Prepared by: **BIOCHAR EUROPE sp. z o.o.**

PYROLYSIS | G2-Next Gen Reactor
container installation for farmers

- BIOCHAR EUROPE SP. Z O.O. in as a R&D ofshoot of a long-established engineering company based in Warsaw, Poland.
- Established to pursue new technologies, primarily in the field of thermal processing technologies.
- Our key objective is to be a leading innovator in biochar production technologies, and related biochar markets.
- In 2022 we created our Polish/Canadian entity – BIOCHAR EUROPE , focused on the innovative development of pyrolysis technology, specifically the patented G2 Next Gen reactor container Installation.

Biochar Europe Vision

Re-imagining our bioeconomy and expanding innovative and sustainable development in bio-residuals processing and carbon capture.

Biochar Europe Mission

Delivering high-quality carbon sequestering biochar that meets the specifications of our clients and their intended application. In our production of biochar, we work to capture and store carbon before it is released as CO_2 into the atmosphere.

Management Team

Donald G. LeBlanc, P.Eng. Halifax, Canada

President of RDA Atlantic Inc, Don and his companies have been involved in engineering and construction of over 2000 commercial and industrial projects in Canada and Europe over the last 35 years. Many of these projects involved complex technologies in processing raw materials into value products.

Jan Gladki, MSc. Kraków, Poland

A global pioneer and expert in biochar production and utilization, Mr. Gladki is known for constructing and operating the largest commercial biochar facility of its kind in Europe and has published numerous papers and books on biochar production and use during his 48 years in thermal technology and autothermal design.

Tomasz Kopeć, President Biochar Europe

Ecological farmer, hemp producer

Michal Kotarski Msc Eng, Poland

An experienced manager and graduate with Master's degree in International Business with Data Analytics from Ulster University and an Engineers degree from Gdynia Maritime University.

Overview

Challenges

- Changing energy landscapes (environmental and geo-political)

- Increase in production demand as populations and consumerism continues to grow

This leads to:

1) Additional stresses on natural resources, agriculture and livestock management – increased pressure on current supply networks and materials management.

2) Rapidly increasing waste: we see it in the manufacturing of everyday materials, and byproducts/residuals from production.

3) Rapid contribution to CO_2 and methane released during our increased expansion of goods and materials.

Overview

Solution

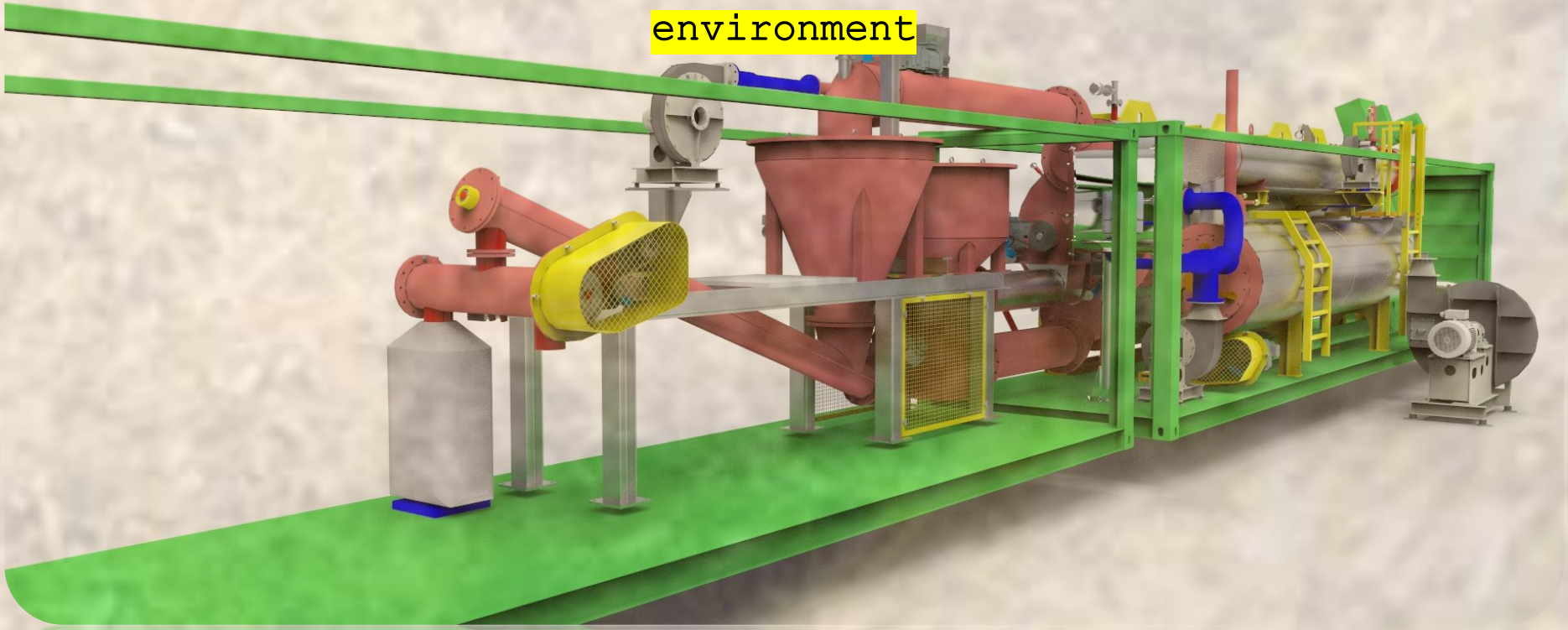
- **Modify how we manage material processing.** How we view waste streams and linear production.
- **Upcycle biomass residuals** to be converted into biochar, creating a carbon storing, carbon negative, renewable raw material.

Biochar Product

Biochar is a carbon rich, organic material that is the result of biomass processing under high temperature – pyrolysis.

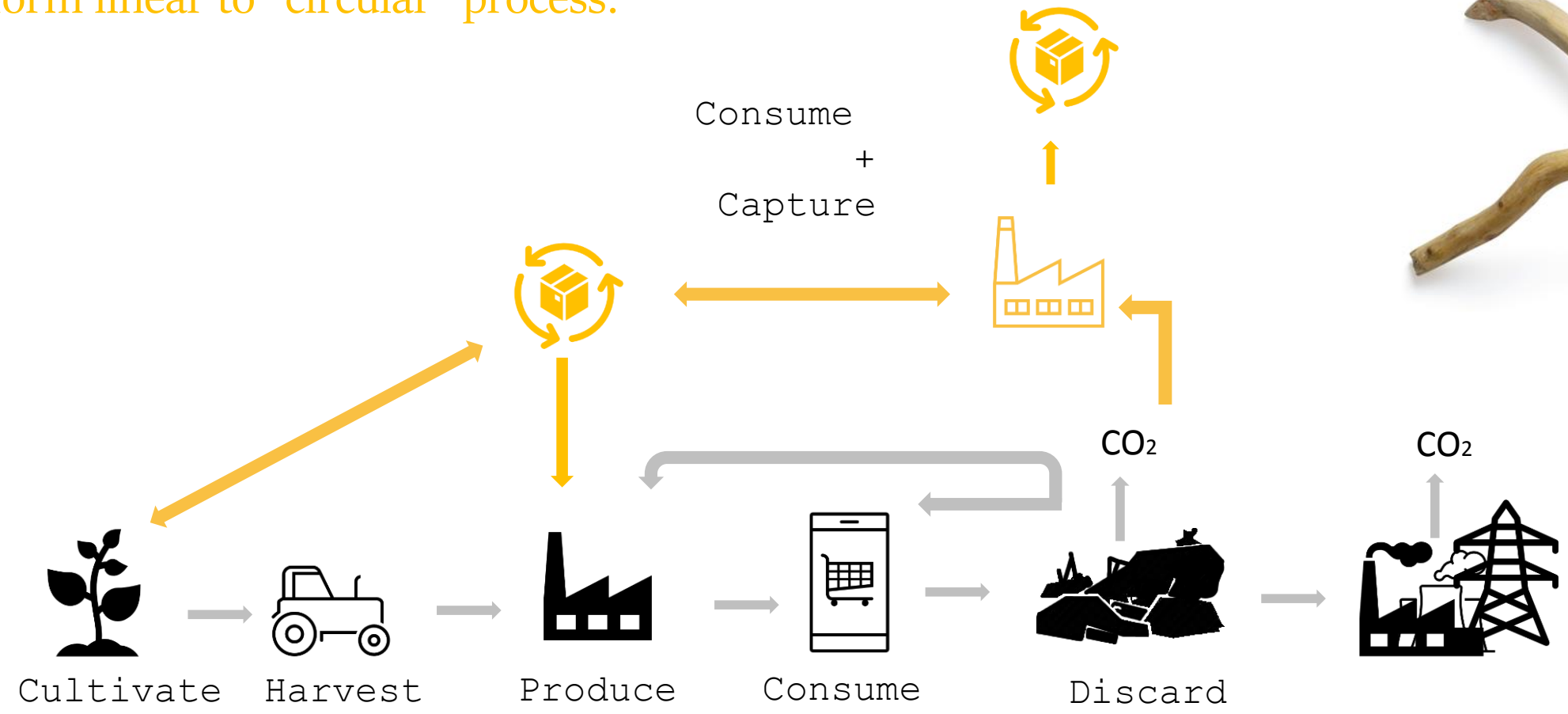
Biochar is an innovative and sustainable carbon negative product when used as a method of storage through soil application or incorporating into building or other materials.

The G2-Next Gen technology innovation relies on biomass processing with an energy efficiency higher than 85%. It also enables production of a heat, electricity or cold what all leads to more efficient development of the farms with simultaneous care for the environment



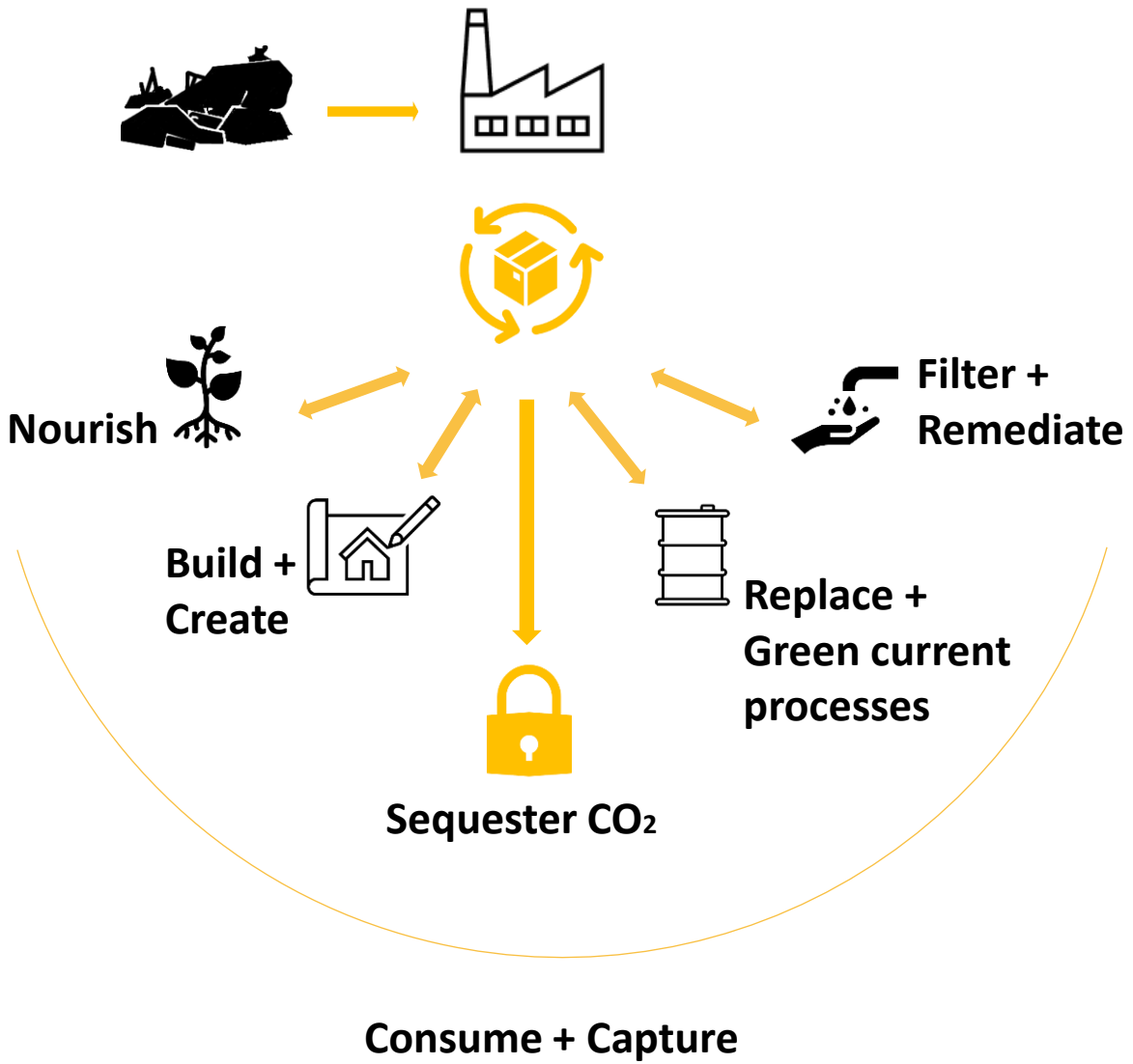
Modify the process

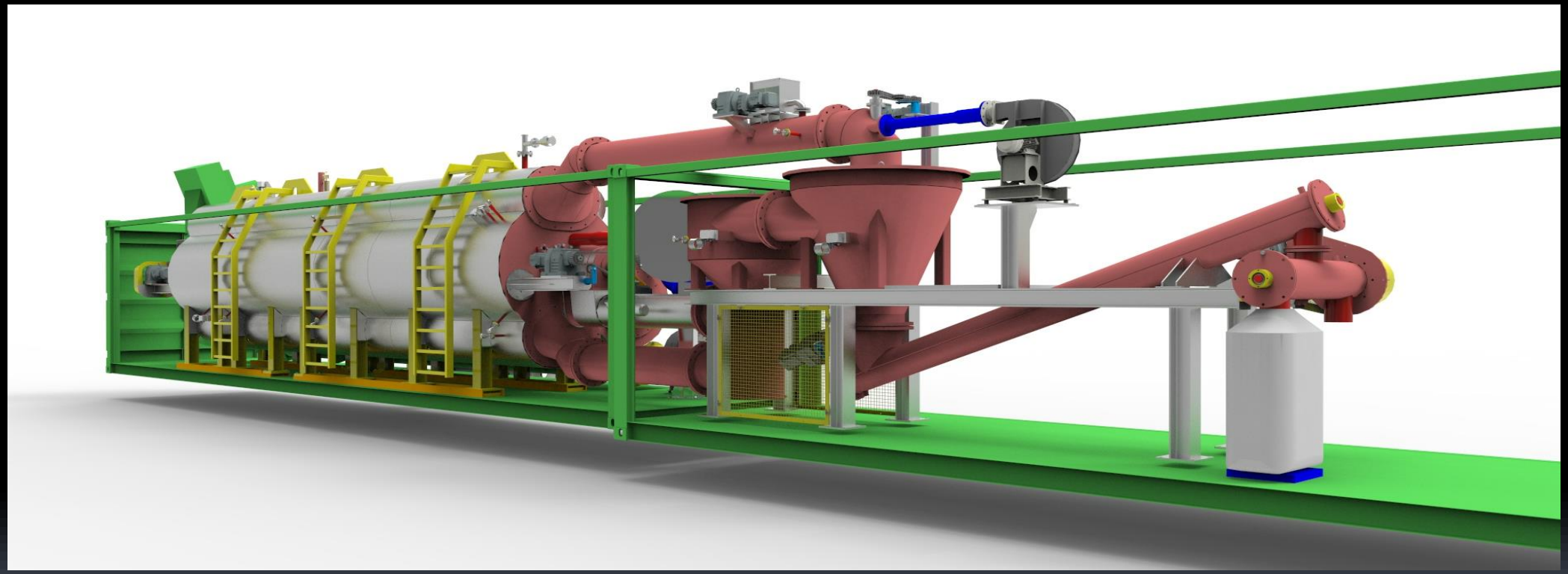
Transform linear to “circular” process:



Upcycle “waste”

- Upcycling a residual, or “waste” to create a valuable byproduct.
- Supporting and reinforcing a more circular bioeconomy.





The Container Energy Recovery Installation consists of four main technological blocks:

1. Biomass preparation block for coalification
2. Block of carbonization, production of biocarbon and heat
3. Biochar activation block, cooling and packing
4. Exhaust purification block

G-next capacity Table Container Installation	
CARBONT CONTENT OF G2 BIOCHAR	80%
PRODUCTION/HR	50 kg/hr
ANNUAL PRODUCTION	400 T
ENERGY OUTPUT	220 KW
DAILY BIOMASS PROCESSING	7 T
ANNUAL CARBON ESTIMATE	1266 T

Biochar Product

Carbon Negative Applications

SOIL
- House important soil microbes (increase the soil food web)
- Aerate the soil
- Increase Cationic Exchange Capacity
  - + Water retention (lessen waterings and irrigation)
  - + Nutrient retention (make fertilizers go further)
  - + Buffer pH levels (sweeten the soil)

CONSTRUCTION
- Chemical stability
- Low thermal conductivity
- Low flammability
- Insulating properties (moisture holding capacity)
- Replacement material

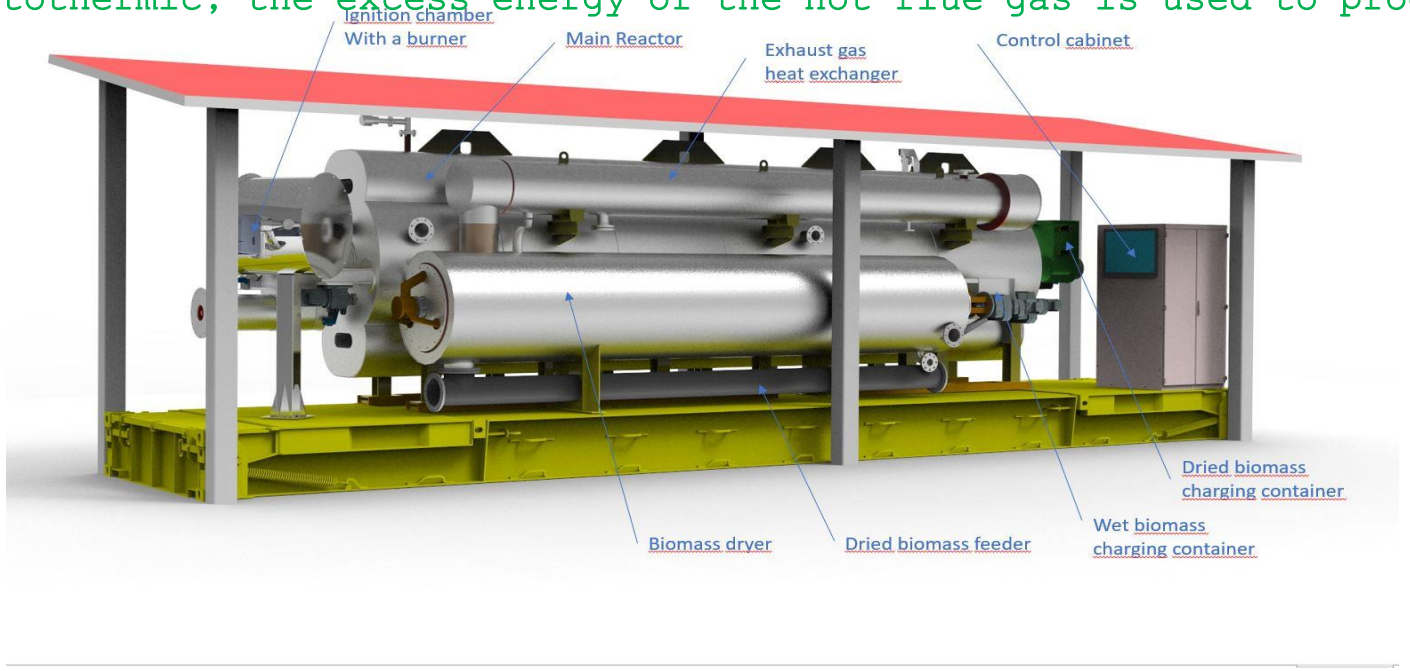
ANIMAL APPLICATIONS
- Odour reduction (bedding and coups)
- Pathogen reduction (from fecal matter)
- Feed additive
  - Reduction in methane production
  - Increased immune system
  - Better digestion (balance microbial activity

REPLACEMENT
- Carbon black
- Graphene production
- Cosmetics
- Textiles
- Art supplies, paints, plasters

FUEL REPLACEMENT
- Odour reduction (bedding and coups)
- Pathogen reduction (from fecal matter)
- Feed additive
  - Reduction in methane production
  - Increased immune system
  - Better digestion (balance microbial activity)

CONTAINER INSTALLATION

In the container installation for energy recovery from agricultural residues, the main innovative device is the G2-Next Gen50 monoblock. It is a device for slow roasting of plant biomass. The biomass is roasted at temperatures from 220 to 500 degrees C in an oxygen-free environment until the various lignin and cellulose products break down to give two products, the first is a product rich in the carbon element (C) called biochar and the second is a hydrogen-rich gaseous fuel stream that is burned inside the reactor to keep the process autothermic, the excess energy of the hot flue gas is used to produce hot water.



BIOCHAR EUROPE –Thank you for your attention