

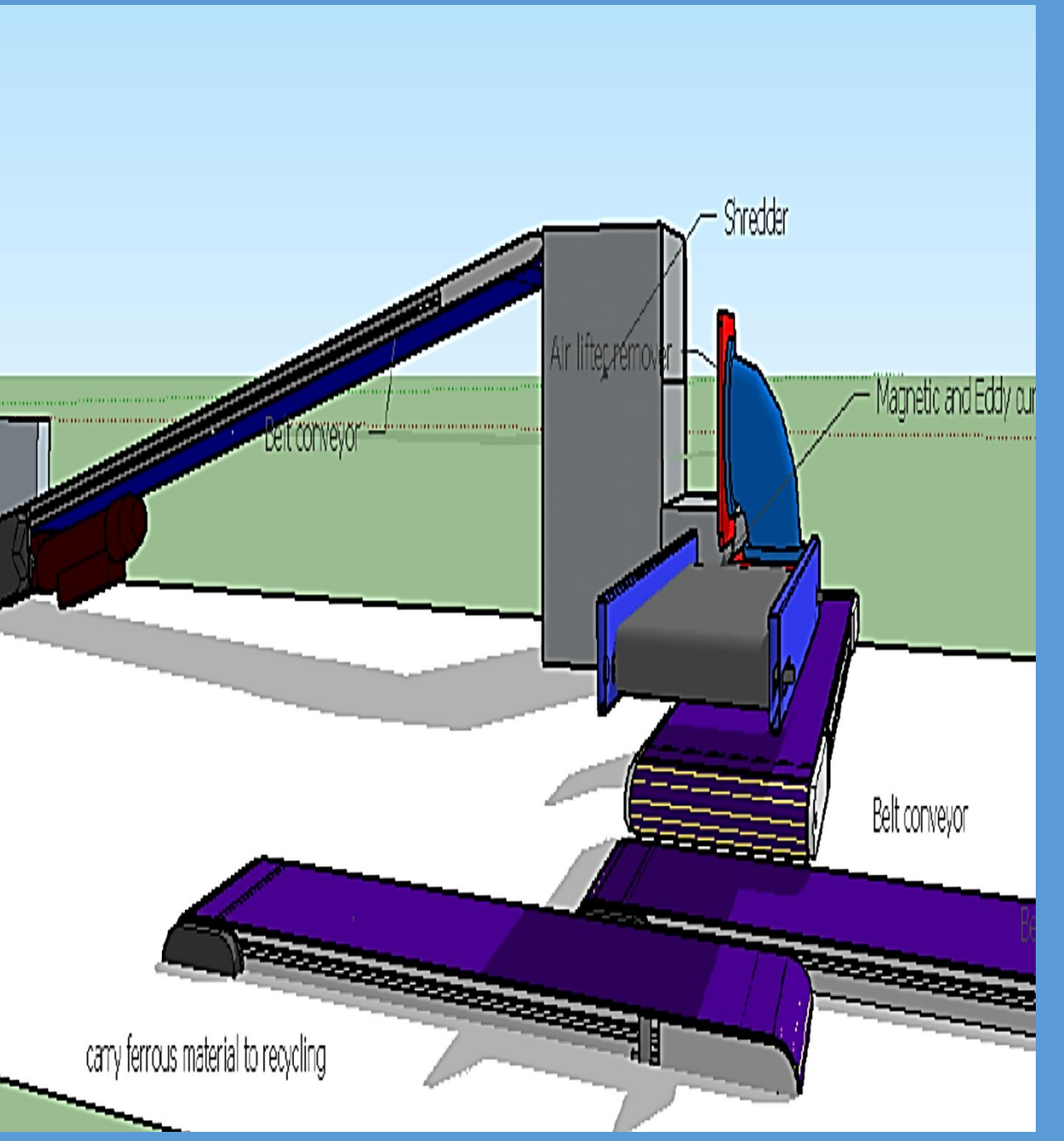
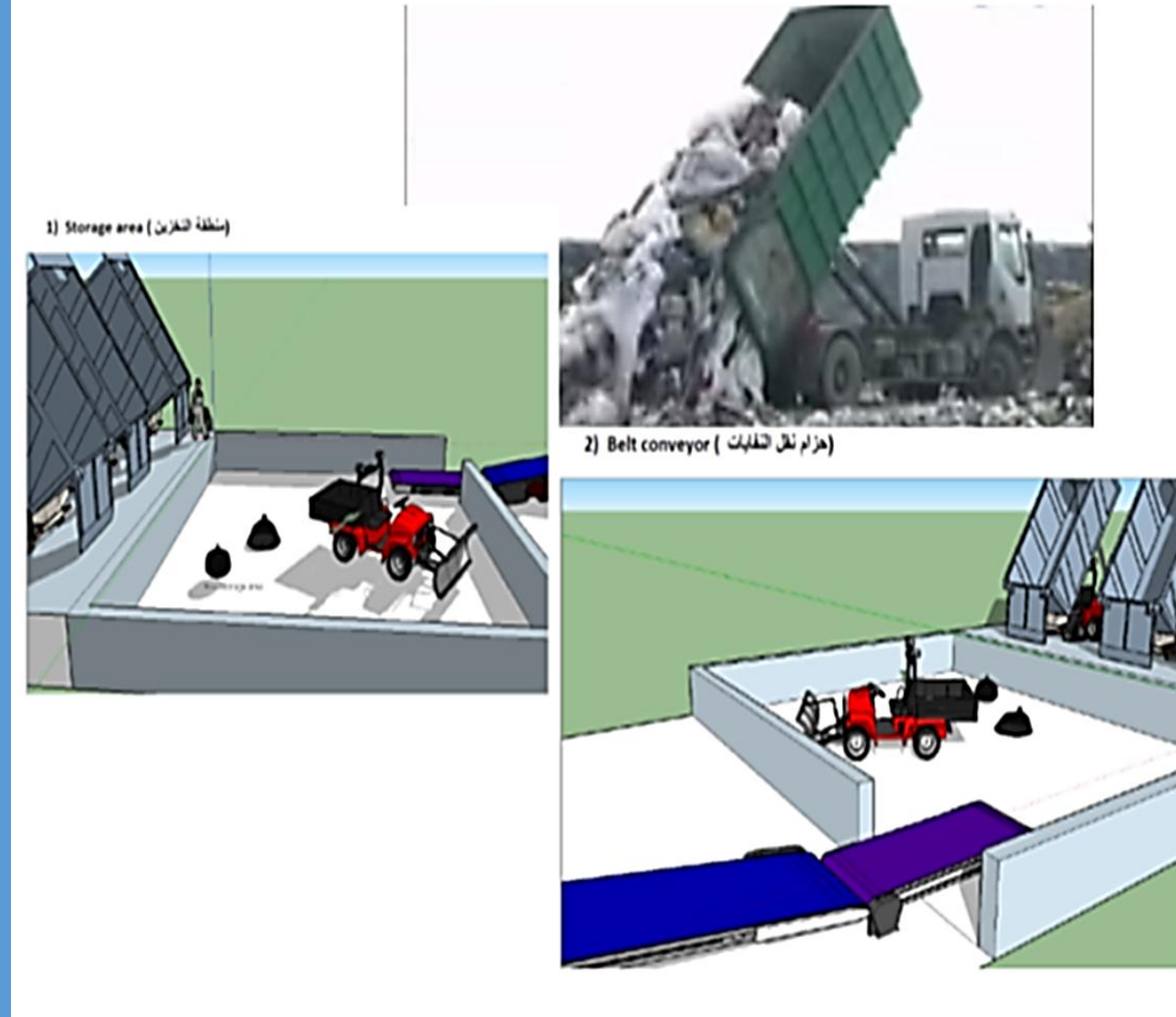


Waste to energy 2 MW platform

I -Waste input

Steps of this part are:

- 1-storage area
- 2-belt conveyor
- 3-shredder
- 4-air filter to remove stench
- 5-magnetic sorting + eddy
- 6-carry ferrous material to recycling
- 7-belt conveyor



	COST \$
Construction: Separation waste system	350.000 \$
Winch	100.000 \$

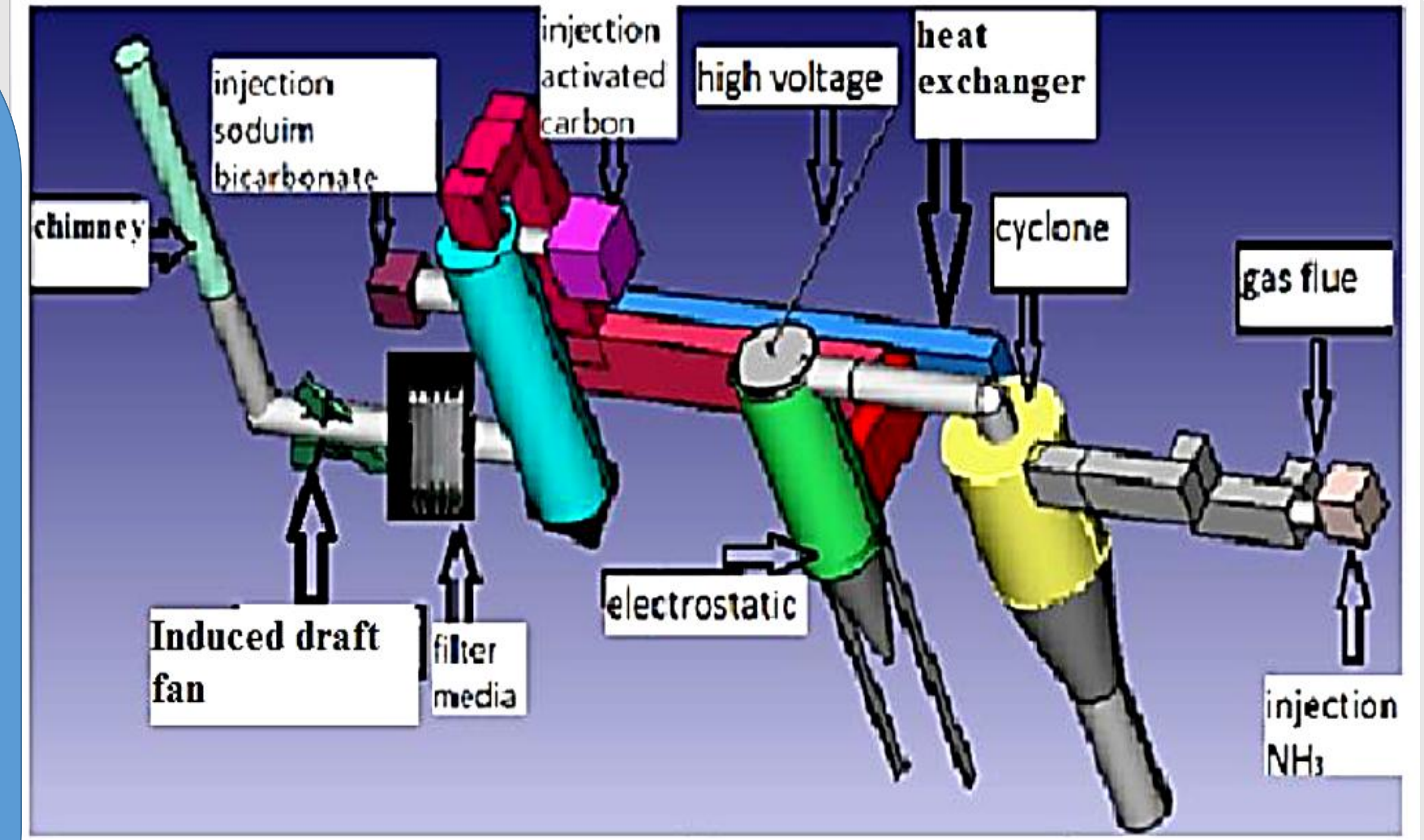
Heat exchanger between flue gas and air that will enter to the boiler and participate in combustion .Heat exchanger minimize the gas temperature to 200°C. at this temperature the charcoal is effective even as sodium bicarbonate .

-Injection of activated charcoal :to reduce the ratio of dioxin and furans in fumes .

- Injection sodium bicarbonate (powder) : to reduce the ratio of acid gas (SO₂ , HCl, HF), at 150-230°C.

- Filter media: fumes came to filter media where a cake was formed in the face ahead flue .It eliminate the toxic gas and bad smell.

System of filtration



Injection	Quantity/ ton of waste	Price of 1 kg	Quantity of injection to 50 tons	Cost / day(\$)	cost/ Month	Operation (Each day 1 silo of 30 kg should be filled out)	Construction of basic structure
Sodium bicarbonate	15 kg	0.23 \$	750 kg	172.5 \$	5.175 \$	Silo of 30 kg	
Activated carbon	1 kg	0.6 \$	50 kg	30 \$	900\$	silo of 1 ton	
Total					6.075	1 staff :300 \$	150.000 \$

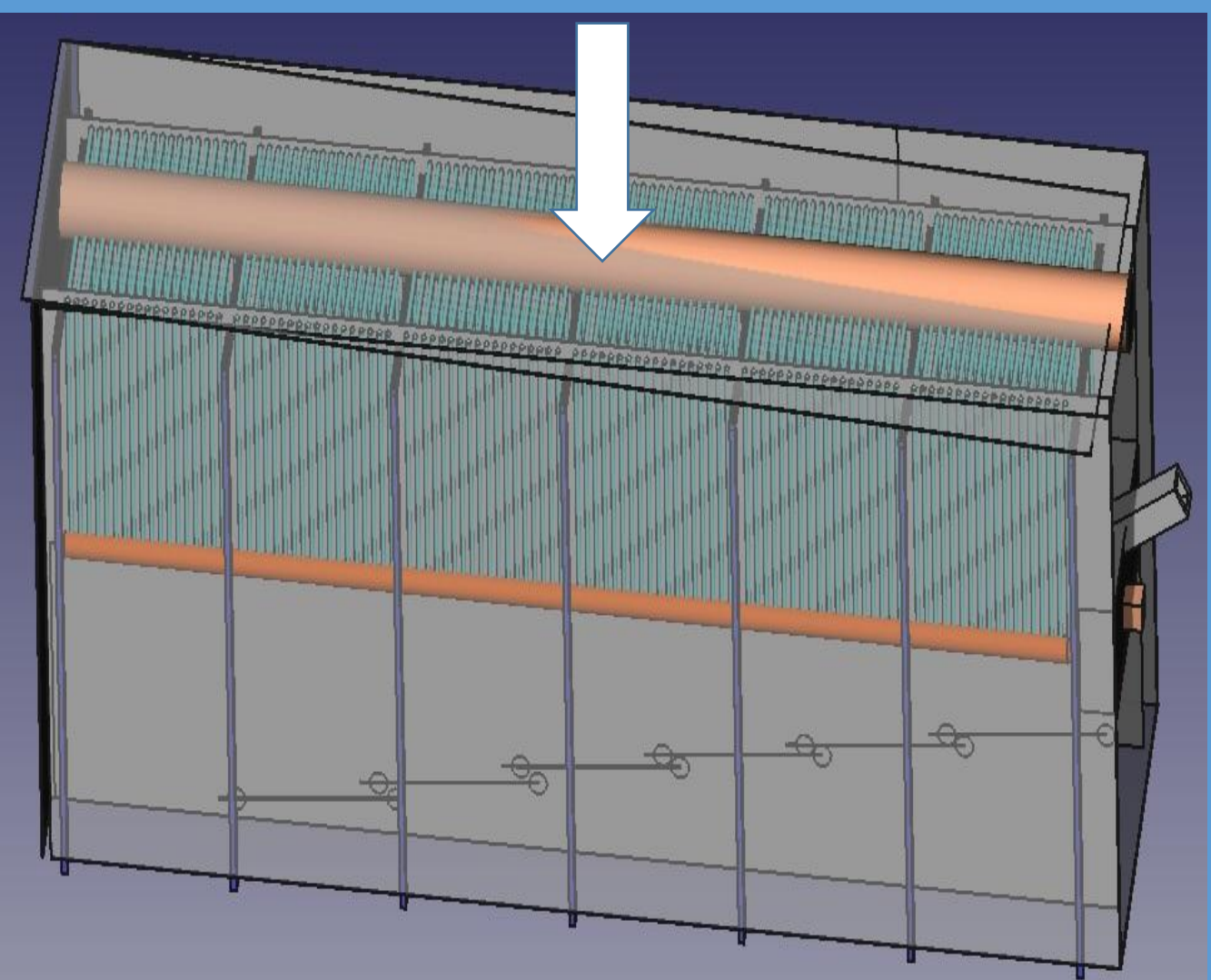
Ref:- https://www.alibaba.com/product-detail/Bulk-sodium-bicarbonate-industrial-grade_60760896553.html?spm=a2700.7735675.normalList.6.3ciZzM&s=p
https://www.alibaba.com/product-detail/activated-carbon-fine-powder_579170072.html?spm=a2700.7724857.2017127.18.54d71acbltCx8n&s=p

II -Incinerator +Boiler

A- Receiving sorted waste to be incinerated. **Combustion**

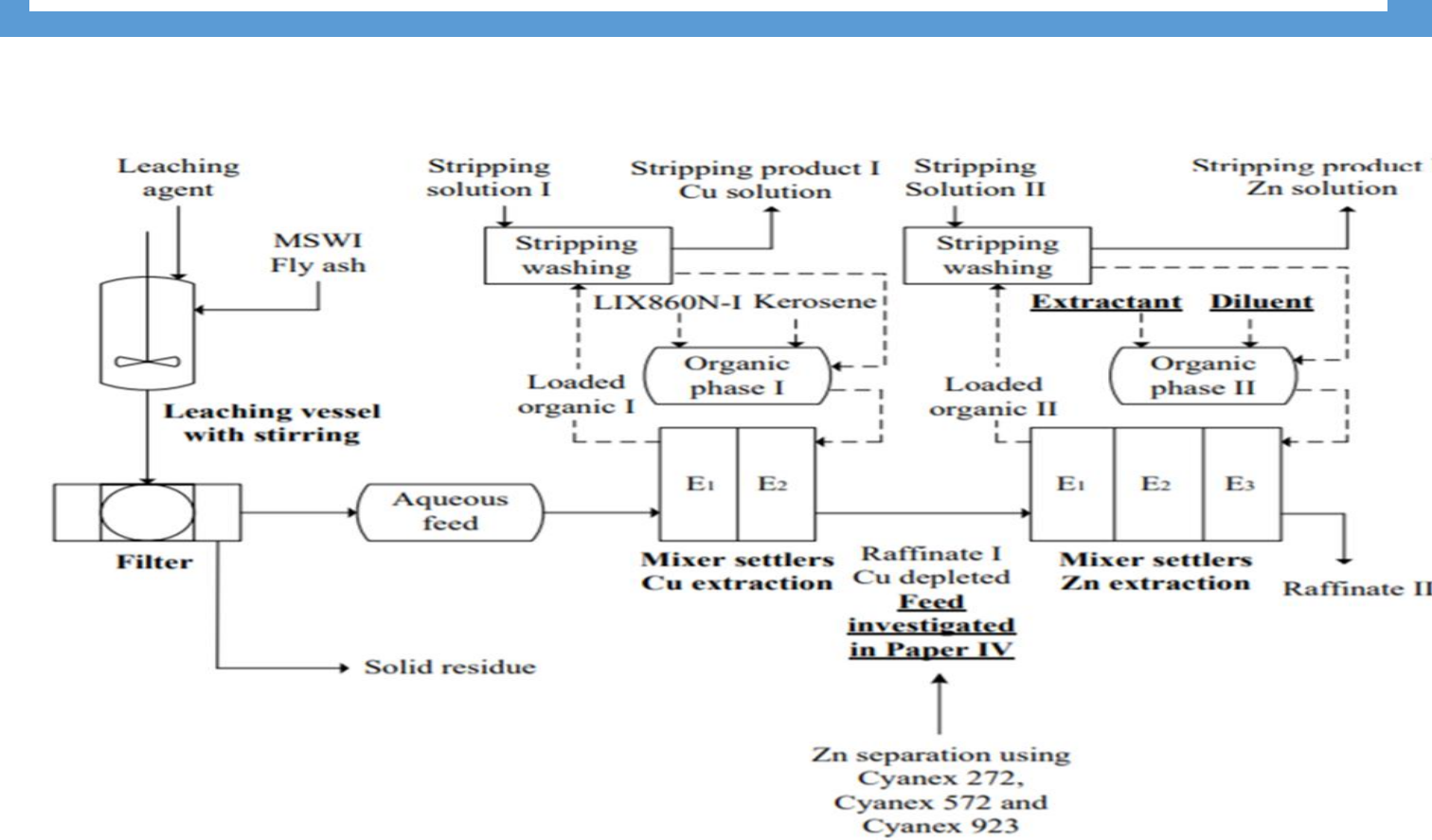
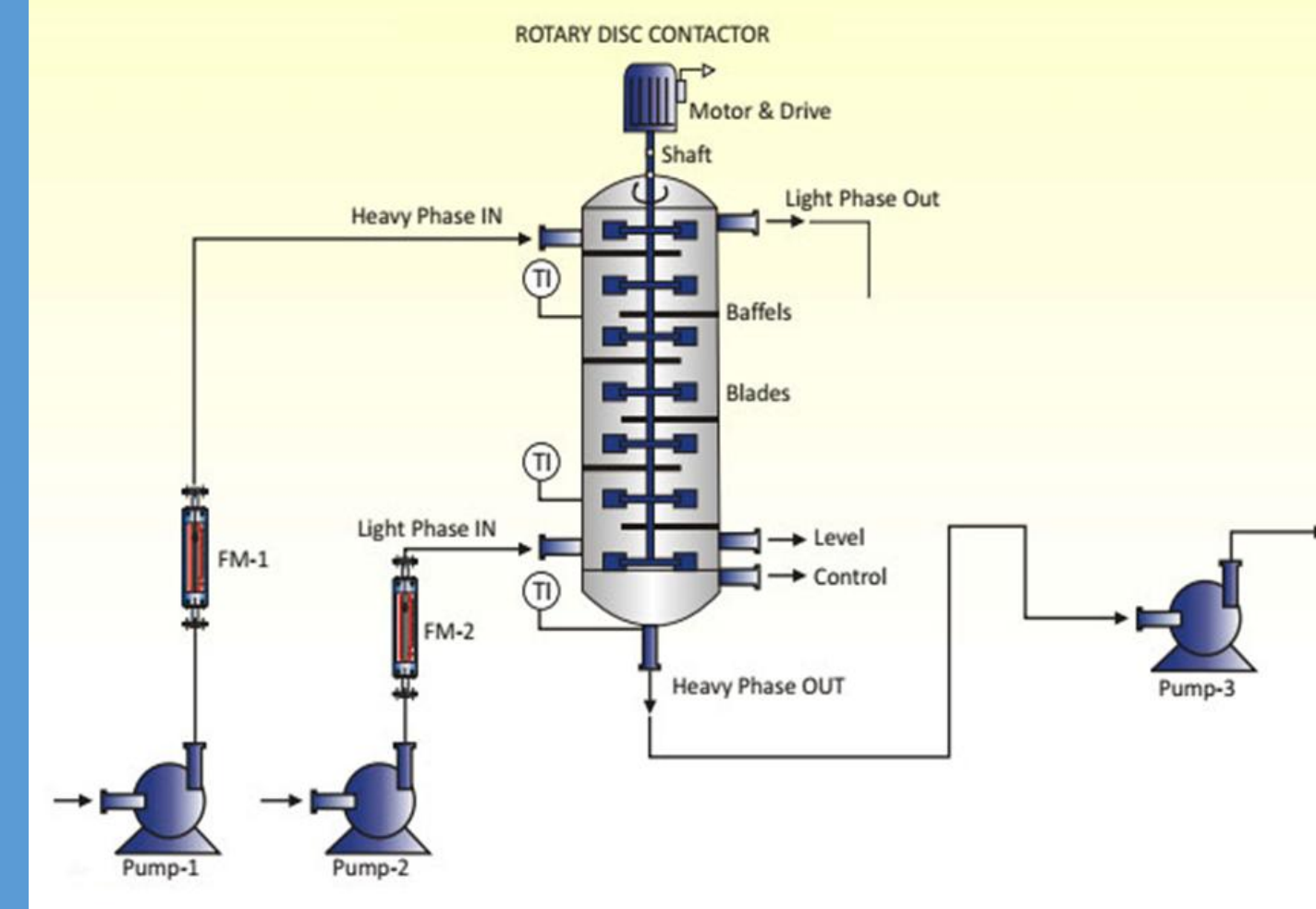
- takes place between 850 and 1000 ° C,
- reduces the waste volume by 90%.
- Reduces mass to 80 %
- In doing so it produces pollutants residues potentially dangerous.
- They are of two types: solid residues, called clinker, are recovered in the furnace vessel and flying residues

Boiler



	Cost(\$)
Construction	200.000 \$
Maintenance of all platform	150.000 \$
Diesel burner	2.000 \$
Total	352.000 \$

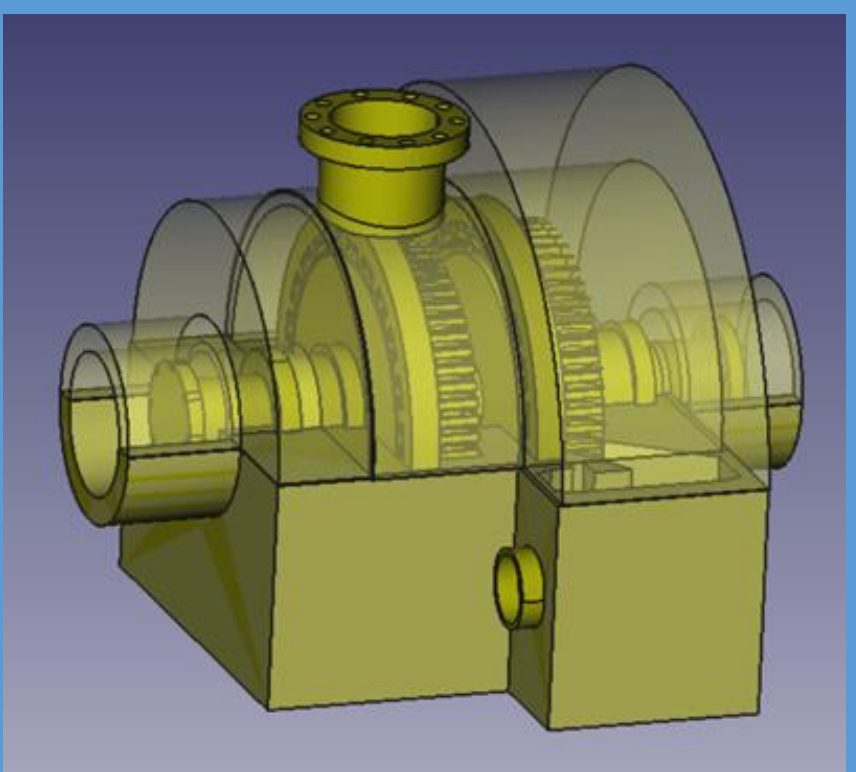
Treatment and recovery of heavy metals(Cu , Pb ,Mg ,Zn)



	Cost
Construction :4 columns	50.000 \$
Operation :2 staff	800 *2=1600 \$/month

III -Turbine + generator

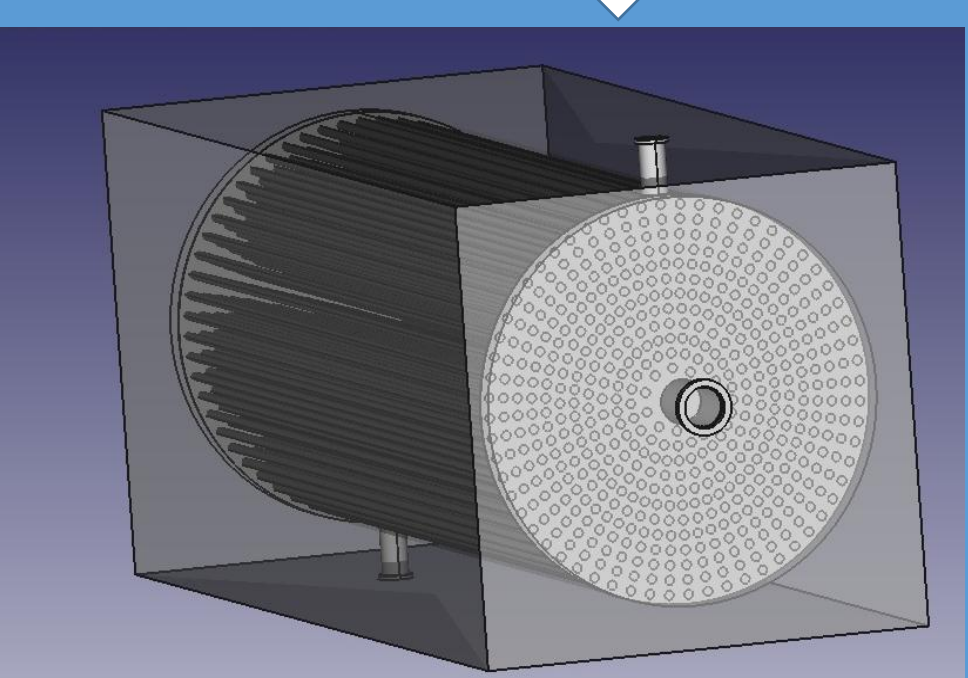
water transforms to steam in the incinerator then it passes to the turbine to .this mechanical power transforms to electrical power by a generator. The ,the steam passes in condenser to repasses to the boiler .



Turbine



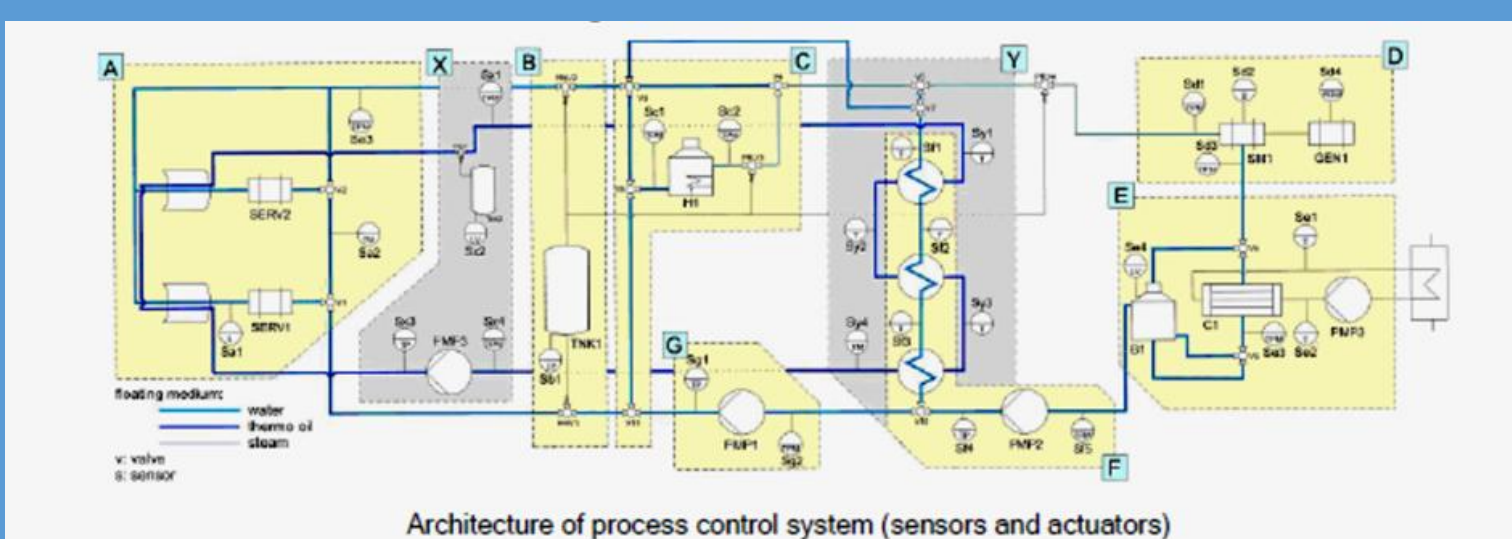
Generator



Condenser

	Cost(\$)
Turbine	1. 000.000 \$
generator	32.500 \$
condenser	35.000 \$
Condenser cooling convertor	1.500 \$
40.000 \$	
Total	1.109.000\$

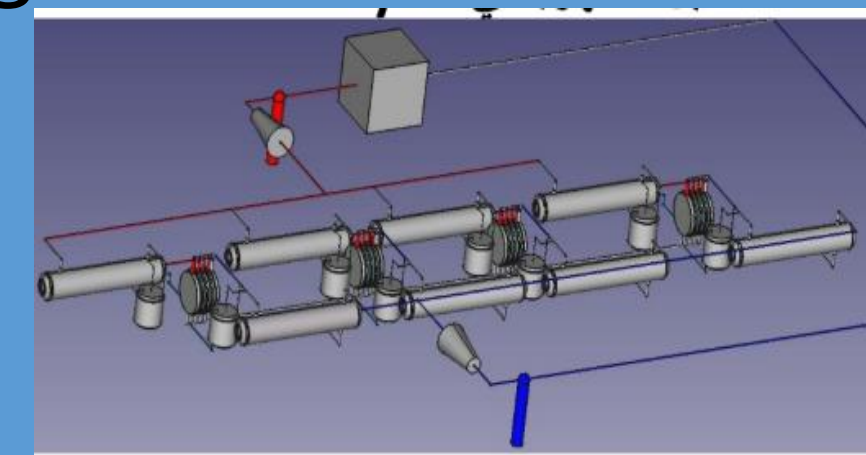
Process Control system



	Cost
Construction	65.000 \$

Electrolysis

-Production of H₂ and O₂ from water by using the electricity generated .



Cost: 912 \$ /KW



This Power plant use: 50 tons per day to generate 2 MW

Operation cost

Task	Number	Qualification	Salary/ month
Forman	1	Forman expert	1.000 \$
Winch employee	1	Winch expert	1.000 \$
Control system	2	Eng. expert	1.000 \$
Bulldozer driver	1	Bulldozer expert	1.000 \$
Waste separation	8	Employer	600 \$
Total			9.800 \$