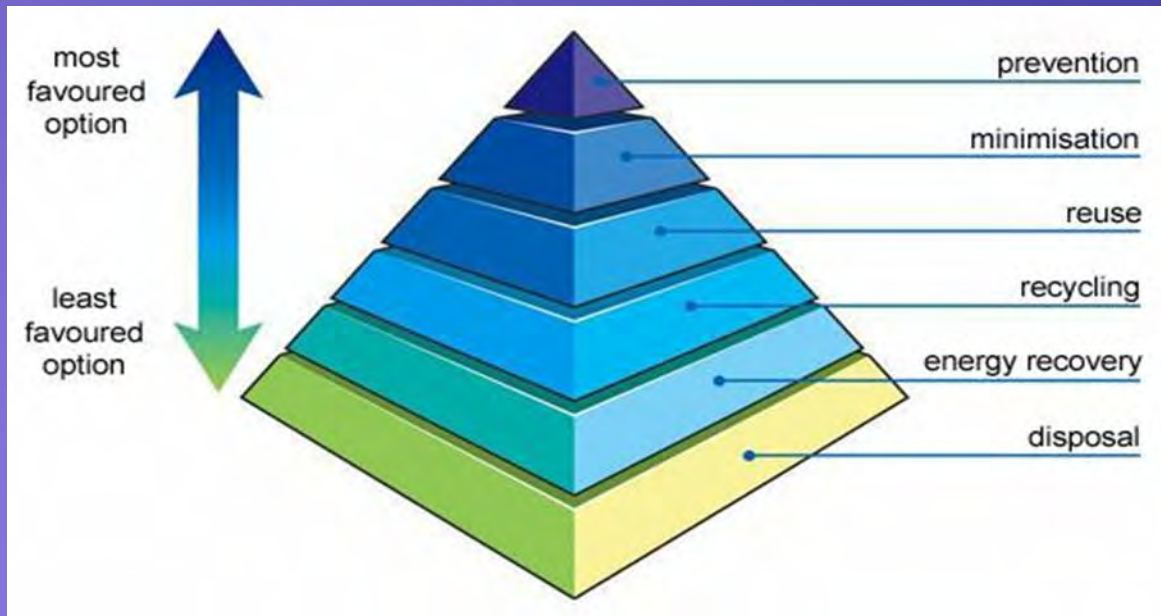


- Waste disposal ~ 1 billion tons of CO₂ per annum

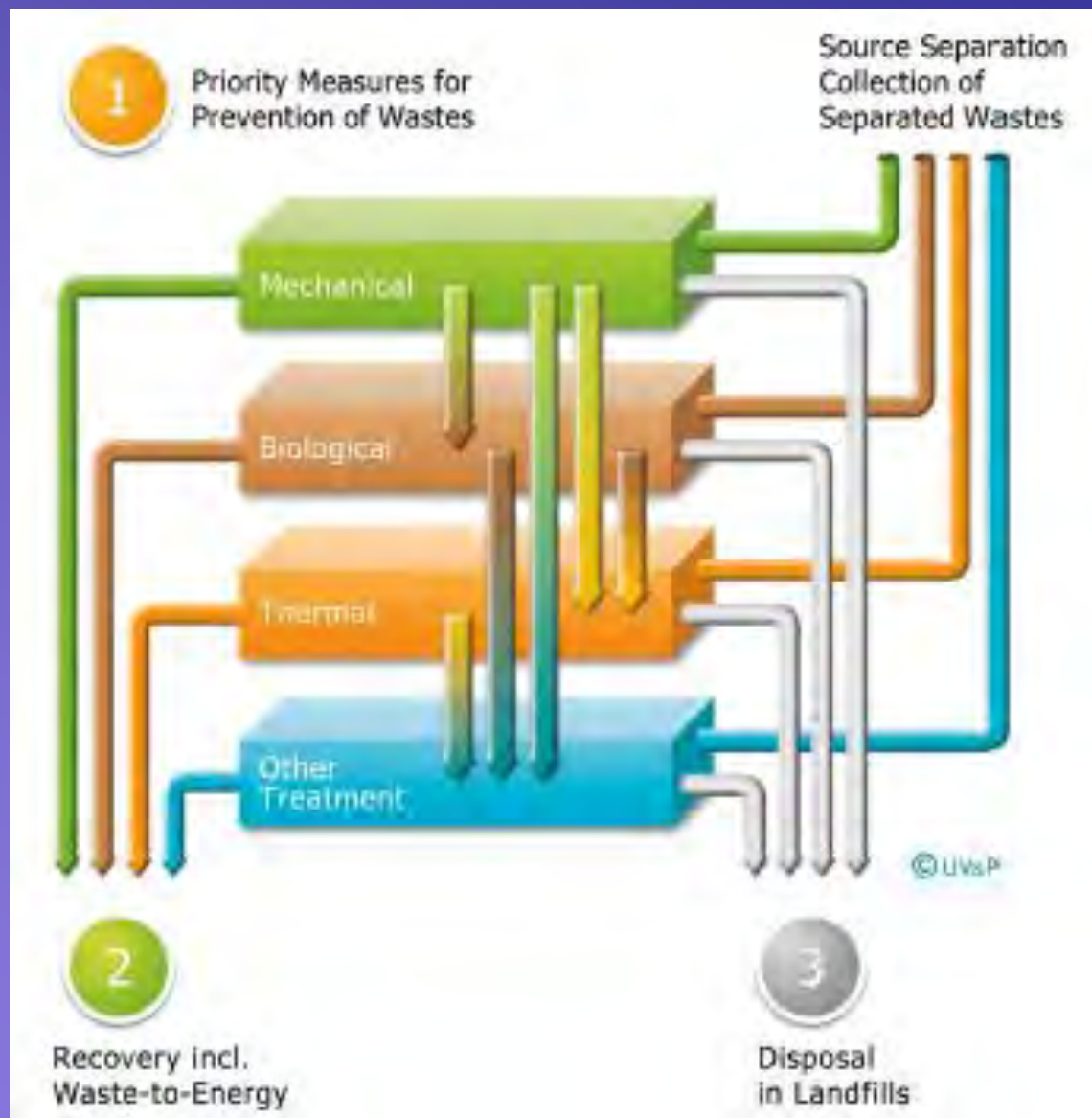


European Union Practises

- EU Directive 2008/98/EC

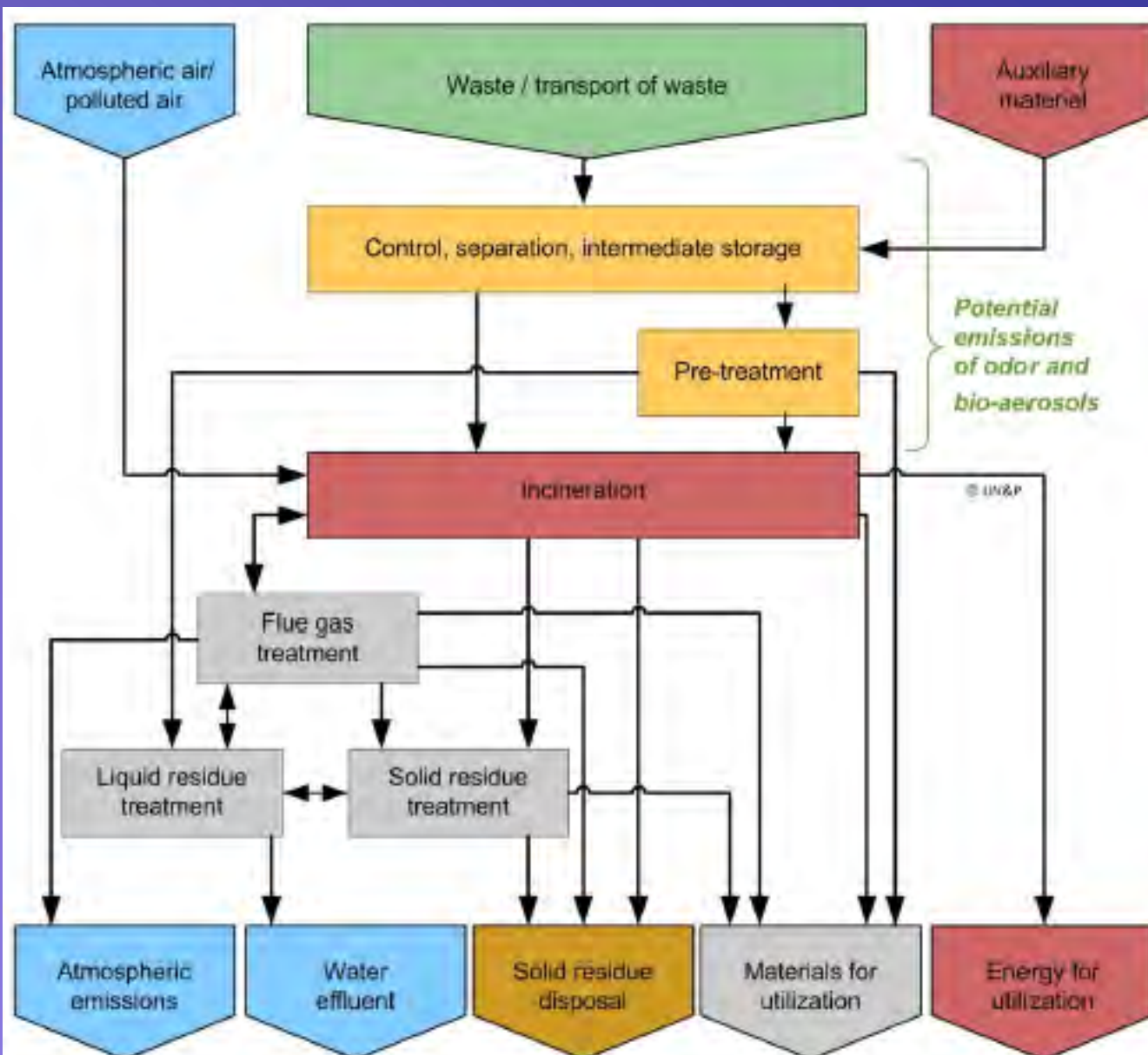


- Waste > 5% Total Organic Carbon banned from landfill!



Integrated system for sustainable waste management,
UV&P, 2014

INCINERATION PROCESS

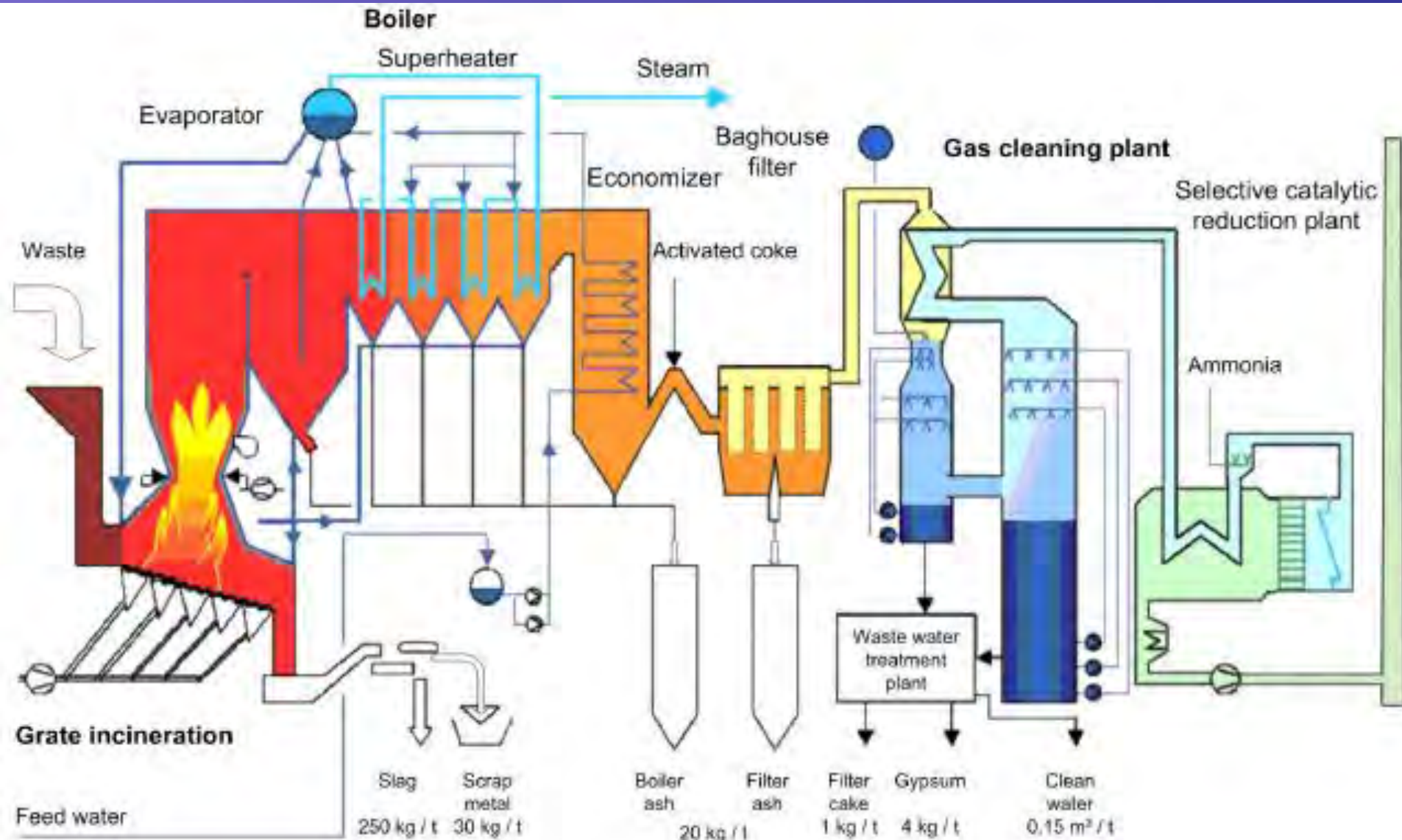


INCINERATION PROCESS

- **Drying**: H_2O is evaporated to render the fuel dry.
- **Degasification**: As further heat is added, volatile organic substances escape. The solid residue is then referred to as “coke”
- **Gasification**: Solid carbon is then converted into combustible carbon monoxide (CO) utilising a gasification agent (H_2O , O_2). The solid residue left over is referred to as ash/bed material/fly ash.
- **Oxidation**: The combustion of the gases CO and H_2 to convert into CO_2 and H_2O with high release of heat.

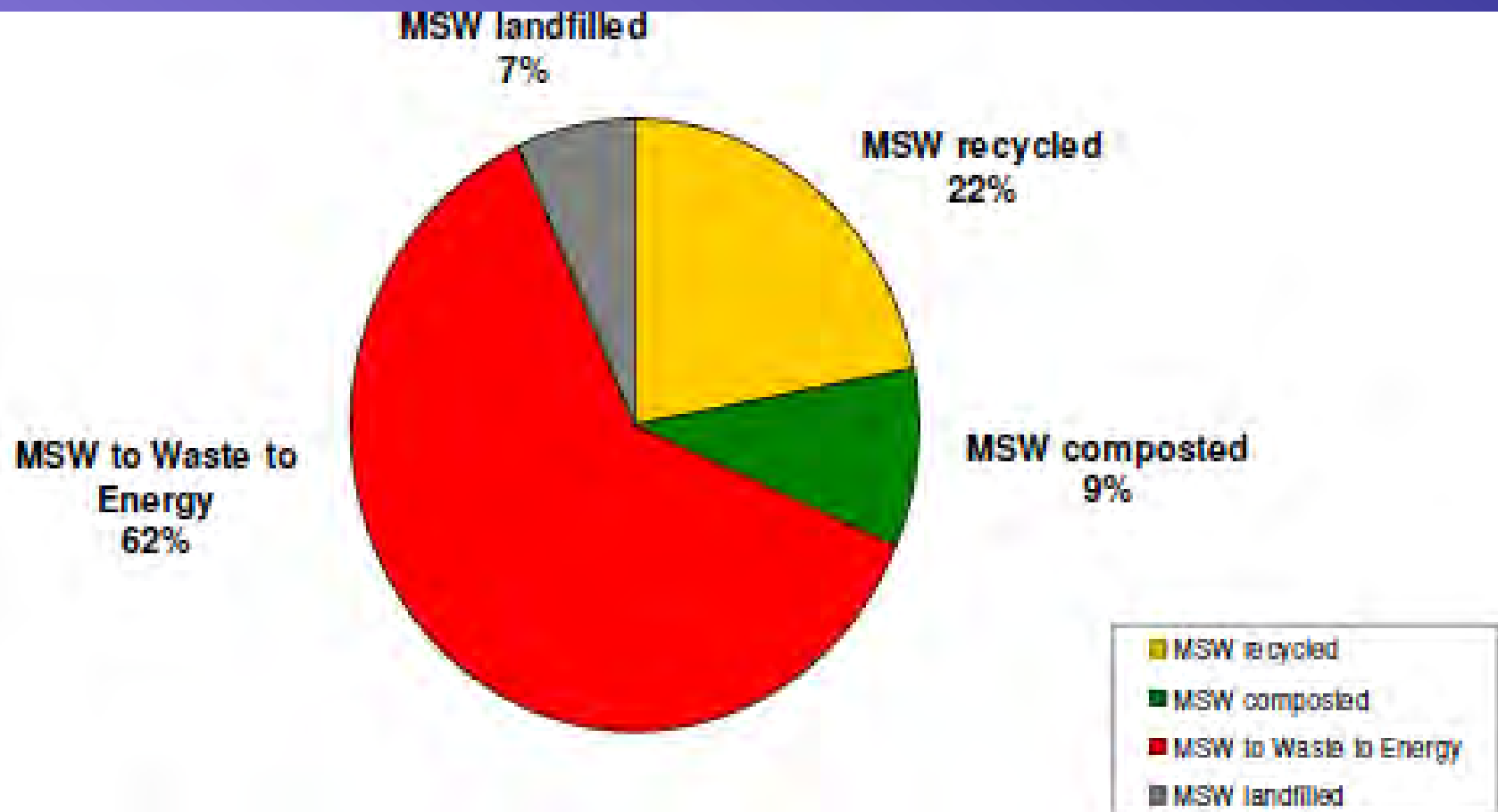
Turbulence + Temp
+ Time

TECHNICAL FIRING SYSTEMS



MSW Management in Vienna

- Operated by MA 48
- 862 000 households with 1 037 000t/a MSW



Separate Collection



250 000t/a Recyclables

600 000t/a Residual WtE

240 000t/a End Disposal

19 drop off sites – bulky waste
WEE, haz waste

Waste Treatment in Vienna

Treatment of residual waste



Pfaffenau WtE



| | |
|--------------------------------------|---------------------------|
| Number of incineration lines: | 2 |
| Amount of fuel: | approx. 250,000 t/year |
| Fuel thermal rated power: | 2*40 MW |
| Electric net power output: | approx. 14 MW |
| Power supply for: | aprox. 25.000 households |
| District heat extraction: | approx. 50 MW |
| Power supply for: | approx. 50,000 households |
| Investment cost | 220 million Euros |





Simmeringer Haide WtE

**180.000 t
municipal
sewage sludge**

**90.000 t
non-hazardous
wastes**

**90.000 t
hazardous wastes**



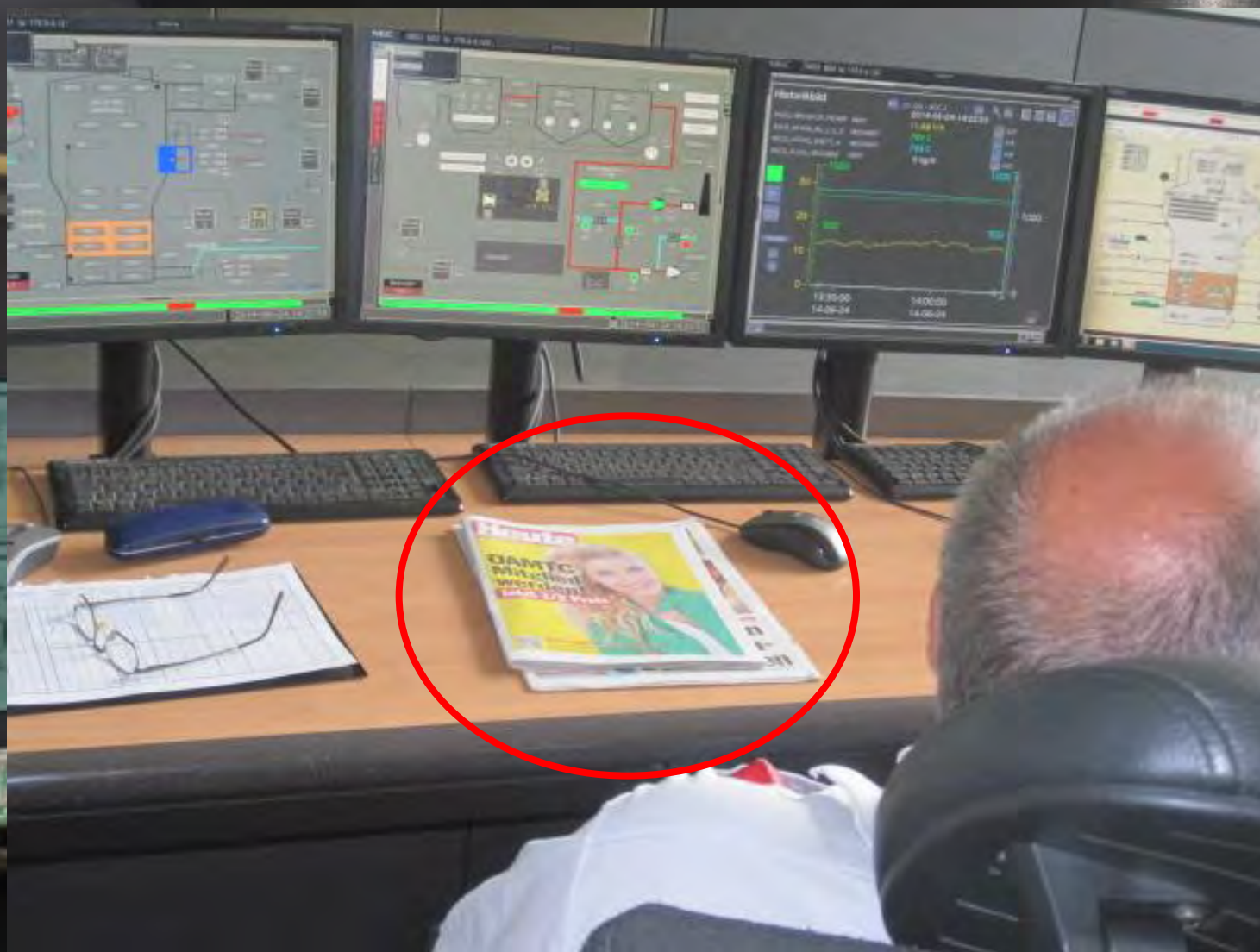
**thermal waste treatment
and recovery of energy**

**56.000 MWh
electricity**

**440.000 MWh
district heating**

**1.800 t
metals**

**62.000 t
solid residues**



Pfaffenau Waste Logistics

- 280 000t/a capacity with Mechanical Pre-Treatment
- Waste baled and foil wrapped
- 44 000 bale capacity in storage
- Facilitates WtE downtime – “buy time”
- Conveyed to Simmeringer Haider



Each Bale 1m x 1m x 1.8m
Capacity of 44 000 bales

Pfaffenau Composting

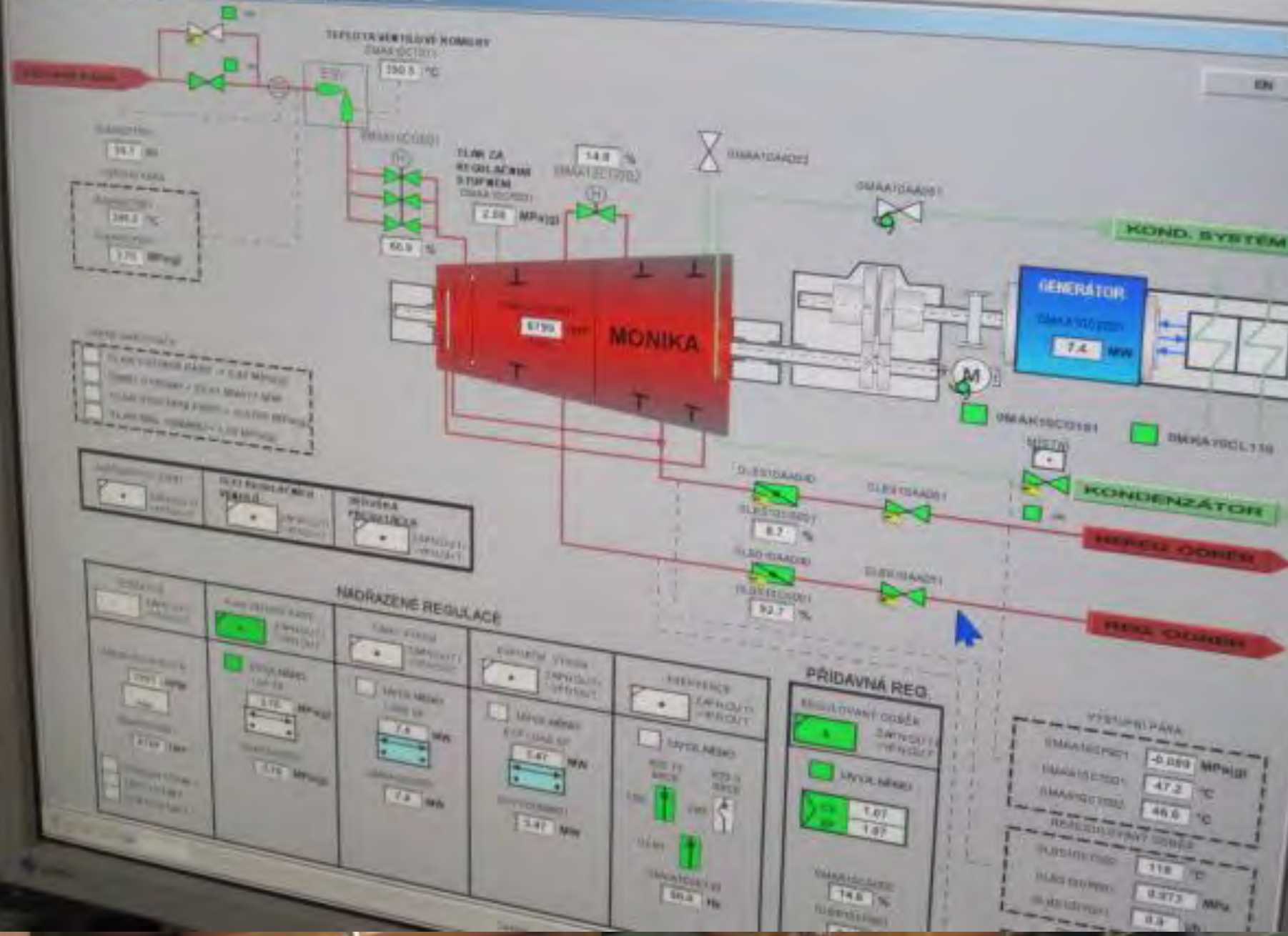
- 115 000t/a biowaste treatment – aerobic composting
- Mechanical Treatment – 2 shredding units
- Wetting plant with conveyor system – 60million Euros!
- Open windrow composting – 70°C in 1 week
- Turning with compost turner & 10~12weeks compost time
- Compost sold, organic gardens, back to citizens



Czech Republic - Bruno

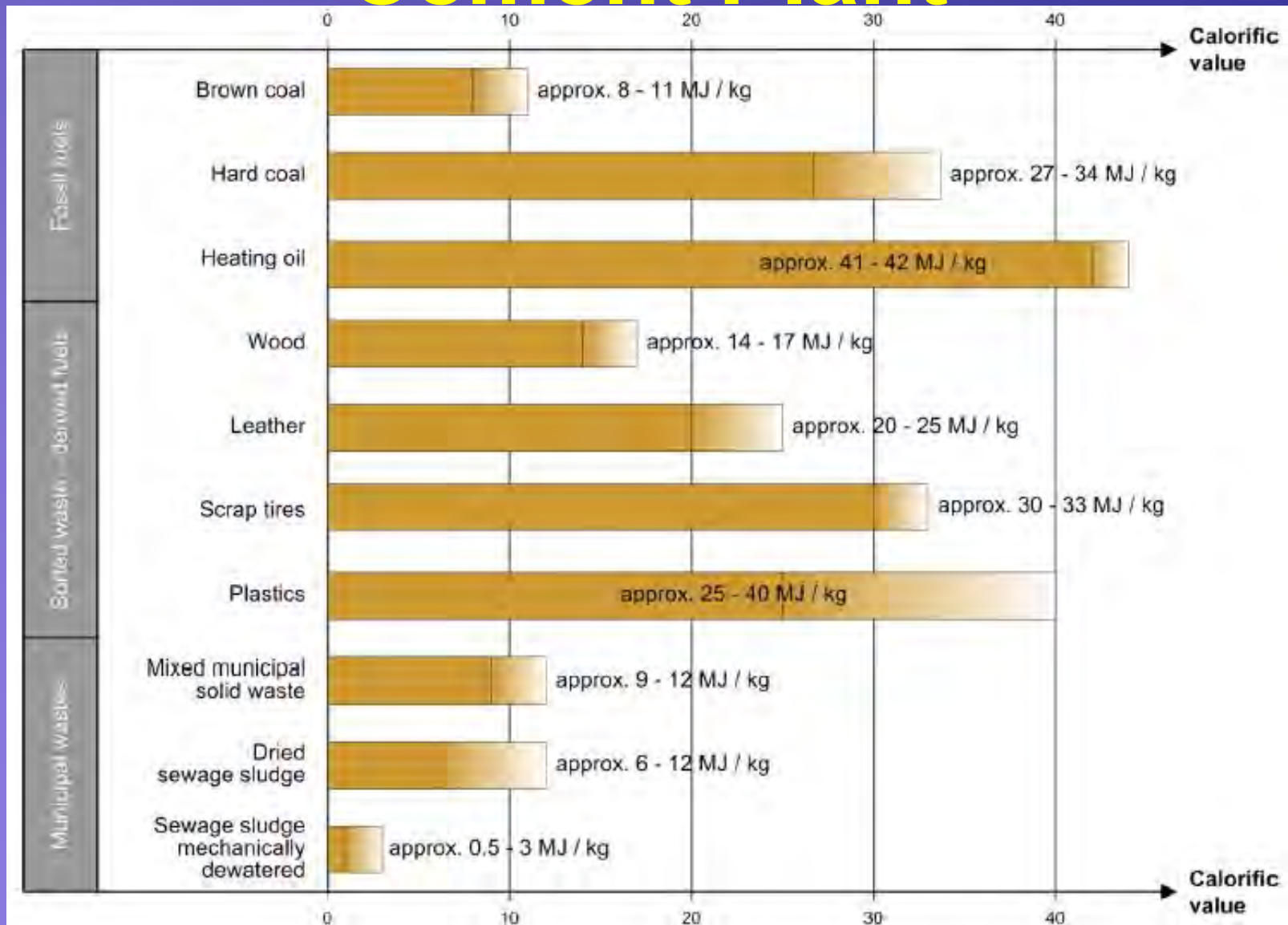
- First Incinerator dating back to 1905
- 224 000t/a MSW WtE plant
- Electricity 63 000MWh/a & Heating 350 000MWh/a
- Total Invest in Upgrade ~ 150 million Euros – 50% subsidized
- Process:
 - 2 x Steam Boilers
 - Semi dry flue gas cleaning
 - Energy: majority district heating and electricity (15%)
- Sorting of Recyclables – 10 000t/a

2. Databázová podpora, SADA, THERM, PICTURE, C2, PICTURE, KONE - (CONTIN)





Secondary Fuels – Rohrdorfer Cement Plant



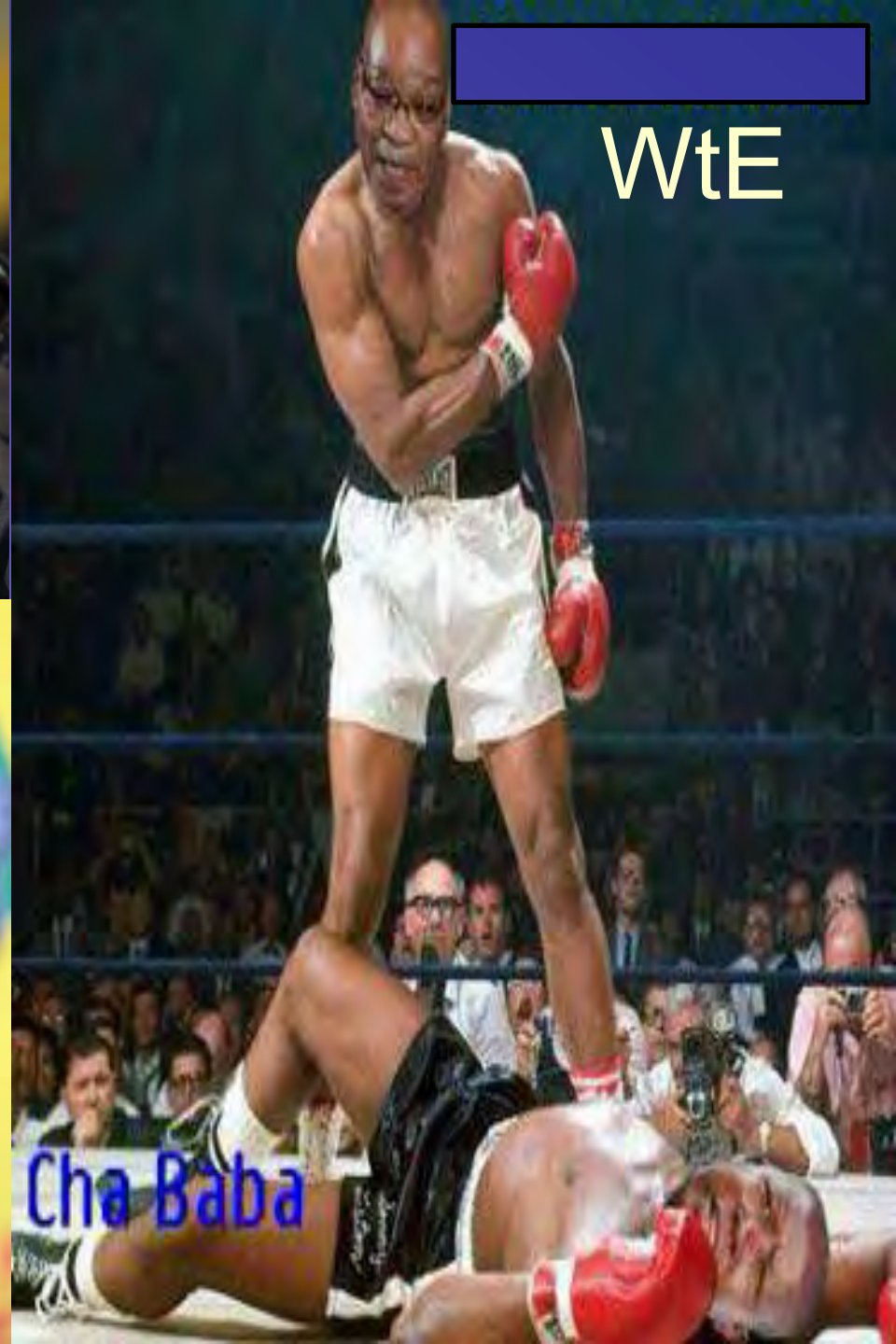


The Number's Game ?

| | Waste to Energy (Euro) | Waste to Energy (Rands) | Typical Landfill |
|-----------------------------------|---------------------------|----------------------------|------------------|
| MSW Waste (tons/annum) | 300,000.00 | 300,000.00 | 300,000.00 |
| Investment Cost | € 220,000,000.00 | R 3,300,000,000.00 | R 110,000,000.00 |
| Calorific Value (MJ/kg) | 9~12 | 9~13 | 9~14 |
| Life (years) | 30 | 30 | 30 |
| Operating costs per ton | € 100.00 | R 1,499.98 | R 100 ~ R 300 |
| Revenue/annum | € 12,000,000.00 | R 180,000,000.00 | ? |



It's sugar free.



Is WtE SA's Answer?

- Stringent legislation in EU Vs SA's legislation
- Social Awareness and Ongoing Education
- Social Acceptance of WtE
- Economic Viability – Landfill still cheaper option and most practical
- Energy Markets

Social Awareness and Ongoing Education



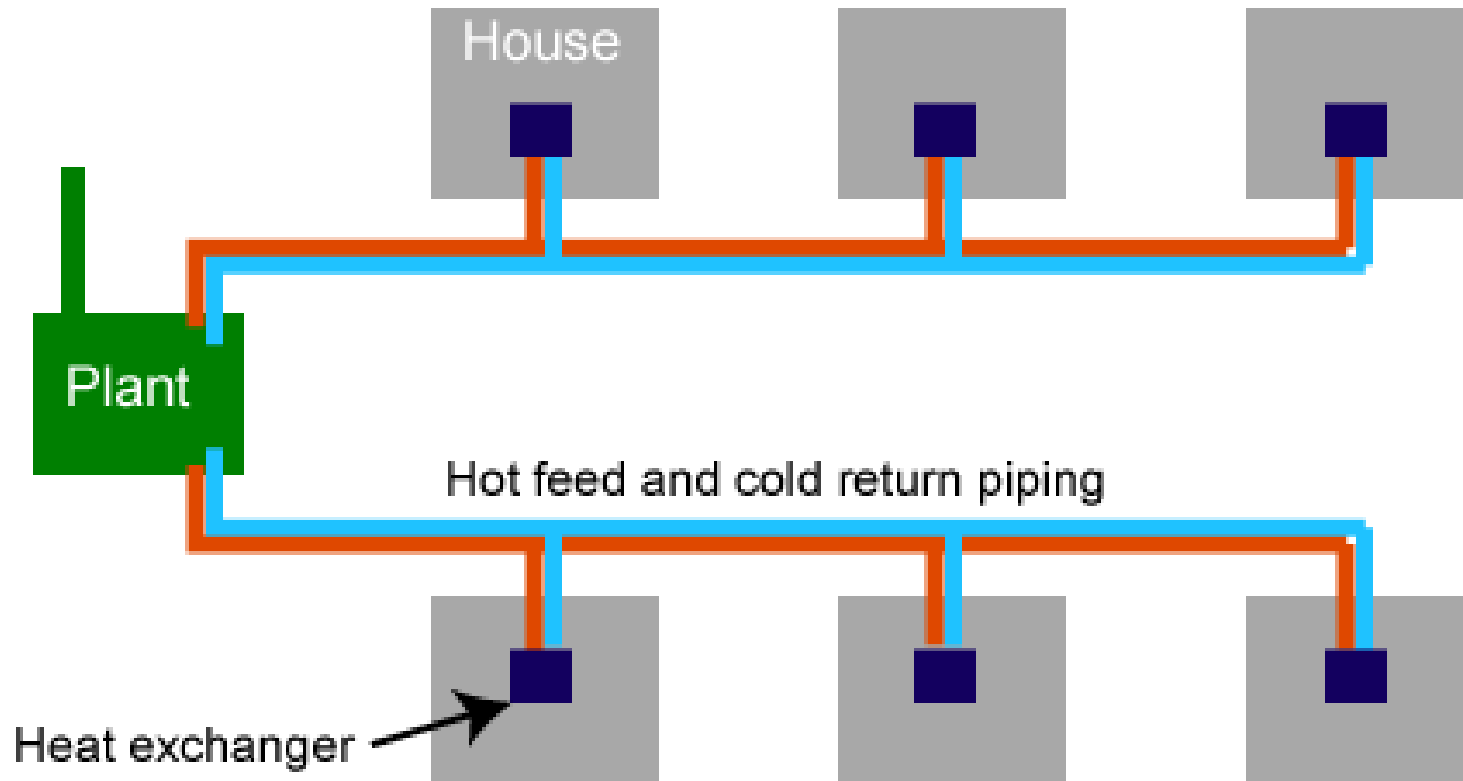
GRANNY'S FRIES
WITHOUT
THE GRANNY



Economical Viability ?



Energy Market ?





DISCUSSION

If you want something in your life you've never had,
you'll have to do something, you've never done.

~ JD Houston



www.Dailyinspirationalquotes.in

THANK YOU FOR YOUR ATTENTION