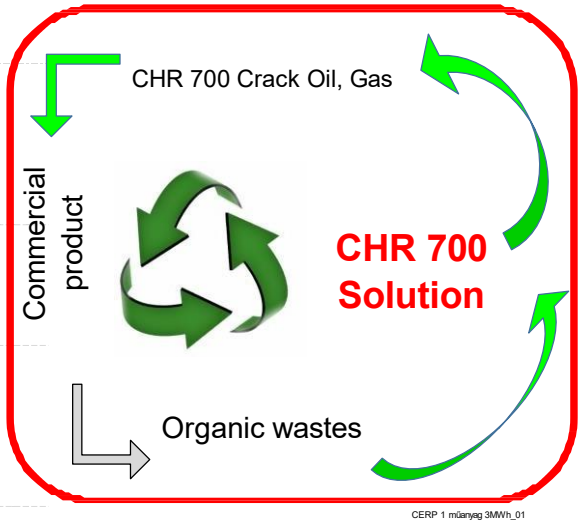
Presentation of the CHR 700 basic unit organic waste recycling plant.



CERP 1 műanyag 3MWh_03 KT/Bevezetőkép 1

Current waste situation in the world

		169,1 M km2
North America	347 547 800 Pe	24,7 M km2
South America	423 581 000 Pe	17,8 M km2
Central America	188 000 000 Pe	19,2 M km2
Europe	748 000 000 Pe	10,5 M km2
Africa	1 372 143 890 Pe	30,4 M km2
Asia	4 659 833 500 Pe	44,6 M km2
Australia	24 511 800 Pe	7,7 M km2
Antarctica	1 500 Pe	14,2 M km2

7 763 619 490 Pe

Source of information: http://nepesseg.population.

Source of information: Estimation https://hu.wikipedia.org/wik

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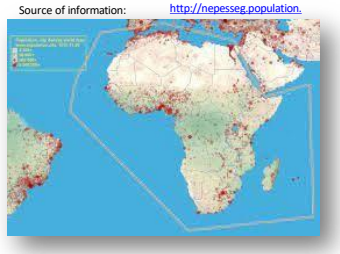
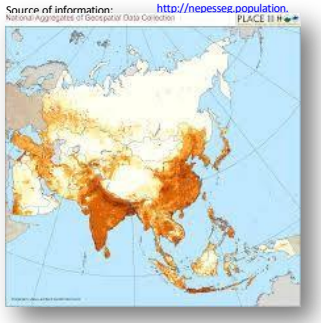
Source of information: http://nepesseg.population.

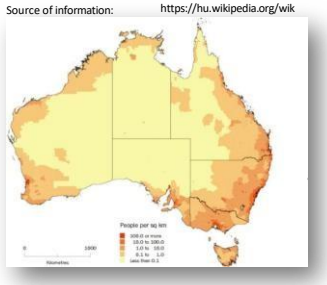


Source of information: https://hu.wikipedia.org/wik

Source of information: http://nepesseg.population.



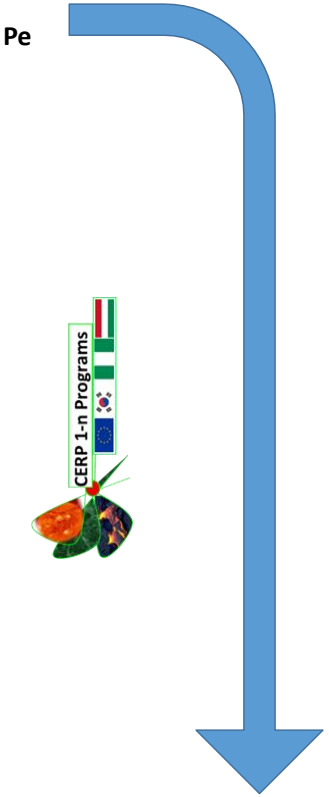
Source of information: https://hu.wikipedia.org/wik



Source of information: https://hu.wikipedia.org/wik

Amount of waste generated per year by one main person:

250 kg/Pe



Proportion of organic waste neutralized so far by incineration or landfill:

15%

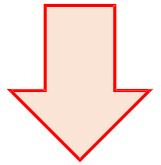
Market share planned by CERP 1:

5%

14 556 787 T/Y

Annual amount of waste recyclable under the CHR 700 process used in the CERP 1 program:

291 135 731 T/Y



CHR 700 base unit, annual input capacity:

7 200 T/Y

Based on the above, the number of CHR 700 base units required:

2 022 CHR 700/Y

Production demand for CHR 700 over a period of ten years, based on the planned market share:

202 CHR 700/Y

The business plan predicts the sale of 34 basic units in five years!

Industrial and other organic wastes are not included in the calculations!

CERP 1 műanyag 3MWh_03 KT/T 1. Kép

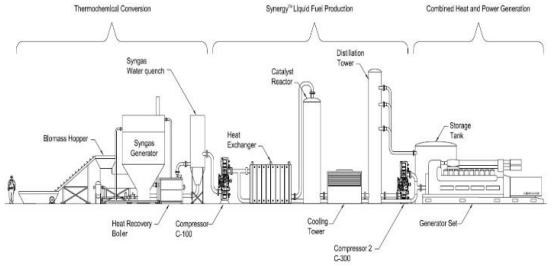
Location of CHR 700 technology in the field of products using a similar thermochemical process.

A process known to me, a batch plant operating in Dunaharaszti for 10 years.

Source of information: https://newenergy.hu/hu/elerhetosegek/

The selection was made without the need for completeness

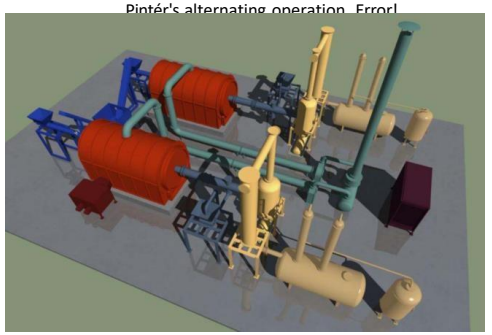
TCG plasma, waste recovery process



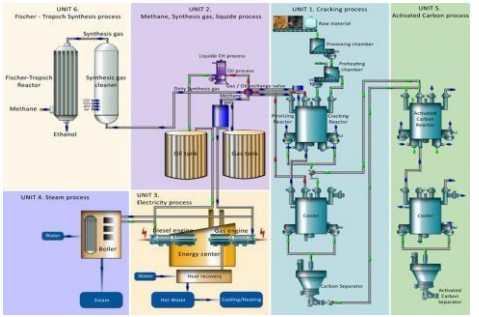
Good marketing, but did not appear in the market

Switched operation solution, did not appear on the

Pintér's alternating operation. Error!



The work of the University of Debrecen. It has no market presence



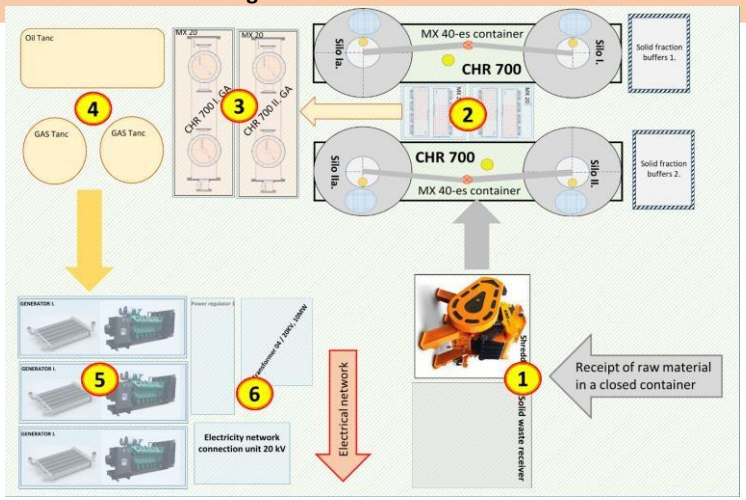
Edvardlla procedure

It processes bone waste. It did not appear on the market.

WTS development, I-III. generation developed, capable of operation but not suitable for market appearance

Further thinking, supplementing and transforming WTS development into a complex product.

Installation diagram of CHR 700 base unit used in CERP 1



CERP 1 műanyag 3MWh_03 KT/T 4. Kép

Recyclable waste with CHR 700 technology

Plastics

Paper, Cardboard

Textile

Tire

Sewage sludge, Lignite

Industrial organic wastes

Municipal waste, RDF

Agricultural waste

Corn stalk

Straw

Sunflower

Coffee bean peel

Food by - products

In the interest of economical operation, it is worth using only those wastes in the CHR 700 solution that cannot otherwise be processed in their material.

What goes in comes out, just in a different form! Also in energy content !!! Not perpétum mobile

CERP 1 műanyag 3MWh_03 KT/2. Kép

Demonstration of waste recycling using the CHR 700 base unit.

Input material, Plastic.

7 200 T/Y

39MJ/kg

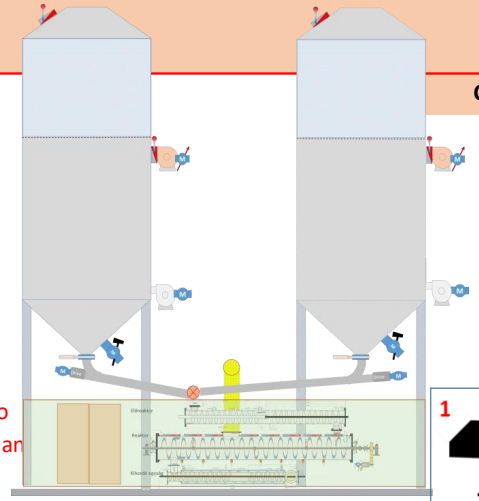
From an economic point of view, it is only recommended to recycle the type of waste that has so far been disposed of in an incinerator or landfill!

Recycling of low moisture organic waste.

CHR 700

If you don't know the procedure, it looks like magic at first.

Magic boksz



CHR 700 base unit

Product output

Recycled hydrocarbon products

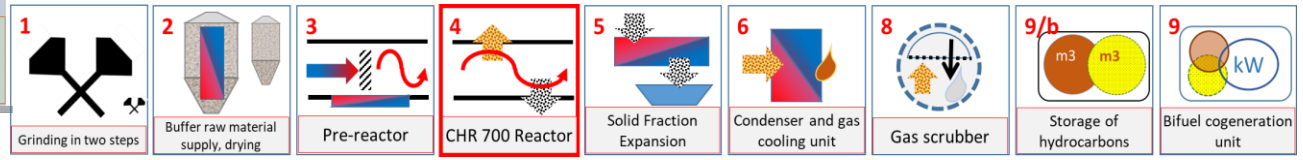
736 T/Y HYDROCARBON GASES

5 704 T/Y **Crack oil**

Its quality is between crude and diesel.

553 T/Y High carbon solid fraction

All inorganic contaminants appear here



CHR 700 waste recovery process, recovery alternatives for the products of 1 basic unit, without the need for completeness.

Input
39 MJ/kg 7 200 T/Y

CHR 700 Production of 1 solid unit solid fraction in case of plastic utilization **553 T/Y**

Solid fraction:

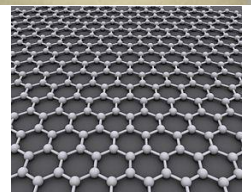
Without technical addition

Sales in iron and steel industry, fuel

For use in agriculture, soil repair, etc.

Technical development, refining

In the chemical industry as refined coal



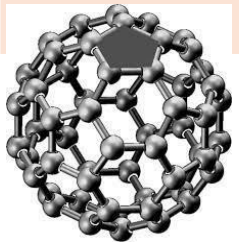
Further refined than rubber carbon black

Even further refined as a nanotechnology feedstock, etc.

Fractionation of solid fraction

In case of neutralization of computer waste

Selection and sale of metals and precious metals, in addition to the production of energy sources



CERP 1 műanyag 3MWh_03 KT/6a. Kép

CHR 700 waste recovery process, recovery alternatives for the products of 1 basic unit, without the need for completeness.

OUTPUT

39 MJ/kg 7 200 T/Y

Utilization of electricity **30 GWh/Y**

Sales of renewable chemical raw materials

6 440 T/Y

Sale of electricity, compensation of electricity produced by solar and wind energy.

Utilization of thermal energy

CHR 700 Technology to meet energy needs

Sale of hydrocarbon gases

Sale of salts from gas cleaning

Sale of cracked oil for refining

Fractionation

Fractionation of cracked oil

It requires technical development

Finomítatlan

Diesel, pakura, paraffin

Light petrol, petrol

The tax conditions in the target area must be taken into account when drawing up the financial plans

CHR 700 waste recovery process, recovery alternatives for the products of 1 basic unit, without the need for completeness.

39 MJ/kg 7 200 T/Y

OUTPUT

Generated simultaneously with the production of **Utilization of thermal energy**

40 GWh/Y

If a cogeneration unit is used

Thermal energy recovery

Neutralization of sewage sludge

Use CERPs 1-n to program

When using a trigeneration unit

Utilization of cooling energy

Preparation of semi - finished chilled food products

In the case of chemical sales, there is no heat and electricity generation. It is necessary to take electricity.

CHR 700 base unit / min, general layout diagram for a fictitious site

Gross outdoor area required to install CHR 700 base unit. 1100 m2

Height of silos with storage structures 16 m

Exact layout and dimensions will be finalized in the investment study

Closed building does not require. The production process can also be migrated from an existing office

1 Crushing of waste reception

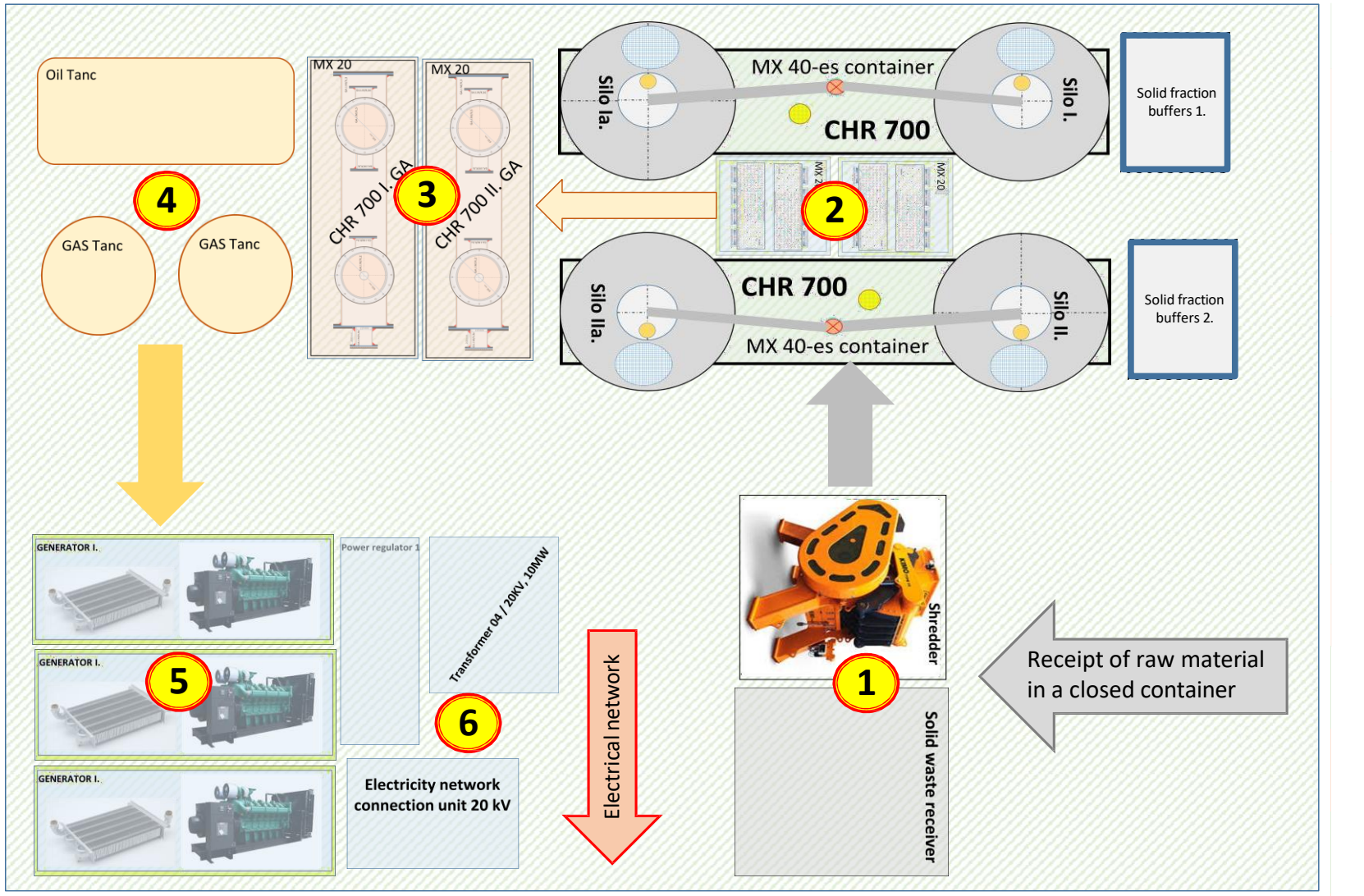
2 Thermochemical unit

3 Gas scrubbing containers

4 Renewable hydrocarbon storage

5 Cogeneration units

6 0.4 / 20kV / 3.5 MWh network connection



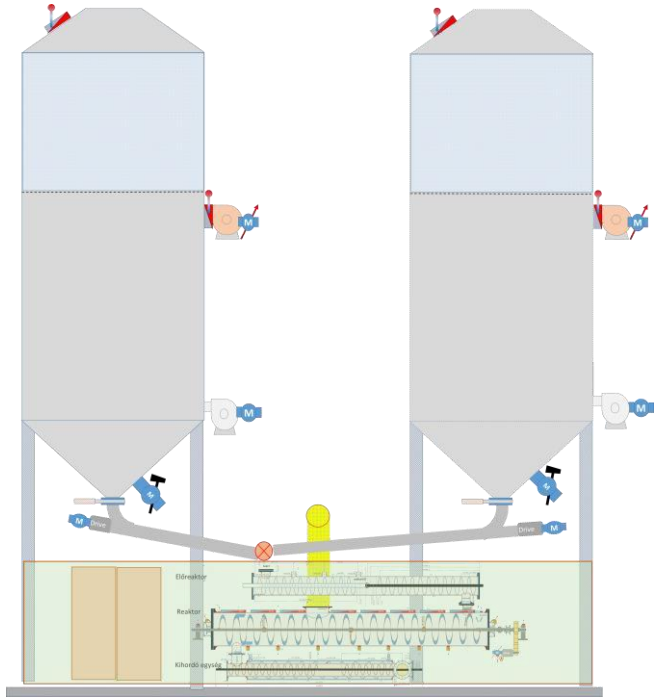
CERP 1 műanyag 3MWh_03 KT/8. Kép

Demonstration of input and output parameters of CHR 700

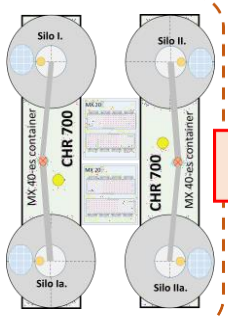
Input plastic raw material parameters:	
	9 750 kWh
Quantity of raw material:	900 kg/h 7 200 T/Y
Energy content	39 MJ/kg

Estimated other impurities

Inorganic impurities	1 kg/h
Moisture content	45 kg/h



The base unit of the CHR 700 is operated with a capacity of 2Rb



The raw material parameters are strongly area dependent

Yield ratios based on raw material presented	
Synthesis gas:	92 kg/h 736 T/Y
Crack Oil:	713 kg/h 5 704 T/Y
Solid fraction:	69 kg/h 553 T/Y

Energy characteristics of renewable products:		
Other losses:	10%	1,0 MWh 7,9 GWh/Y
Amount of thermal energy:	50%	4,9 MWh 40 GWh/Y
Gross electricity:	40%	3,9 MWh 30 GWh/Y
	100%	9 750 kWh
Technology energy demand:	25%	1,0 MWh 8 GWh/Y
Quantity of electricity sold:	75%	2,9 MWh 22 GWh/Y

Based on the investment study, the data may change.

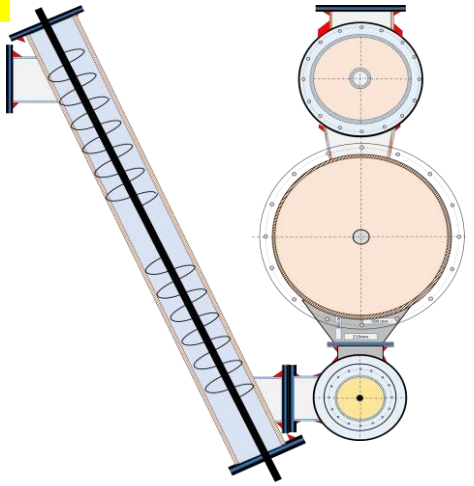
CERP 1 műanyag 3MWh_03 KT/3. Kép

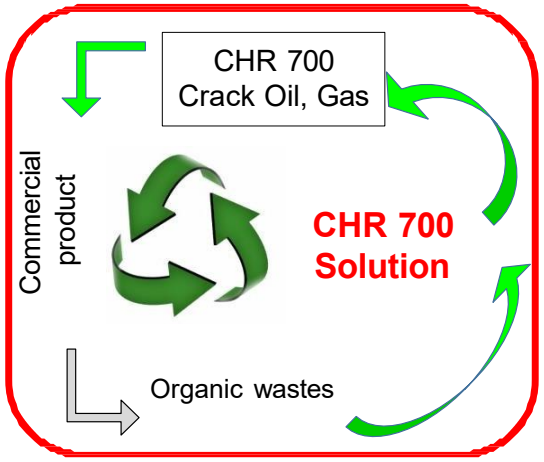
Guidelines for planning preliminary waste processing capacity

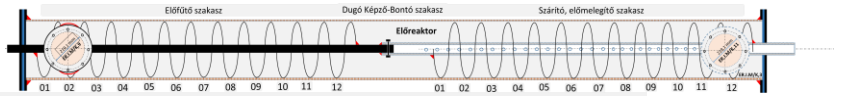
Technical content will be finalized on the basis of the investment study

Construction of a single CHR 700 base unit

Raw material grinder capacity 10T / h, grain size 30mm	1 Pc
Raw material buffer storage and pre-drying silos	4 Pc
A pre-reactor performs the thermal preparation of the feedstock	2 Pc
CHR 700 Thermochemical REACTOR, where the raw material is cracked below 600 °C.	2 Pc
The task is to expel the solid fraction from the reactor and cool it	2 Pc
Condensation of hydrocarbon vapors during cracking, Gas cooling	2 Pc
Neutralization of the content of the generated gases (CL, S) in the scrubber	2 Pc
Tempered buffer storage of the resulting cracked oil with a gas tank safety torch	1 Pc
Utilization of generated oil and gas for the production of electricity and heat	3 Pc







1 base unit with CHR 700, 20 T/D capacity.

2 CHR 700 base units connected 40 T/D

3 CHR 700 base units connected 60 T/D

4 CHR 700 base units connected 80 T/D

5 CHR 700 base units connected 100 T/D

CERP 1 műanyag 3MWh_03 KT/4. Kép

CERP 1-n program is a sustainable and profitable solution

Organic wastes

Central technology

CERP 1

CHR 700 organic waste recycling

Continuous generation of electricity to compensate for the hectification of solar energy

CERP 2a,b

Result:

Constant compensated electricity generation as well as + H2, + O2

Energy carriers stored in renewable hydrocarbons

Utilization of renewable chemical raw materials

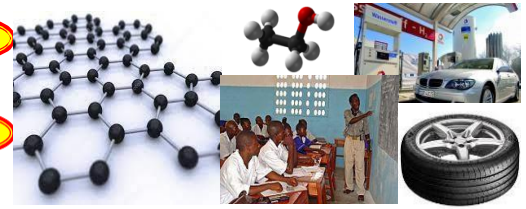
Neutralization of sewage sludge with thermal energy generated in CERP 1

CERP 7

Hydrogen and coal technology development, knowledge transfer

CERP 6

CERP 5



Using cold storage technology, production of semi-finished products for the food industry.

CERP 4

Hydroponic plant and algae cultivation, as well as fish farming, in a symbiotic solution

CERP 3 a,b,c

Food raw materials

Renewable electricity generation

CERP 1

CERP Complex *continous* Energy Rationalisation Programs

CERP 1 műanyag 3MWh_03 KT/1. Kép

Thank you for your attention

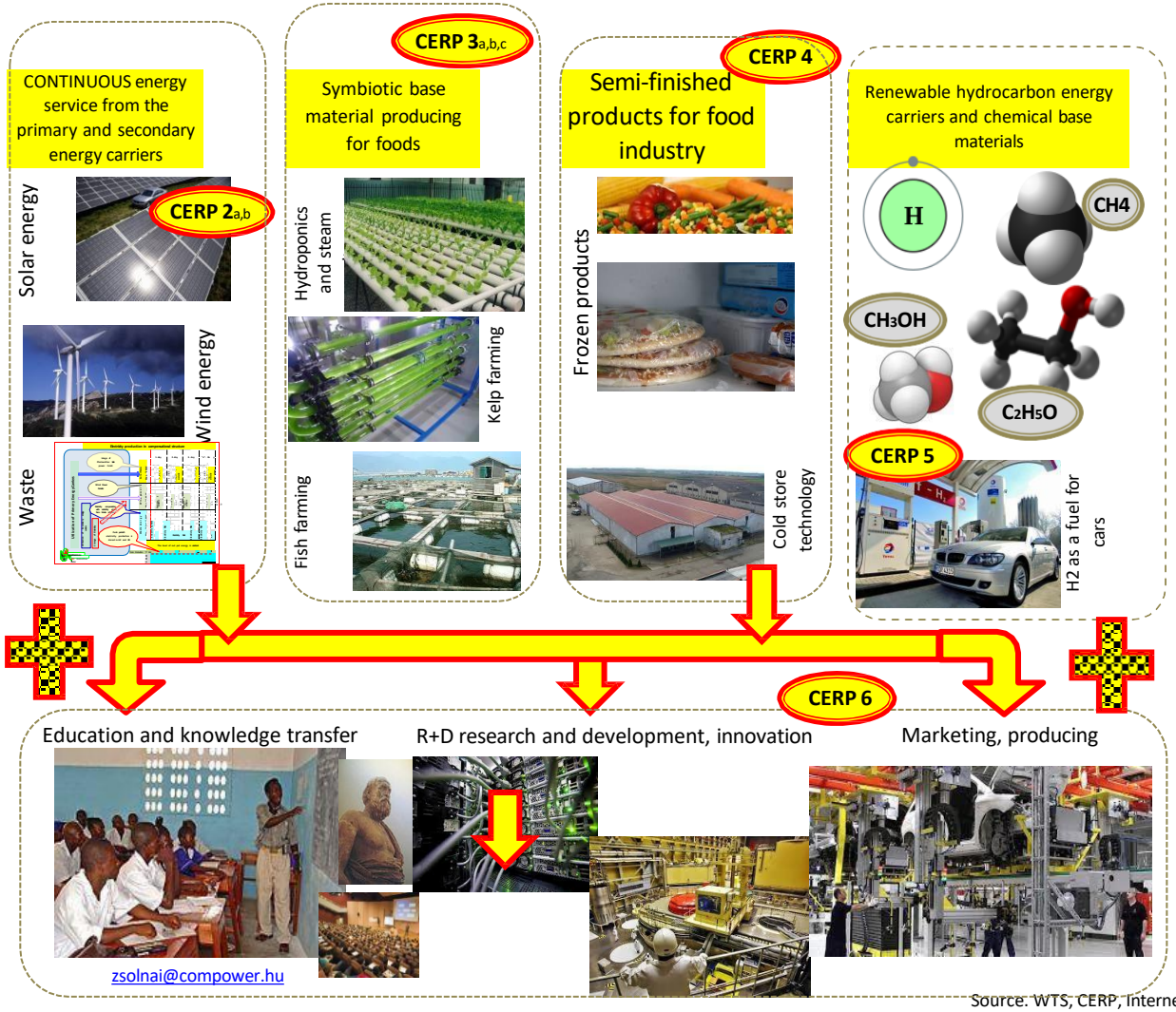
Personal discussion is essential for full understanding.

Péter Zsolnai
Program on CERP 1-n
Programmer, owner.

zsolnai@compower.hu
www.compower.hu

Vision

CERP 2-n Planned development programs



Source: WTS, CERP, Internet

CERP Complex *continous* **E**nergy **R**ationalisation **P**rograms