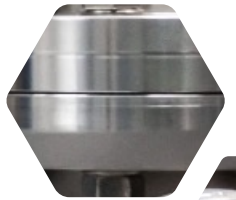
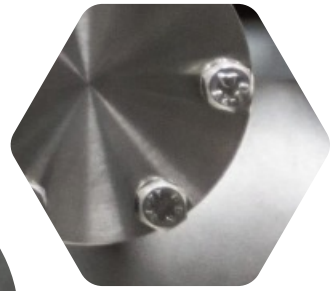
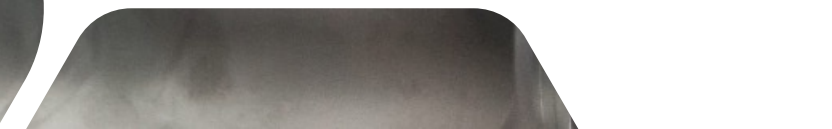
"GENETT ™" TECHNOLOGY

1. GENETT™ Technology - Process Line Family
2. CO_2 decomposition Process
3. Laboratory & Industrial Units
4. Deployments variants





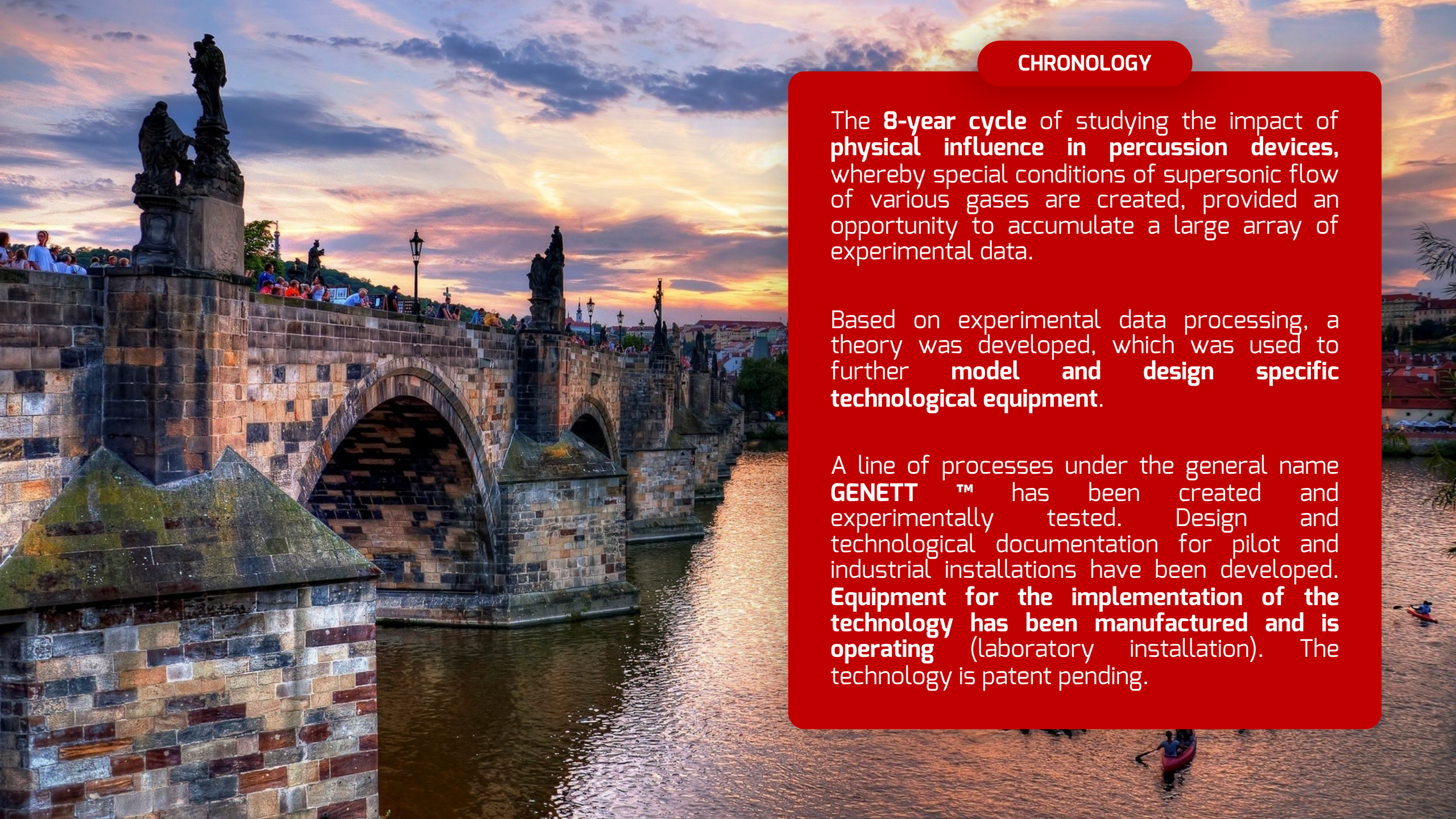


PART I

GENETT ™

TECHNOLOGY

Process Line Family



CHRONOLOGY

The **8-year cycle** of studying the impact of **physical influence in percussion devices,** whereby special conditions of supersonic flow of various gases are created, provided an opportunity to accumulate a large array of experimental data.

Based on experimental data processing, a theory was developed, which was used to further **model and design specific technological equipment**.

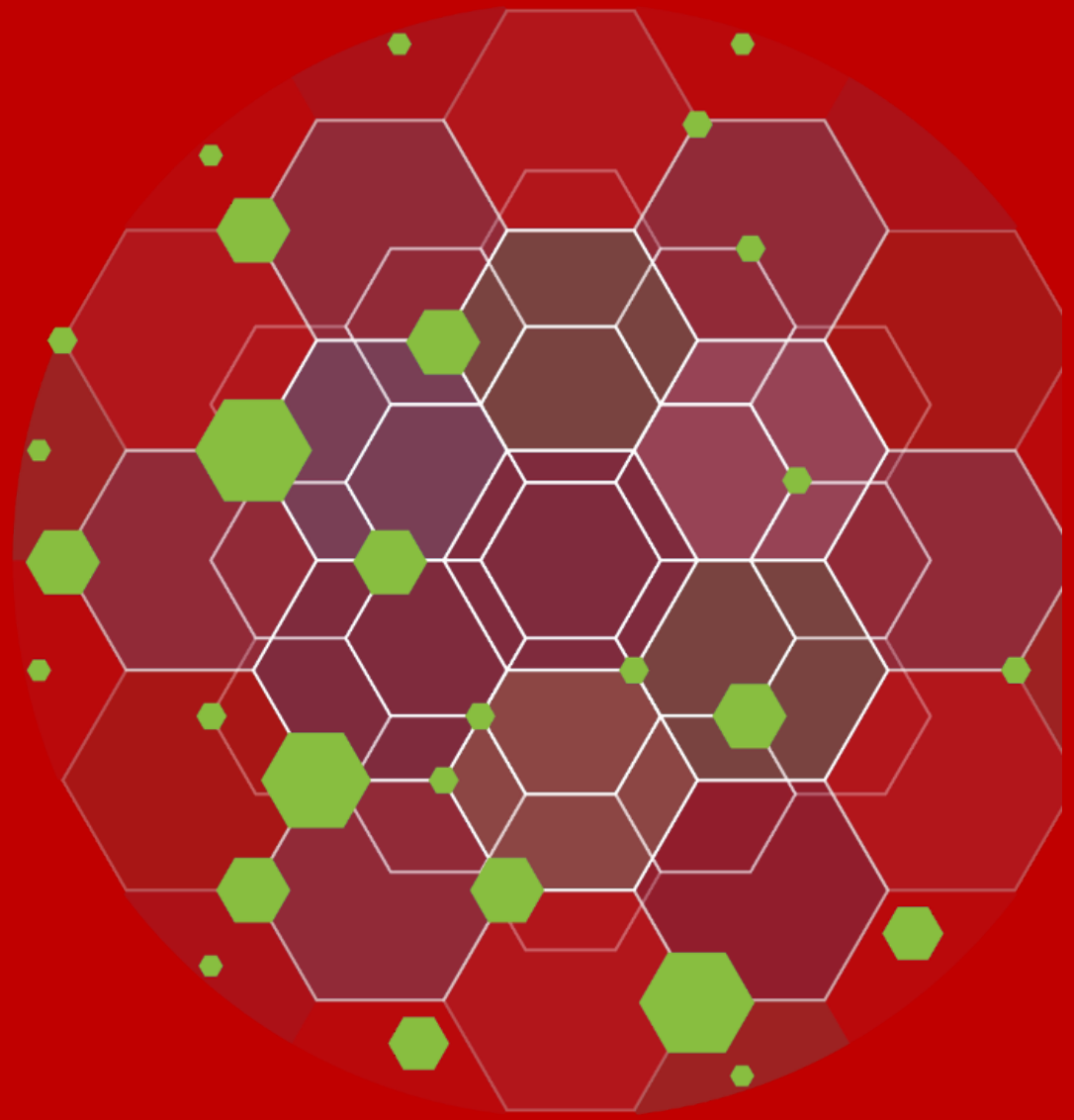
A line of processes under the general name **GENETT ™** has been created and experimentally tested. Design and technological documentation for pilot and industrial installations have been developed. **Equipment for the implementation of the technology has been manufactured and is operating** (laboratory installation). The technology is patent pending.

Main characteristics of the GENETT ™ technology

A specially designed and inflicted physical impact on the molecules of gases and liquids, whereby the energy required for molecule dissociation is multiple times lower than the binding energy in a given molecule, which initiates:

- Deformation and disintegration of molecules into atoms, followed by molecular rearrangement, elemental synthesis and the release of energy equal to or exceeding the binding energy in the molecule.

- Changing the physical and chemical properties of the original molecule, while maintaining the atomic mass number;



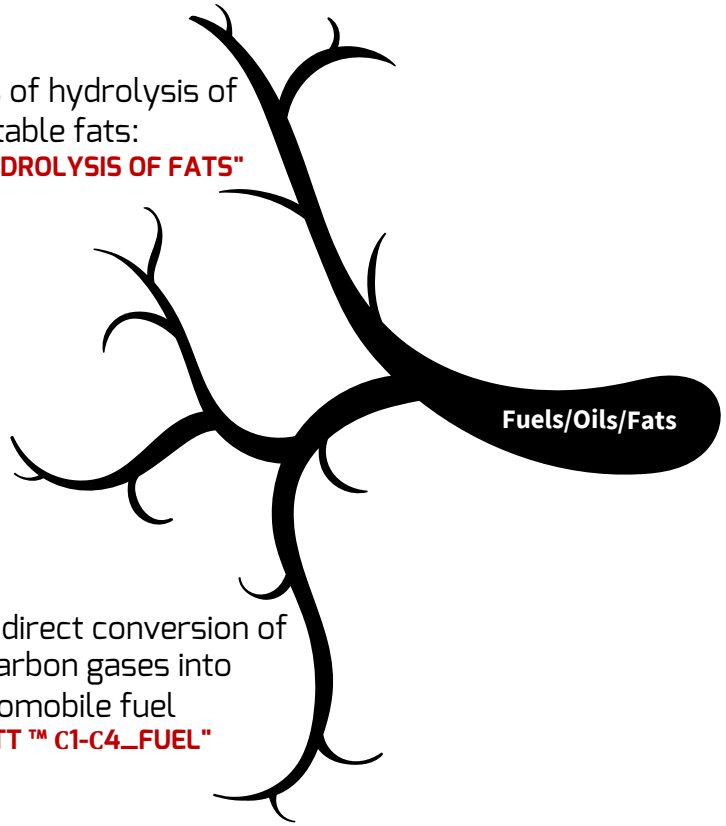
Technology Applications

Processes for production of bio-diesel fuel of the 2nd and 3rd generation (analogue of natural oil fuel):
"GENETT ™ VEGETABLE_FUEL"
"GENETT ™ UCO_FUEL"

The process of hydrolysis of vegetable fats:
"GENETT ™ HYDROLYSIS OF FATS"

Process of direct conversion of hydrocarbon gases into automobile fuel
"GENETT ™ C1-C4_FUEL"

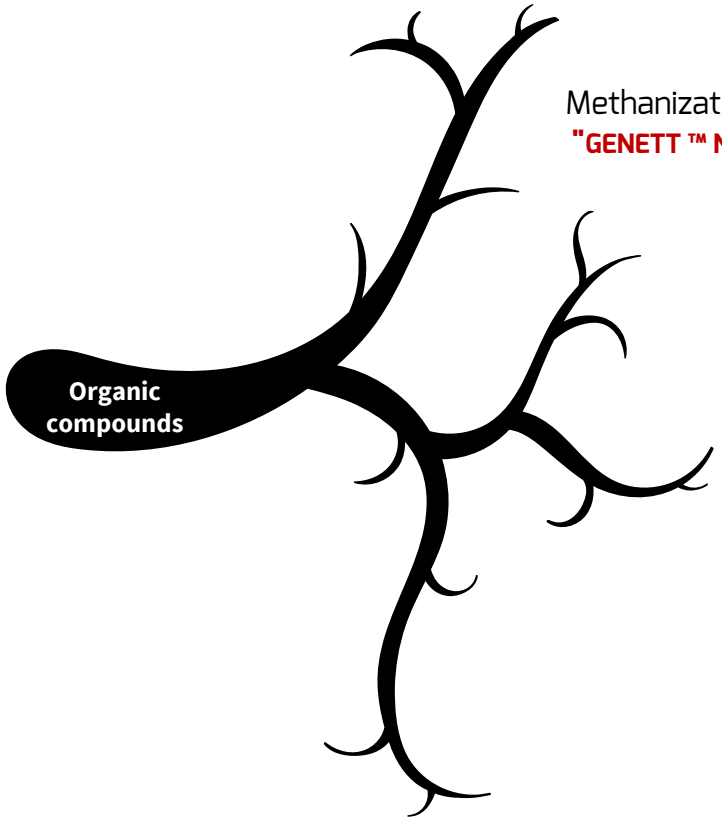
The process of improving the physical and chemical characteristics of natural oil: removing sulfur compounds, reducing the density of oil (increasing the commercial value):
"GENETT ™ IMPROVING THE QUALITY OF OIL"



GENETT ™ Technology

Processes for the synthesis of organic compounds:
"GENETT ™ AIR_H2O_CHNO"
"GENETT ™ N2_H2O_CHNO"
"GENETT ™ CO2_H2O_CHNO"
"GENETT ™ AIR_UCO_CHNO"
"GENETT ™ N2_UCO_CHNO"
"GENETT ™ CO2_UCO_CHNO"

Methanization process
"GENETT ™ N2O2_CnHm"



Process of CO2 utilization
"GENETT ™ CO2_AIR"

PART II

GENETT ™

TECHNOLOGY

CO_2 decomposition process

Decomposition of CO2 molecules

occurs in a

non-equilibrium discharge plasma

created and maintained

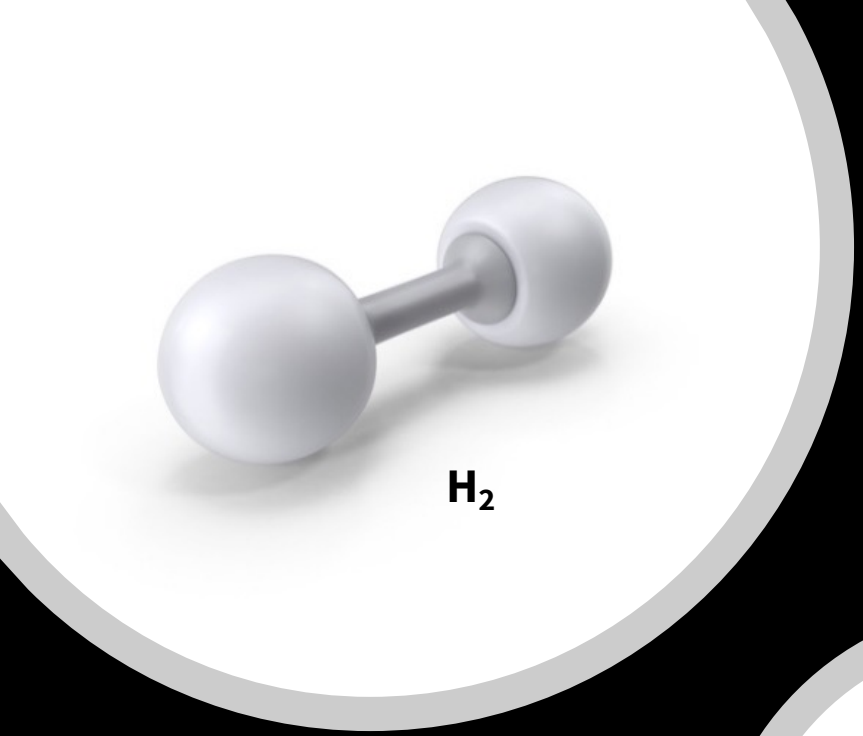
via a shock wave

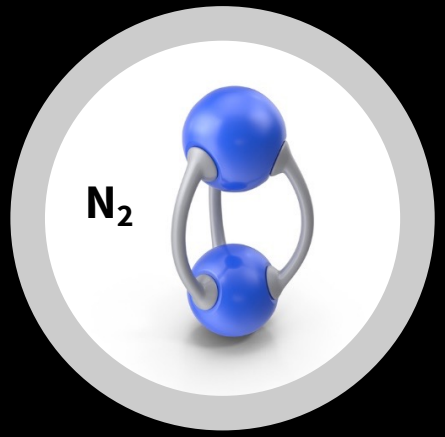
Whereby the following conditions are created:

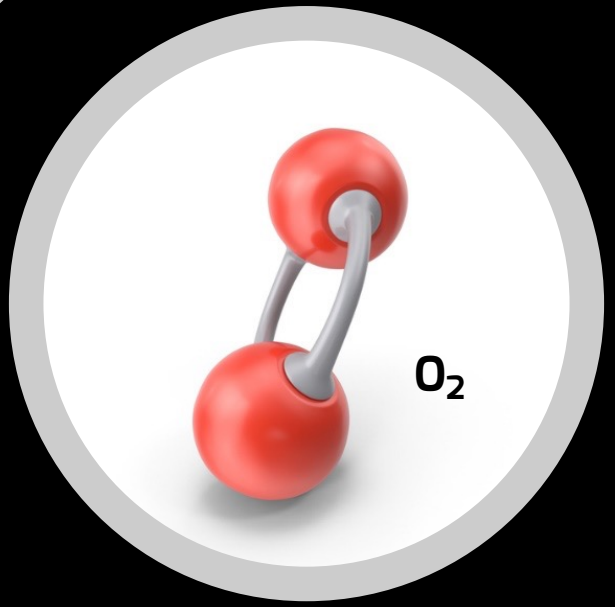
- Hypersonic stream of a mixture of CO_2, nitrogen, oxygen, subjected to prior detonation and the orchestration of the subsequent phase of standing pressure waves. Thus, the gas mixture activated in the (wave's) antinode enters the node, where it experiences a pressure difference exceeding the point of its stability and then disintegrates into fragments and electrons (plasma);

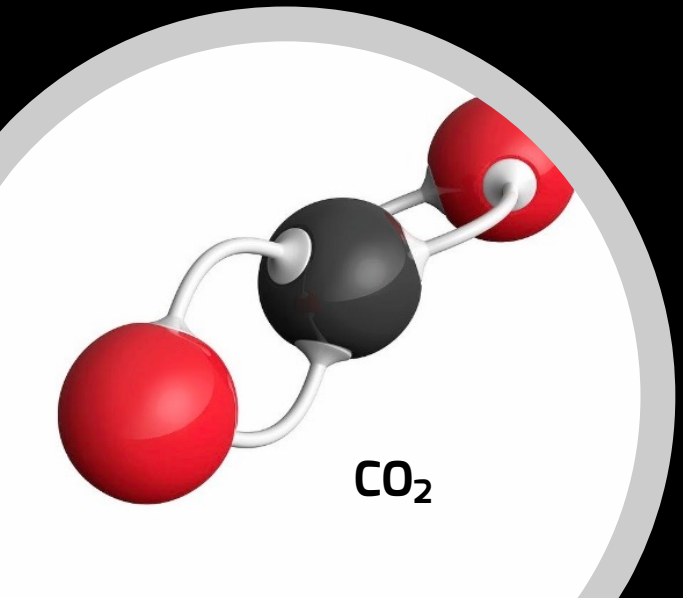
- Deceleration followed by acceleration of the stream of the substance consisting of molecules, fragments of molecules with the creation of a tribo-static effect and addition of electrons and ions to the plasma structure;

This mechanism provides for the decomposition process to be carried out at low gas temperatures, which is of higher energy efficiency than thermal dissociation under equilibrium conditions









The possible reactions of CO_2 molecules with GENNET Technology

$$2CO_2 = 2CO + O_2$$

$$CO_2 = C + O_2$$

$$2CO_2 = 2N_2 + O_2 + H_2$$

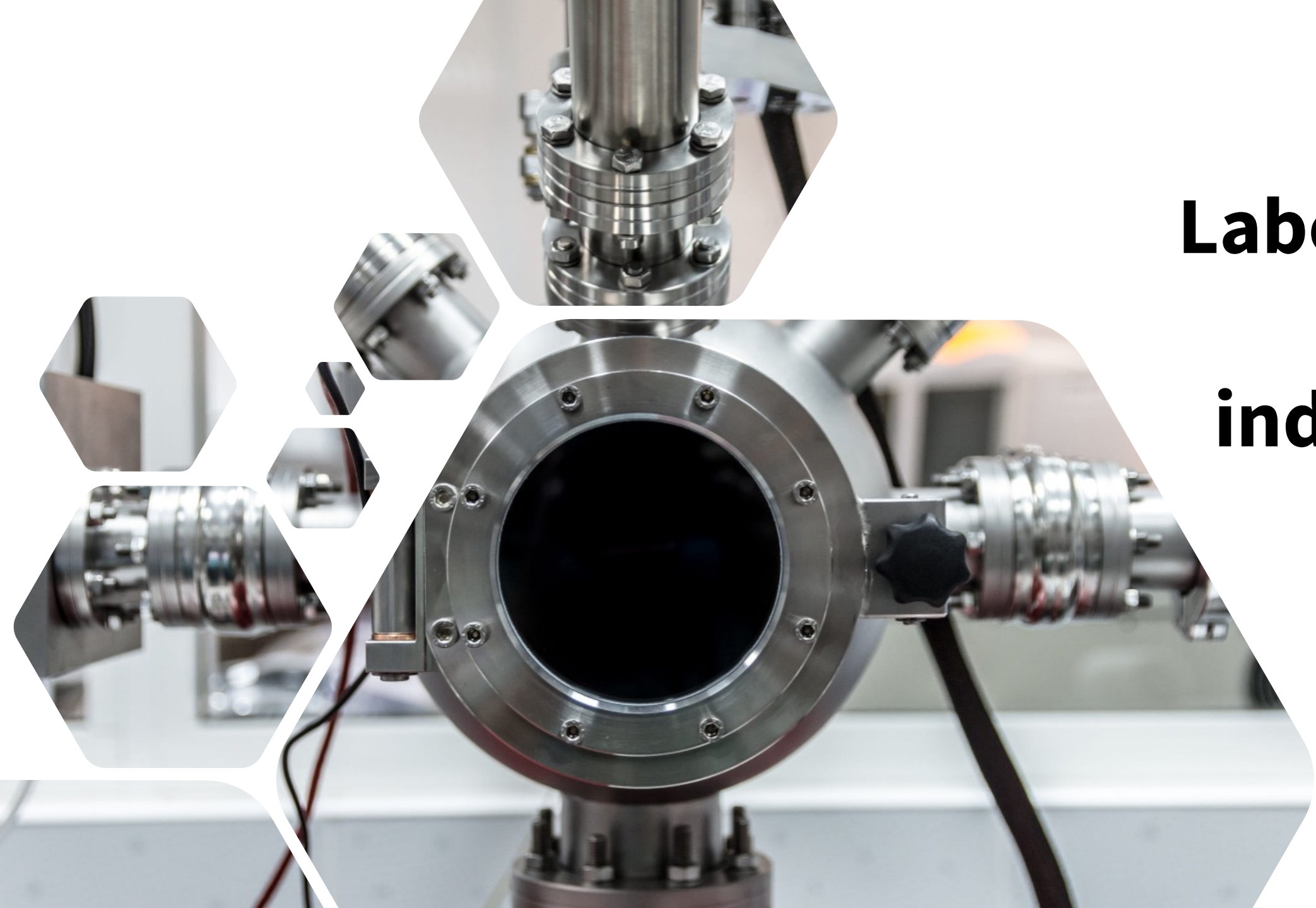
MAIN TECHNICAL PARAMETERS

OF UPGRADED LABORATORY UNIT

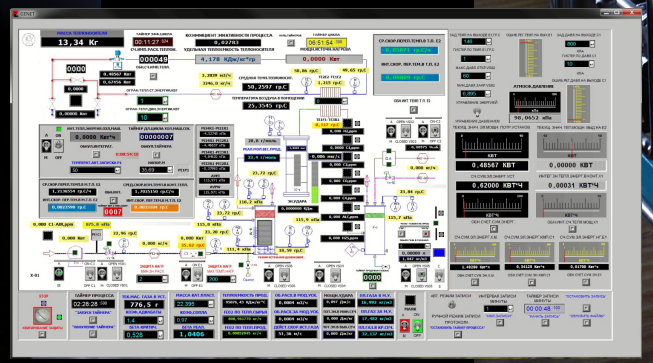
	Content of CO_2	El. energy consumption per 1t of CO_2	Conversion rate (%)
Air	450 ppm	...	100 %
Flue gas (direct)	3% - 15%	2680 – 5394 kW	100 %
Carbon Capture Equipment	>15% - 50%	657 – 1818 kW	100 %

PART III

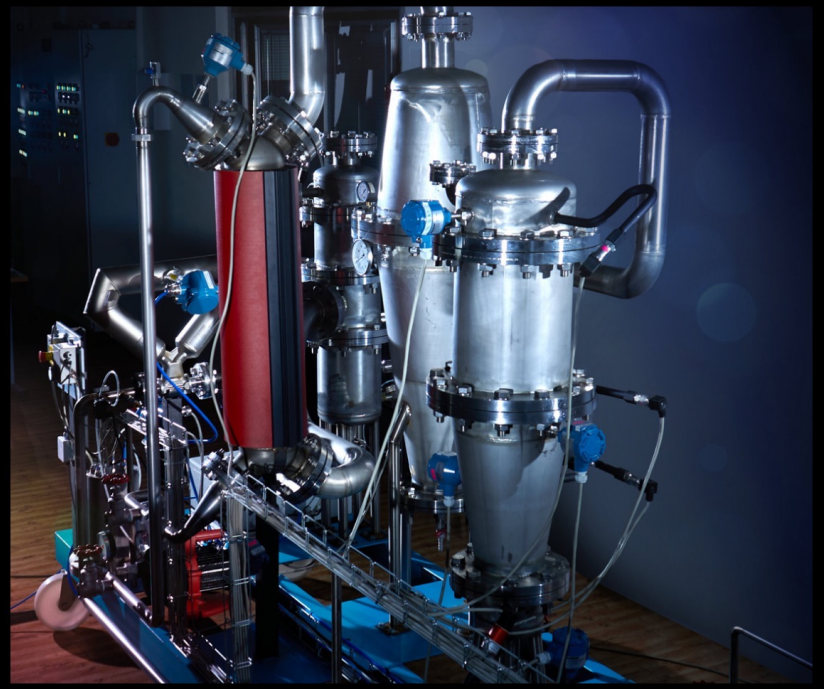
Laboratory & industrial Unit

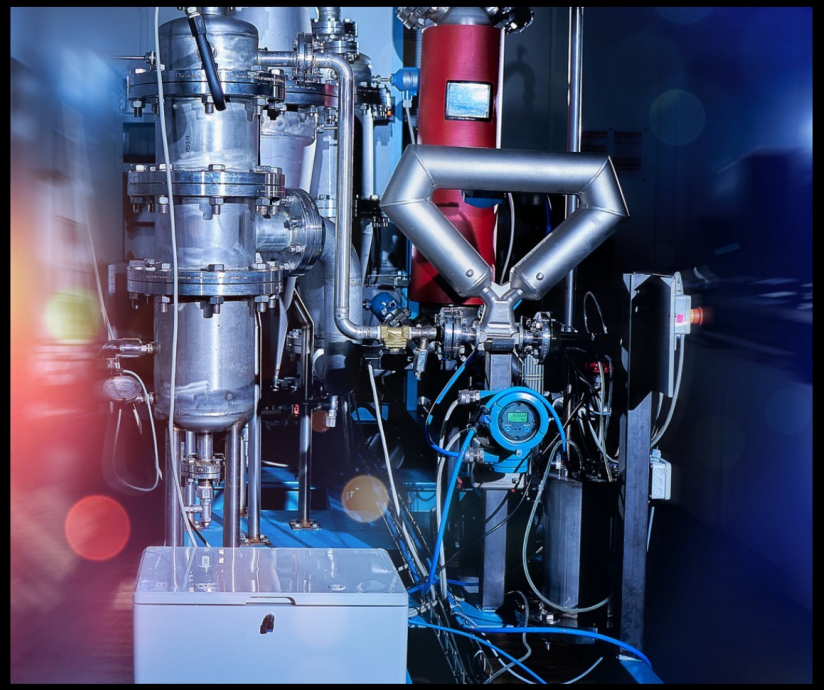


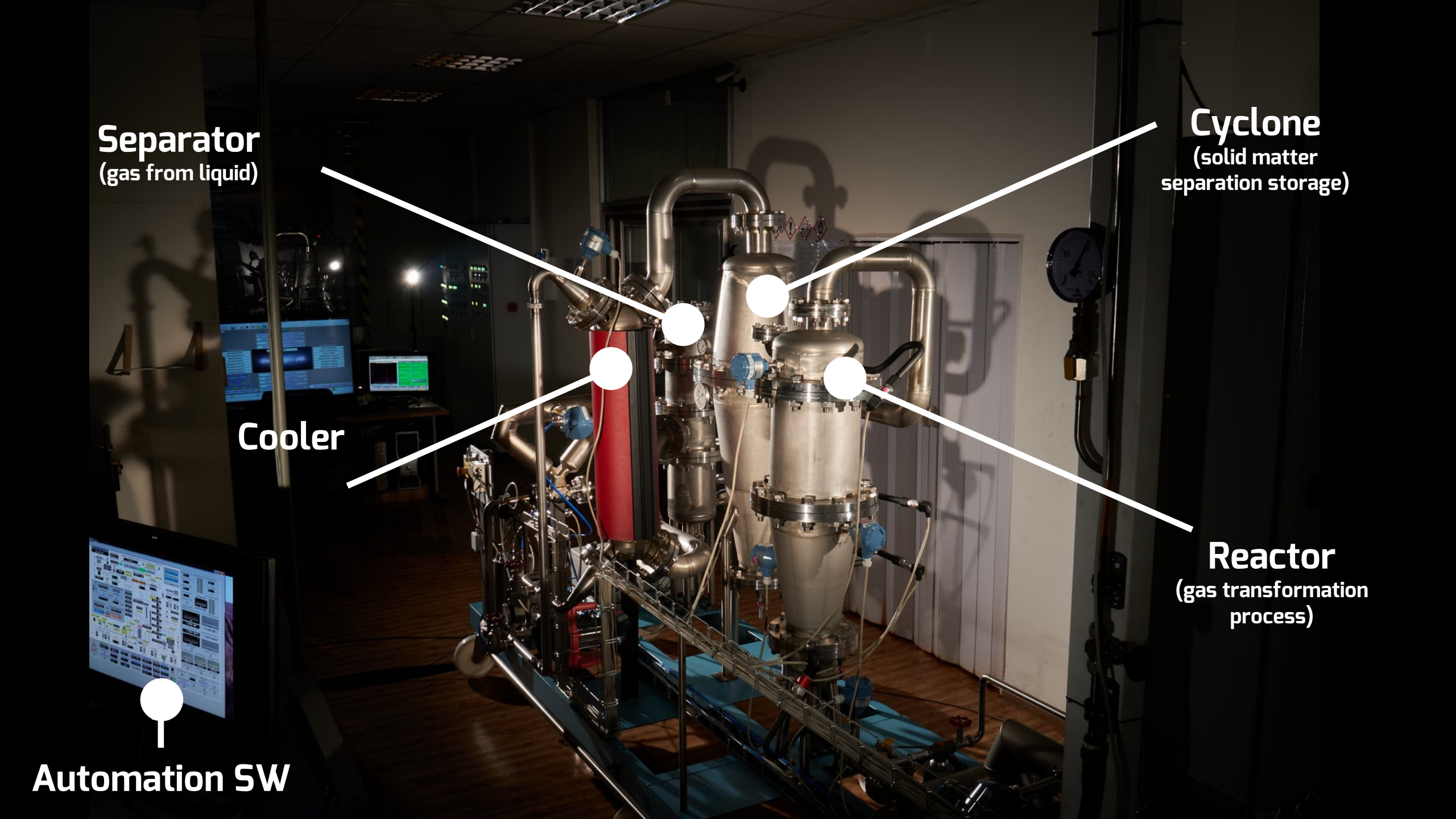
Laboratory Unit



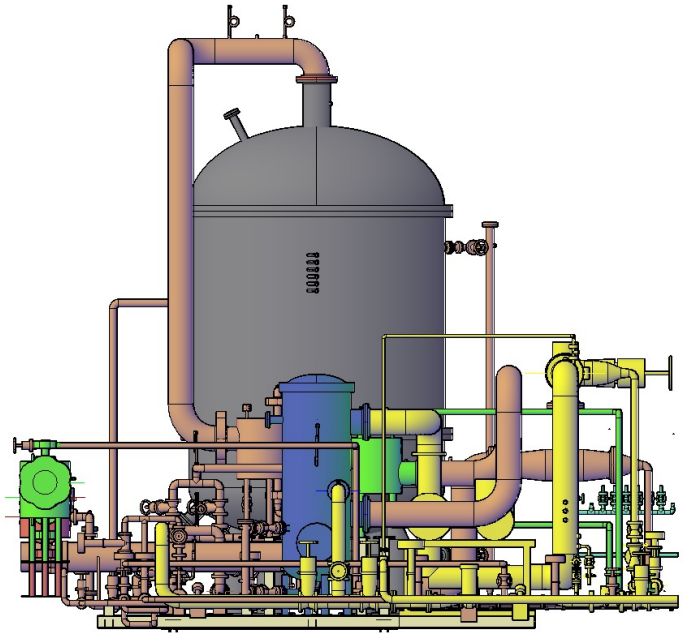
Mnemonic diagram of the process control system

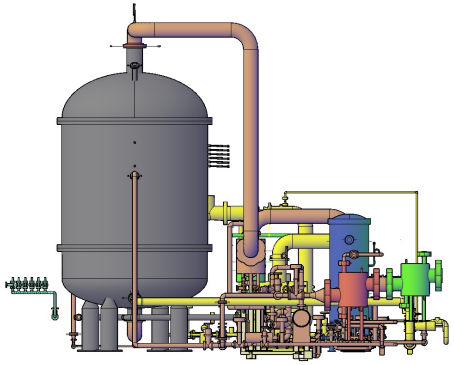


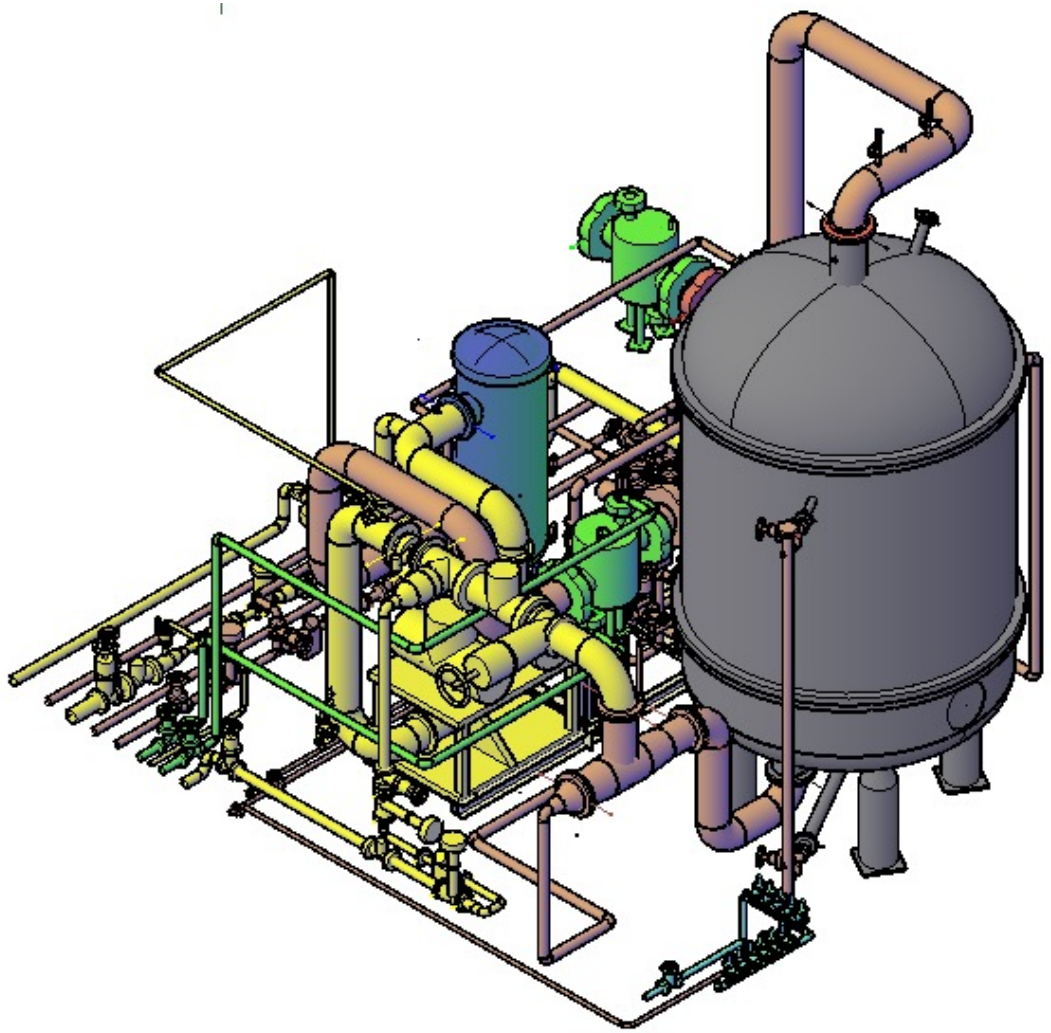

Separator
(gas from liquid)
Cyclone
(solid matter
separation storage)
Cooler
Reactor
(gas transformation
process)
Automation SW

RIGHT VIEW



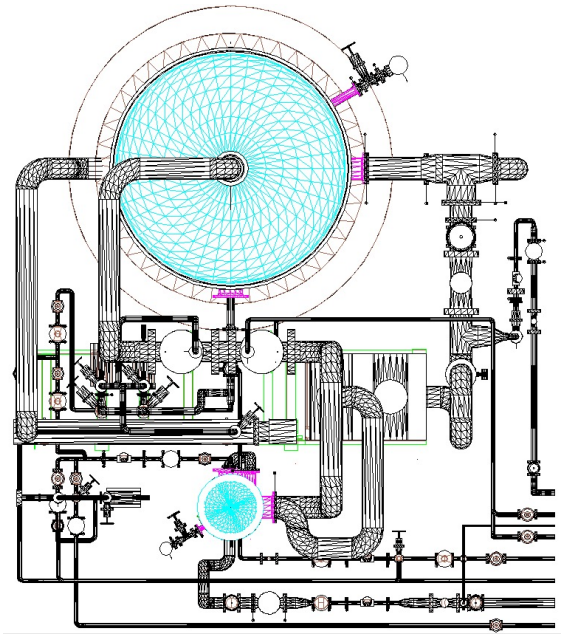


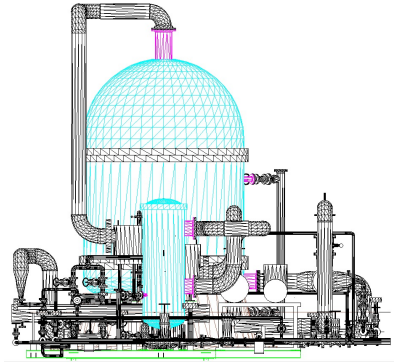
LEFT VIEW



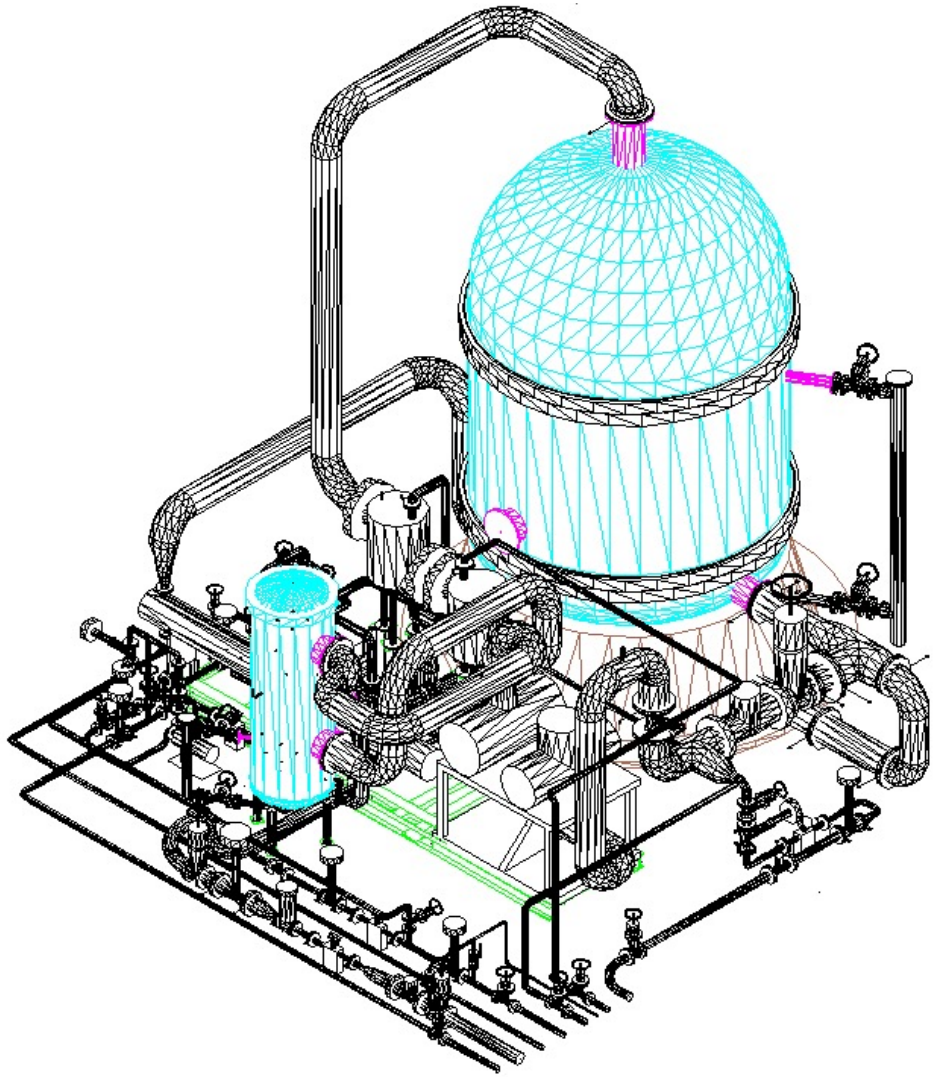
3D VIEW

VIEW FROM ABOVE





FRONTSIDE VIEW



SOUTH-EAST ISOMETRY

Reactor

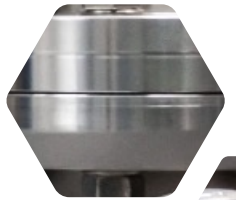
Vacuum Pumps

Separator

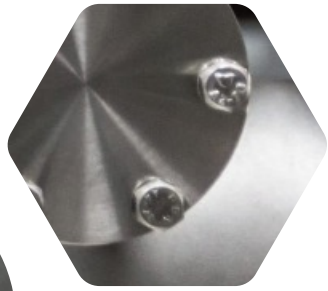
Standard Pumps

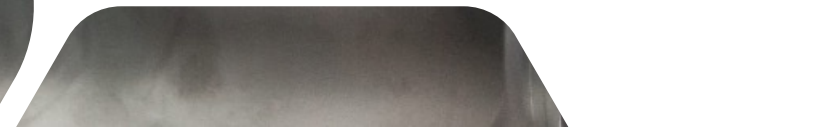
PART IV

Deployment



Variants





GENETT deployment possibility

after Carbon Capture equipment

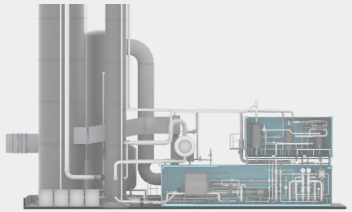
Air
(N202)

1 CO_2 generation

Thermal Power Plant

Flue gases
(cca. 15% of CO_2)

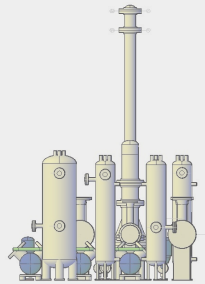
2 CO_2 capturing



Carbon Capture Equipment

Mixture of CO2
(cca. 50%) & air

3 CO_2 decomposition



GENETT Technology

Air
(N202)

GENETT deployment possibility
without Carbon Capture equipment

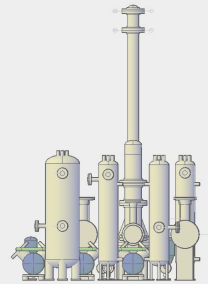
Air
(N202)

1 CO_2 generation

Thermal Power Plant

Flue gases
(cca. 15% of CO_2)

2 CO_2 decomposition



GENETT Technology

Air
(N202)

Carbon pricing

EU ETS (European Union Emissions Trading System) carbon prices