PLASMIC ENERGY UNIT FOR GASIFICATION OF WASTE AND ALTERNATIVE FUELS

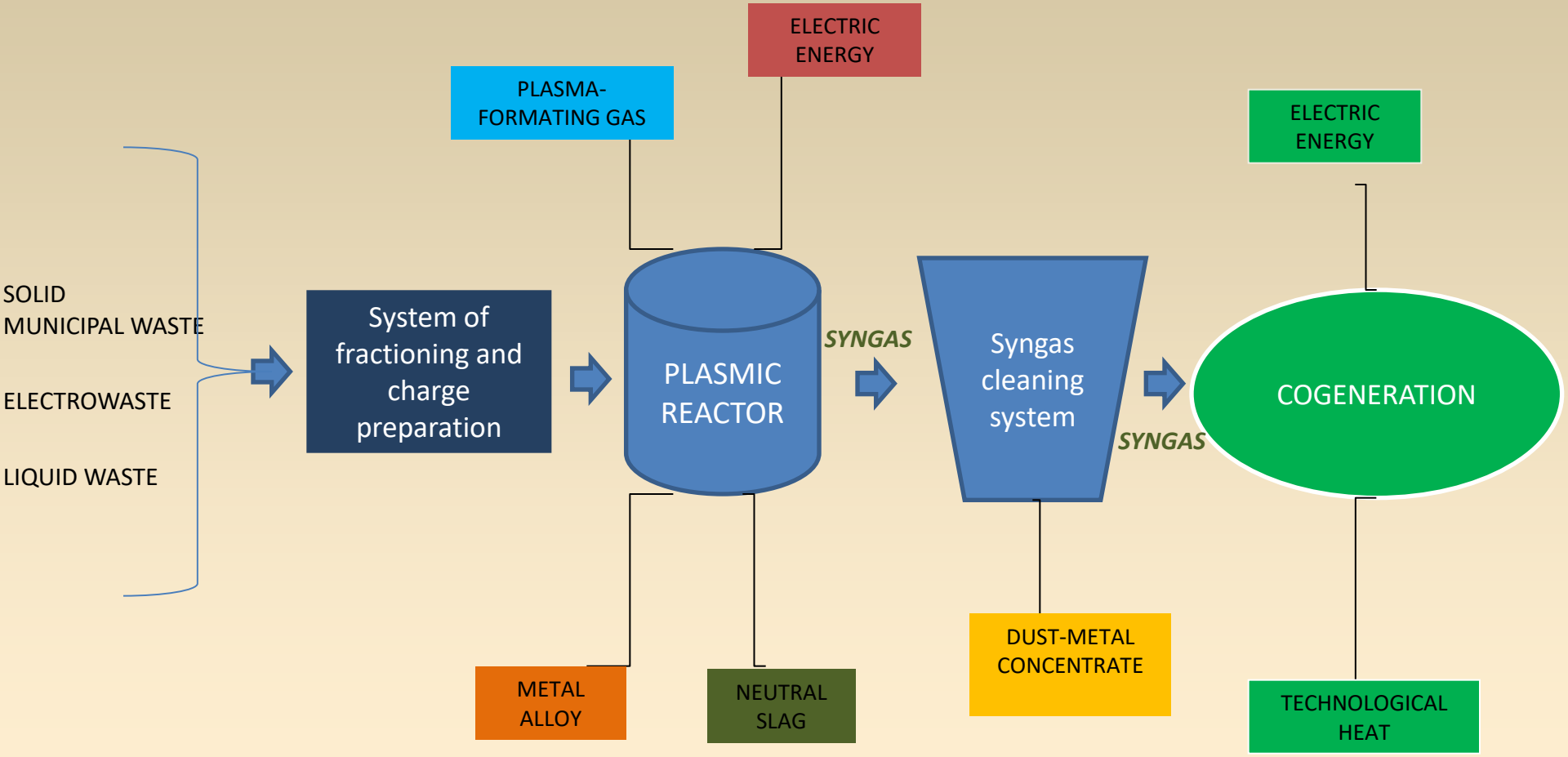
FOREWORD

- Plasmic reactors have been used for more than 10 years
- Big interest with regard to the huge problem of rubbish overflow
- Increasing costs of utilization with traditional methods
- Increase of interest with environment protection problems

WHY PLASMA TECHNOLOGY?

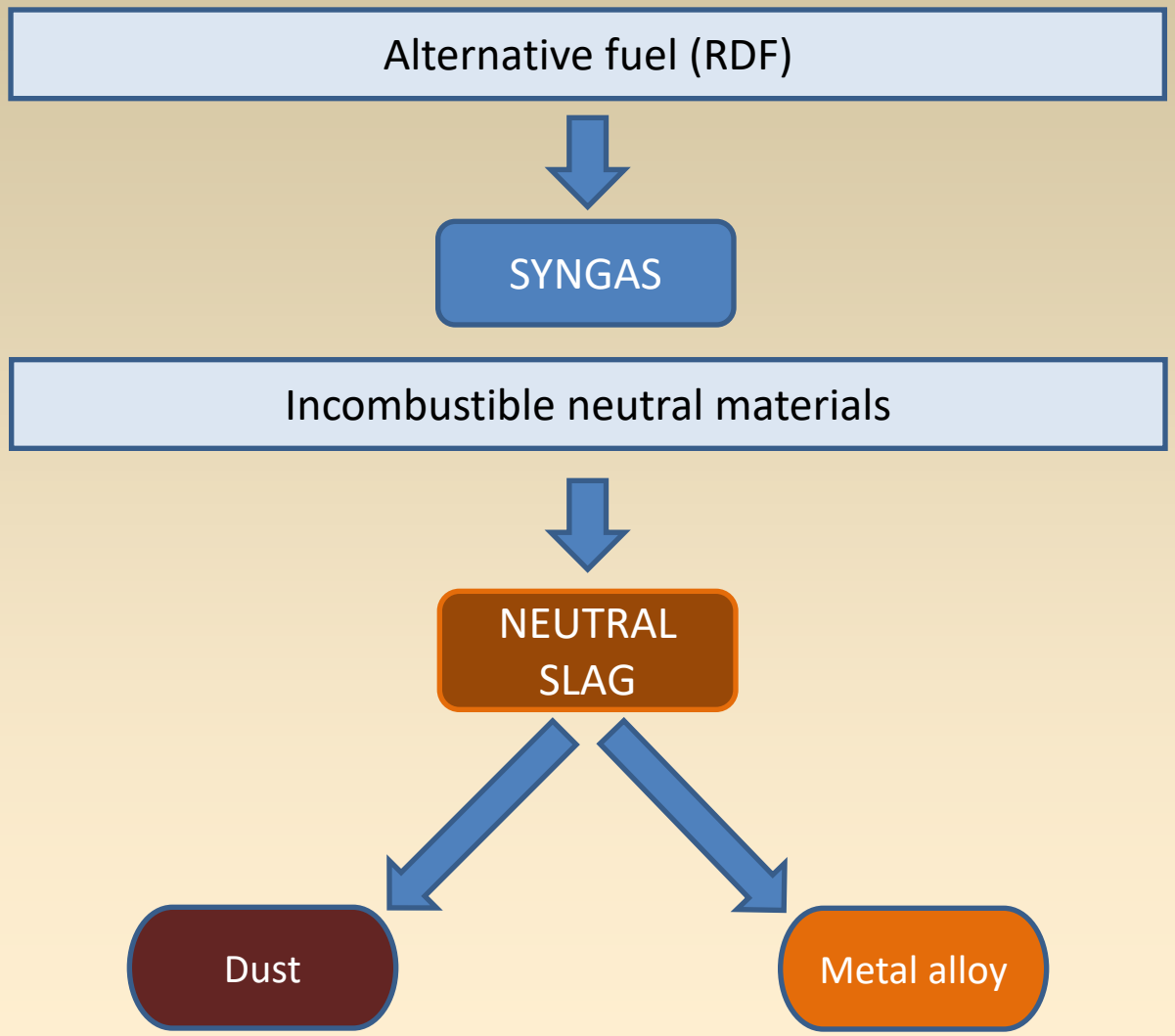
- completely ecological method
- primary materials recovery
- **thermal and electric energy recovery**
- possibility of liquidation of incompliant landfills
- technology of the future
- currently, there is no waste utilization method that would be more effective and so universal

PLASMIC GASSIFICATION



Gasification process algorithm

Syngas production



COMPARISON OF COMBUSTION AND GASIFICATION PROCESSES

COMBUSTION	PLASMIC GASIFICATION
Use of heat energy	**Use of energy**
Emission of exhaust gases	**Synthesis gas**
Production of large amount of ash	**Dust containing metals**
Furnace dust generation	**Metal alloy**
	Neutral slag
Necessity to store ashes and furnace dust with high contents of heavy metals, dioxins and furans	***Prosess is eco-friendly and does not result in production of solid or liquid waste***

PLASMIC ENERGY UNIT BY SILVERGAS COMPANY VERSUS WASTE

Some of plasma converter possibilities:

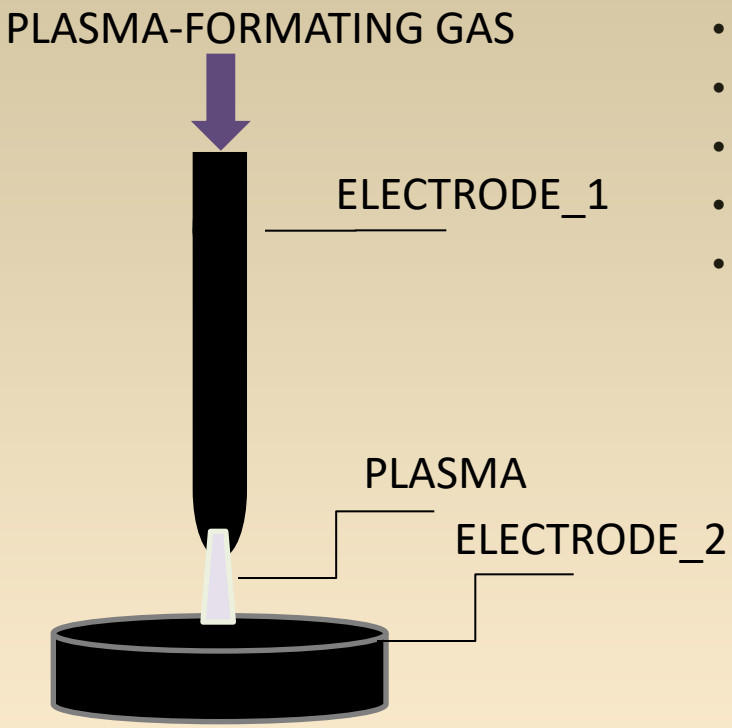
-municipal waste neutralization,

- production of synthesis gas for energetic purposes
- use of swag for construction purposes

-electro-waste destruction and primary materials recovery

-neutralization of waste sediments from purification plants

OPERATIONAL PRINCIPLE



- *plasma formation between electrodes*
- *power stabilization by current and voltage control*
- *arc length proportional to intensity*
- *control of regulation of distances between electrodes*
- *monitoring and control by a computer control system*

MATERIAL BALANCE AFTER COMUNAL WASTE GASIFICATION

SYNGAS COMPOSITION AFTER MUNICIPAL WASTE PROCESSING

COMPOSITION	%
CO	33,47
H2	29,09
N2	34,43
H2S	0,76
HCL	0,68
CH4	1,57

- *1kg of waste with humidity of 20% --- 2m3 of syngas*
- *calorific value 1m3 --- 6,5 MJ*
- *syngas energy from 1kg of waste --- 13 MJ*

- *energy demand for 1kg of waste --- 1,0 kWh*
- *from 1kg of waste --- 1,45 kWe*
  --- 3,60 kWc
- *formation of material in form of hyalinized safe material used in construction industry --- 2..8%*

Assumptions:

Reactor's operation 300 days/year for 24 h/day — 7200 h/year
1000t/year — 70 kg/h — 70 kW reactor's power – installation works in SAFINA company
3000t/year — 215 kg/h — 215 kW reactor's power
5000t/year — 350 kg/h — 354 kW reactor's power

PLASMA REACTOR

Processing and recovery of valuable materials from electro-waste

Reactor's power– 200kW

Capacity– 200kg/h

PLASMA REACTOR

PLASMA REACTOR

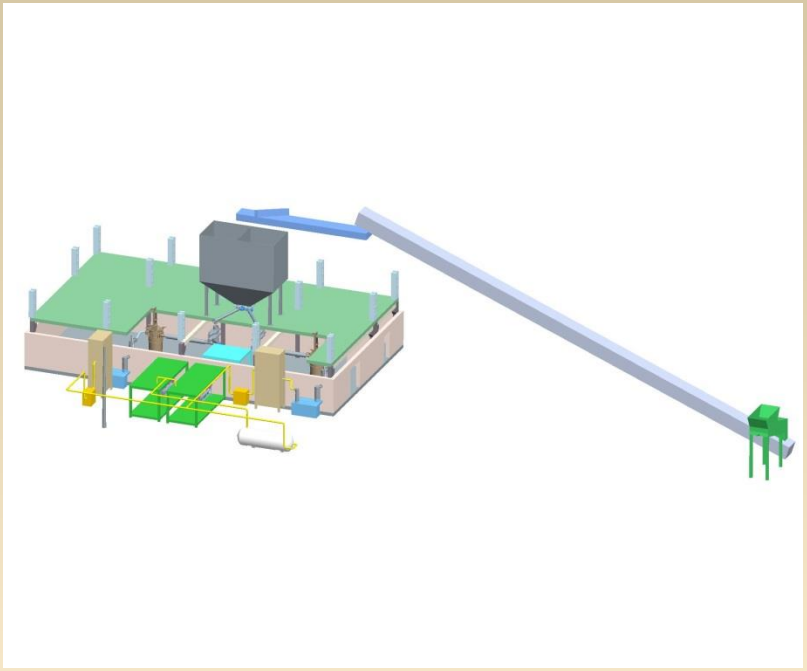
Reactor's power– 70kW

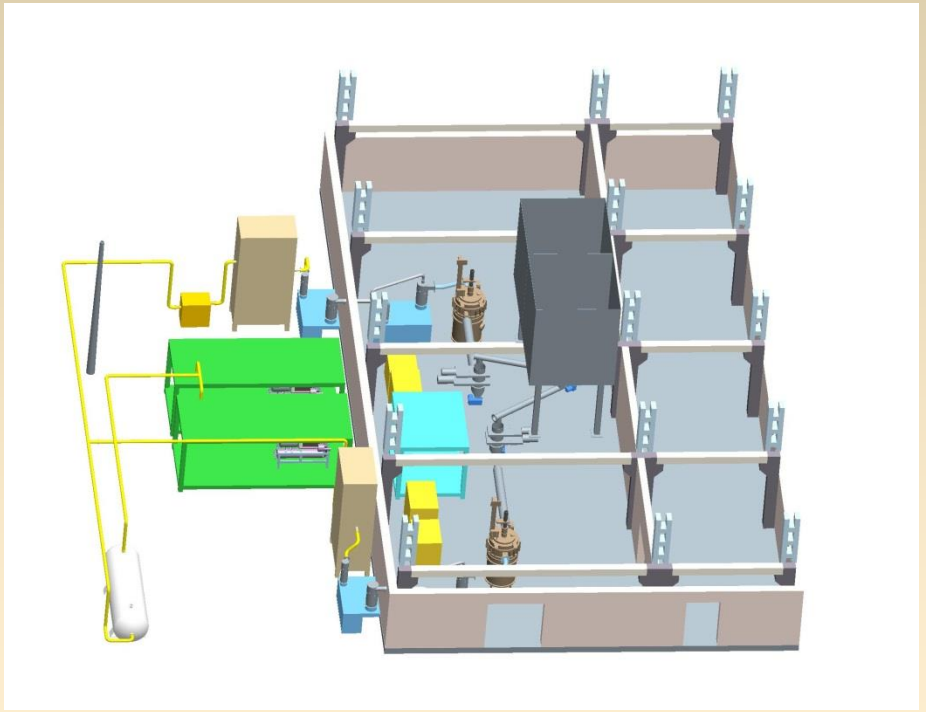
Capacity– 70kg/h

PLASMA REACTOR

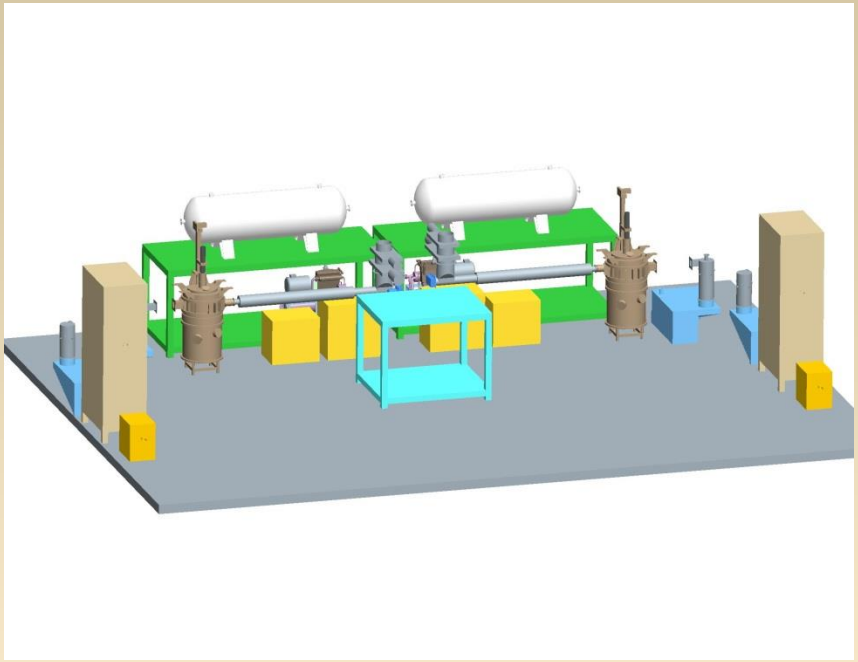
PLASMA REACTOR

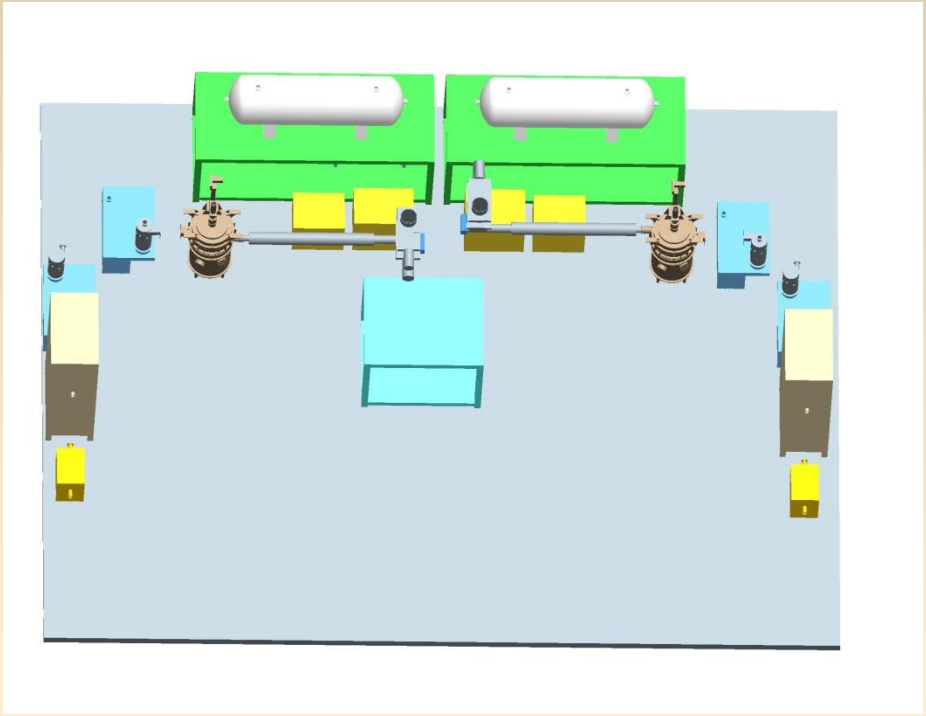
DESIGNED SYSTEM OF PLASMIC ENERGY UNIT /POLAND/



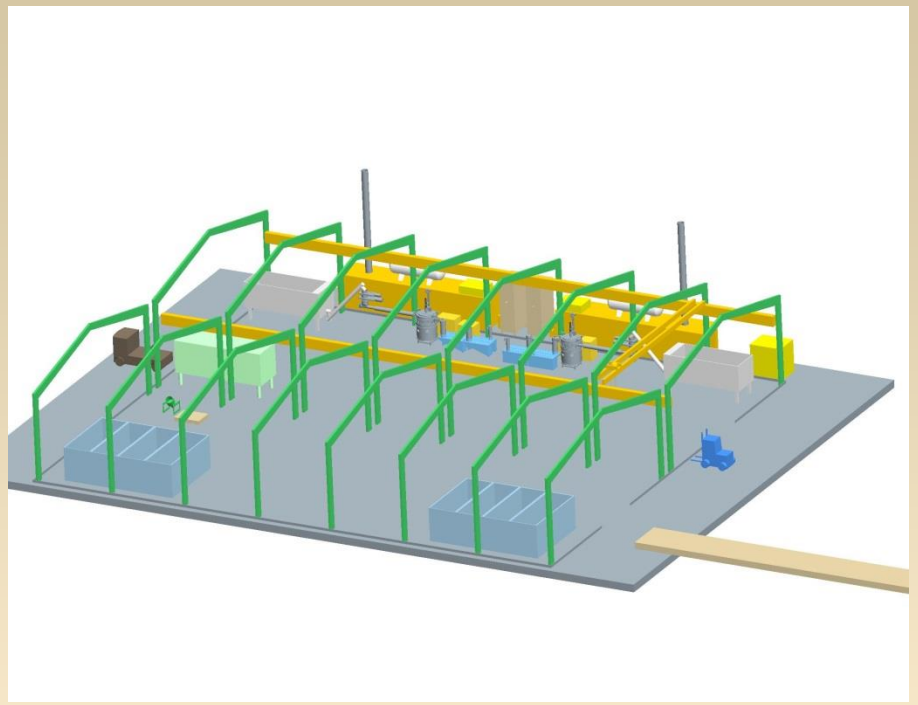


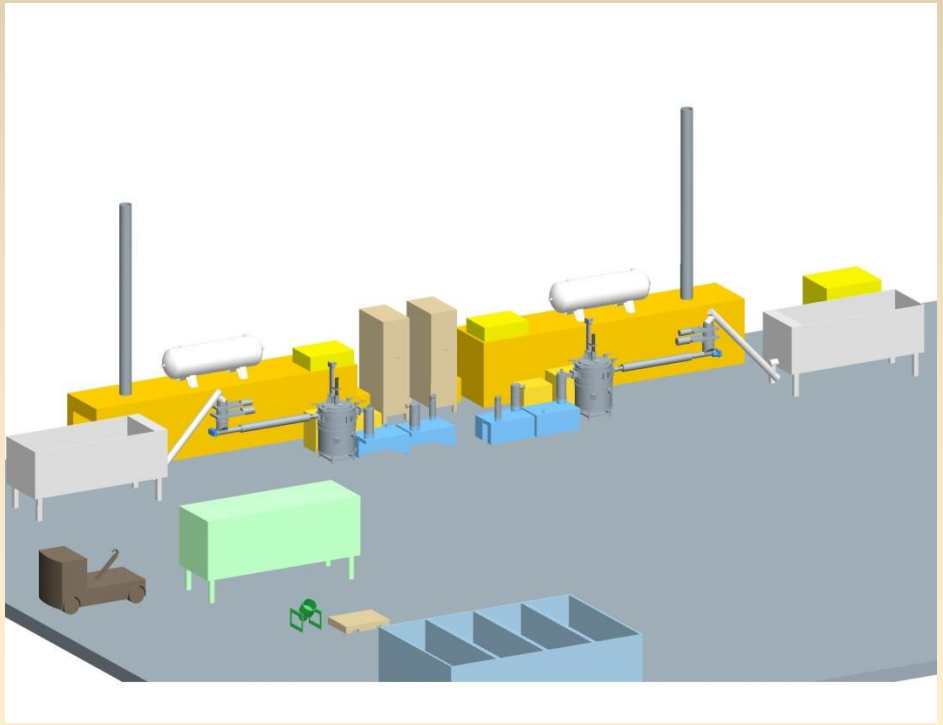
DESIGNED SYSTEM OF PLASMIC ENERGY UNIT /CZECH REPUBLIC/





DESIGNED SYSTEM OF PLASMIC ENERGY UNIT BARDEJOV /SLOVAKIA/





ADVANTAGES OF USE OF PLASMIC ENERGY UNIT

Advantages:

-neutralization of various types of waste

-possibility of selection of plasma-formating gas (N_2 , Ar, He)

-easiness of waste delivery to decomposition zone

-simple control of process parameters

-high degree of automation

-low costs of workforce and maintenance

-completely wasteless process

THANK YOU FOR YOUR ATTENTION

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