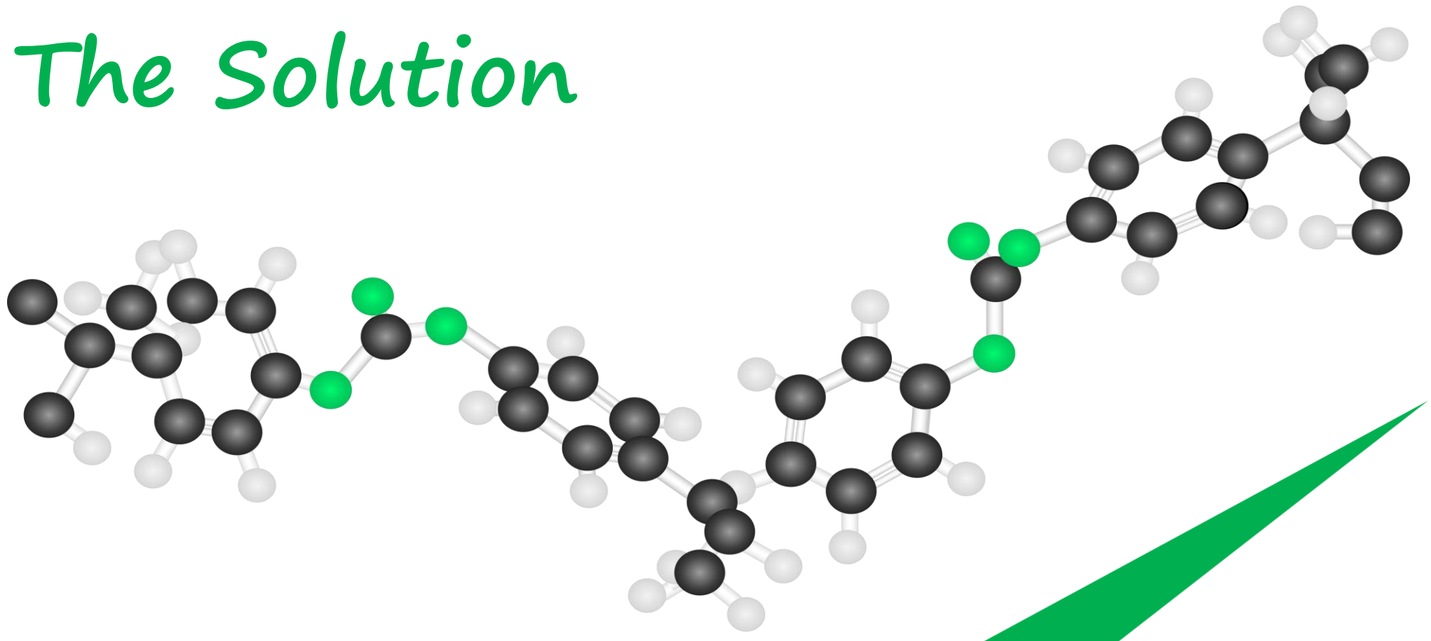
The Solution



TTL USA INC
TECHNOLOGY TRANSFER LABS

PLASTIFISSION

2 TMD REACTORS

Thermomolecular Decomposition Technology

Technology serving nature

ENERGY PRODUCTION FROM PLASTIC

2 Reactors
Electricity
12 500 MWh/y

& Heat Energy
66 500
GJ/y

POWER BY PLASTIFISSION TECHNOLOGY

TTL USA INC
TECHNOLOGY TRANSFER LABS

THE NEW SOLUTION

WOW

ENERGY PRODUCTION FROM PLASTIC
2 Reactors Electricity
12 500 MWh/y
& Heat Energy
66 500 GJ/y
POWER BY PLASTIFISSION TECHNOLOGY

WE GENERATE ELECTRICITY FROM NON-RECYCLABLE, END-OF-LIFE-CYCLE MIXED PLASTIC WASTE USING AN ENVIRONMENTALLY FRIENDLY AND UNIQUE RECYCLING, THERMO – MOLECULAR CONVERSION TECHNOLOGY

HEAT ENERGY
66 500 GJ/year

5% CARBON *
235 tons
* Incl. 0.5-1% other solid fraction

70% OIL
3 786 720 liter

4,7 thousand tons/year
Mixed Plastic Waste

TCC

25% GAS
GAS
1 176 000 m³

TCC

ELECTRICITY
12 500 MWh/year

OUR TECHNOLOGY

ENERGY PRODUCTION FROM PLASTIC

Energy production

2 reactors:
560 kg/h (1,235 lbs/h) capacity unit provides **5,000 homes (in the EU) with electricity (and heat) each year.**

Job creation

One waste treatment plant employs **12 people.** **Additional employment opportunities** include collection, selection, storage, and transportation of plastics.

Flexible output materials

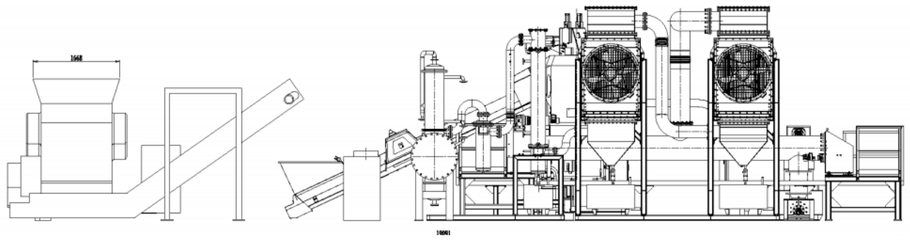
Scalable processing capacity
Adjustable power output
Stored energy
Distributed power generation
Modular design in mobile systems on **1,500 m²** (16,145 sq ft)

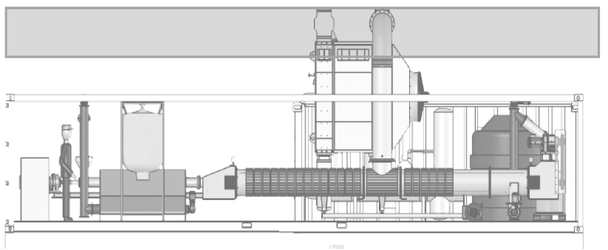
ADVANTAGE RECAP

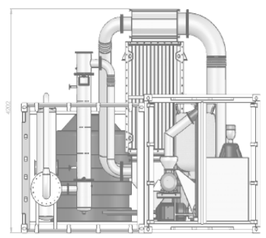
TÜVRheinland®
Precisely Right.

CE certified

Our technology does not require cleaned plastic and works as a closed system without harmful emissions.







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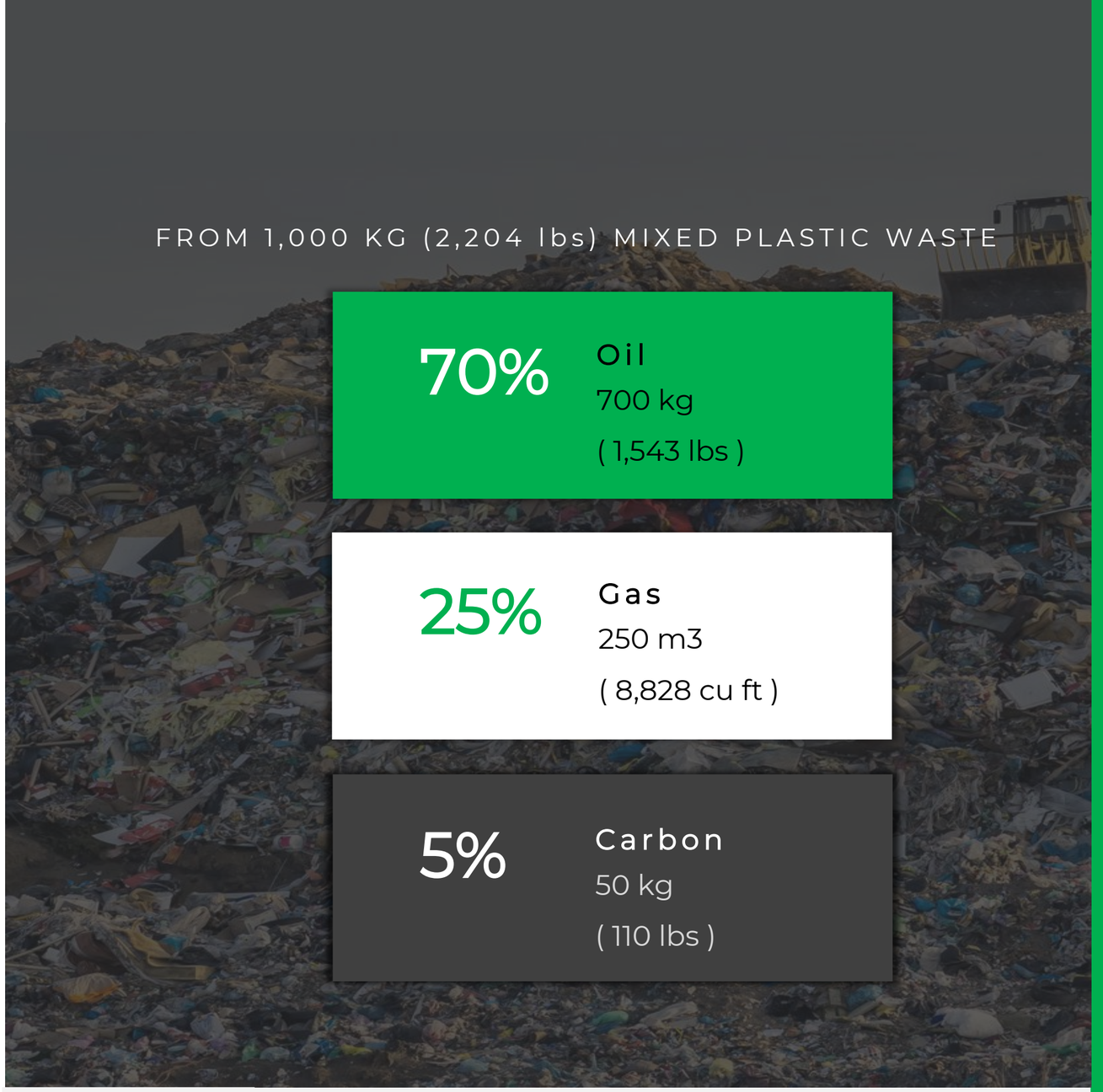
OUR TECHNOLOGY

ENERGY PRODUCTION FROM PLASTIC

In terms of energy, the highest efficiency is achieved with mixed plastic waste input where the yield is:

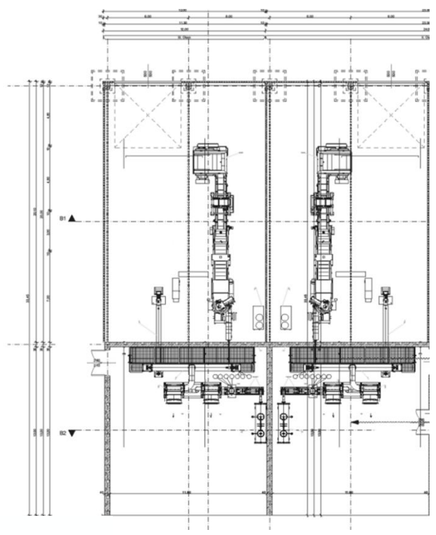
Oil	70%
Gas	25%
Carbon	5%

During heat decomposition, the input waste breaks down to elementary pieces and thereafter the heat builds chemical bonds and transforms the waste to oil, gas and carbon in solid phase respectively.



OUR PORTFOLIO

SCHEMATIC DIAGRAM OF PLASTIFISSION



TÜVRheinland®
Precisely Right.

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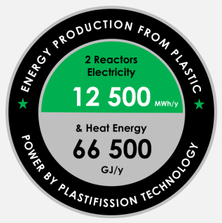

TTL-TMD 300

A schematic diagram of 1 block (2 reactors)

01.	Raw material conveyor belt
02.	Raw material storage silos
03.	Thermomolecular reactor
04.	Solid fraction quenching
05.	Solid fraction quenching pipe
06.	Partial condensers
07.	Gas chillers
08.	Drop separators
09.	Common gas cleaner
10.	Electric heating element
11.	Electricity generating units

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MIXED PLASTIC WASTE

ABS

Acrylonitrile butadiene styrene

PA

Polyamide

PC

Polycarbonate

P E

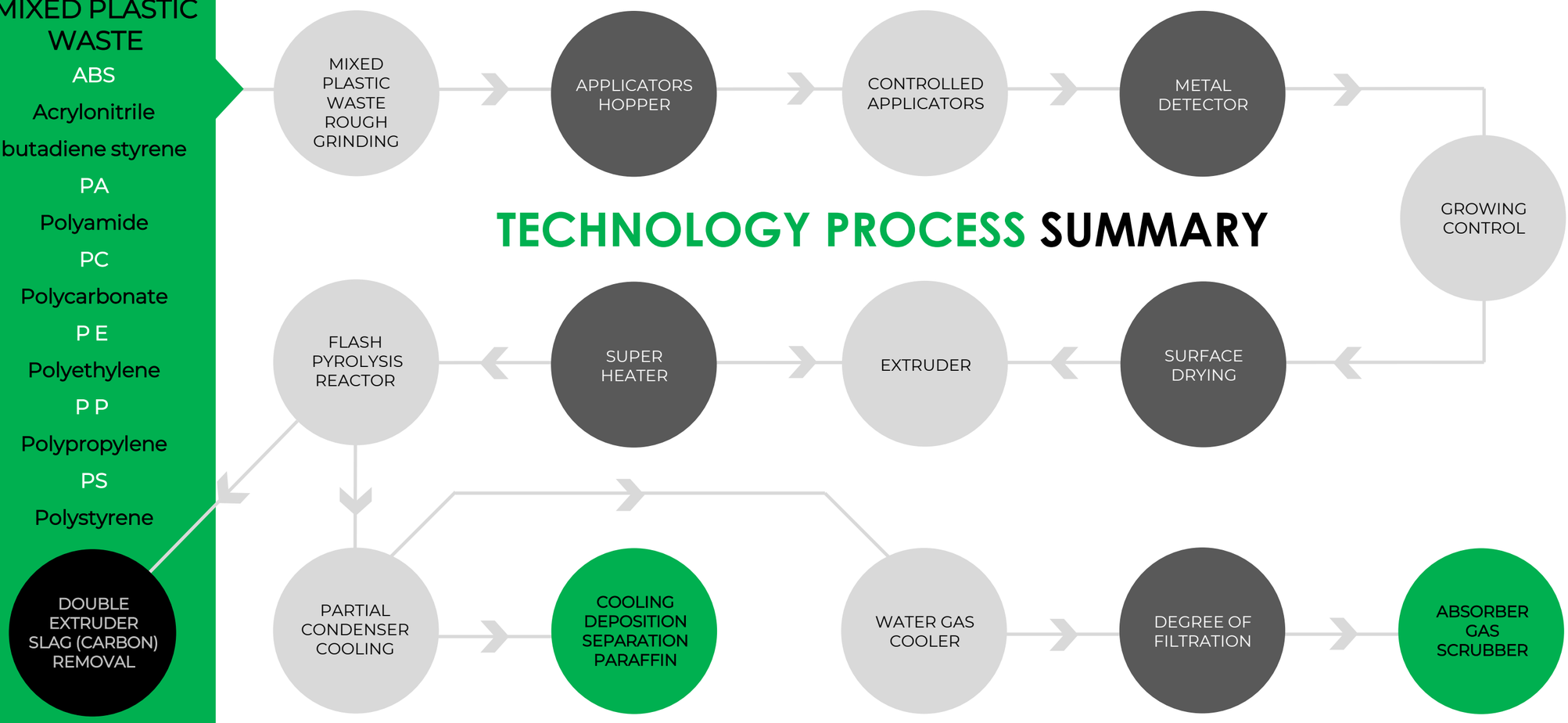
Polyethylene

P P

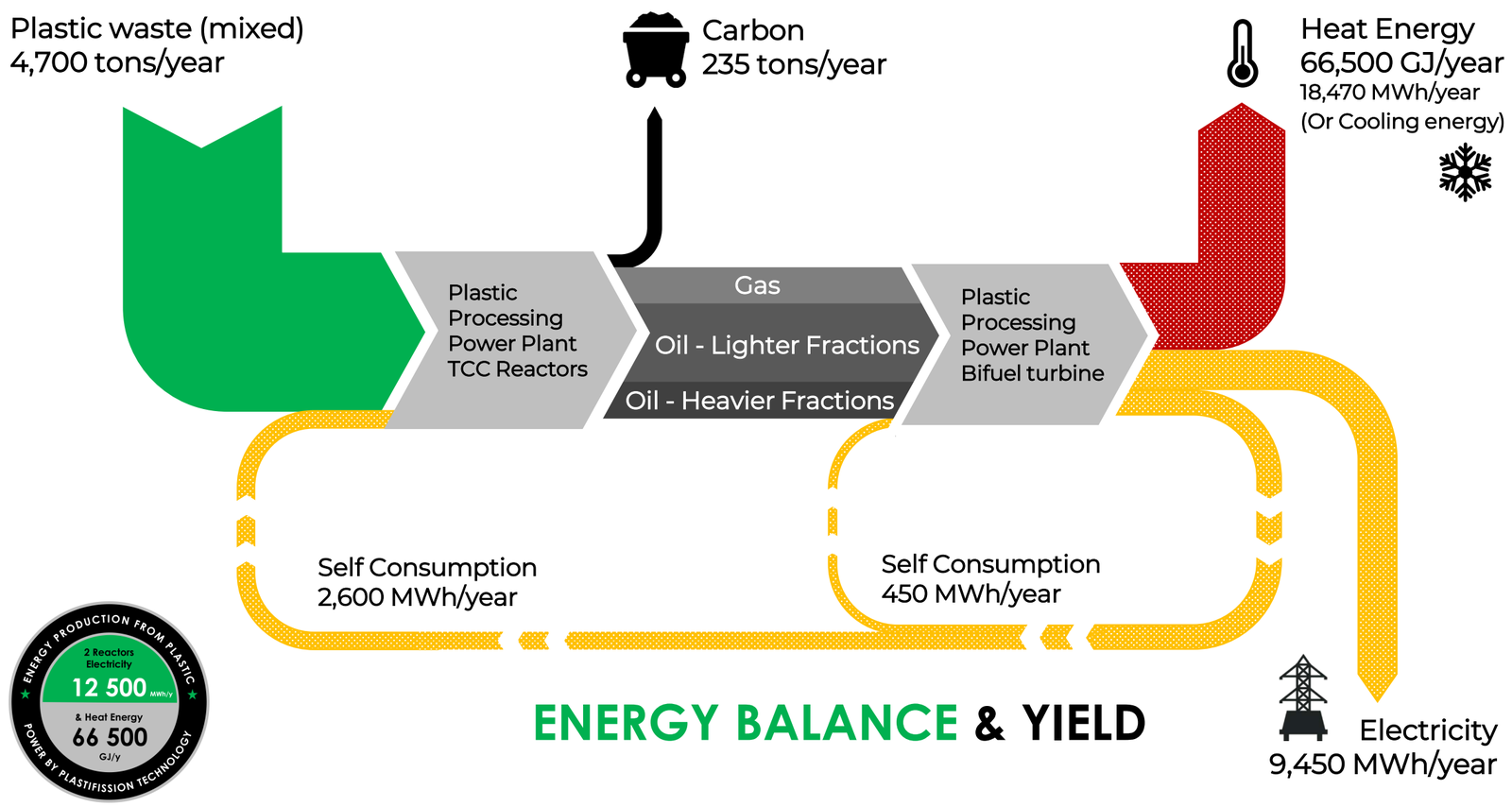
Polypropylene

PS

Polystyrene



TECHNOLOGY PROCESS SUMMARY



ENERGY BALANCE & YIELD

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TECHNOLOGY

USE
OF HEAT BYPRODUCT

2 TMD REACTORS

THERMAL ENERGY UTILIZATION: SELECTED POSSIBILITIES

- **District heating**
- Chemical industry
- Grain drying
- Pharmaceutical industry

OUTPUT

Heat Energy

66,500

GJ/year

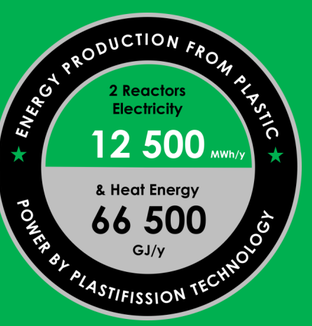
TECHNOLOGY

USE
OF CARBON BYPRODUCT

CARBON UTILIZATION: SELECTED POSSIBILITIES

- **Carbon**

- Metallurgy: steel production
- Industrial and commercial waste water treatment
- Pharmaceutical and chemical purification
- Water filtration
- Air filtration
- Food refinery: cane and corn sugar
- Skin Care



C

235

tons/year

CARBON

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KEY EXPERTISE

BUSINESS POSSIBILITY - PLASTIFISSION 2 REACTORS

Mixed plastic waste processing capacity: 4,700 tons/year (560 kg/h or 1,235 lbs/h) **Operating time: 8,400** hours/year.

CHEMICAL THERMAL DECOMPOSITION

OIL 70%

3,786,720

liter per year

1,000,346 gal per year

High quality oil (**38 MJ/kg**). We can generate **12,500 MWh/year** of electricity from chemically processing **4,700** tons of mixed plastic waste using an environmentally friendly technology.

GAS 25%

1,176,000

m^3 per year

41,530,000 cu ft per year

High quality gas (**52-56 MJ/kg**). Provides the **electricity required for the operation** of the Plastic Processing Power Plant.

CARBON 5%

235

tons per year

High quality carbon powder. Metallurgical raw material, World market price: **750 EUR/tons.** We can make **activated carbon. (WMP: 2,300 – 2,500 EUR/tons).**

* Unit provides **5,000 homes** (in the EU) with electricity (and heat) each year.

ENERGY PRODUCTION FROM PLASTIC

2 Reactors Electricity

12 500 MWh/y

& Heat Energy

66 500 GJ/y

POWER BY PLASTIFISSION TECHNOLOGY

Electricity capacity of power plant/year:

12,500 MWh *

Heat Energy

66,500 GJ/year

SCHEDULE

PROJECT TIMELINE

Total timing: 18 months	2025 Q 04	2026 Q 01	2026 Q 02	2026 Q 03	2026 Q 04	2027 Q 01
PREPARATION & CONTRACTS #1month						
POWER PLANT PLANNING #3month						
TECHNOLOGY PRODUCTION #10month						
TRANSPORT & ASSEMBLY #2month						
TEST OPERATION & TRAINING #2month						

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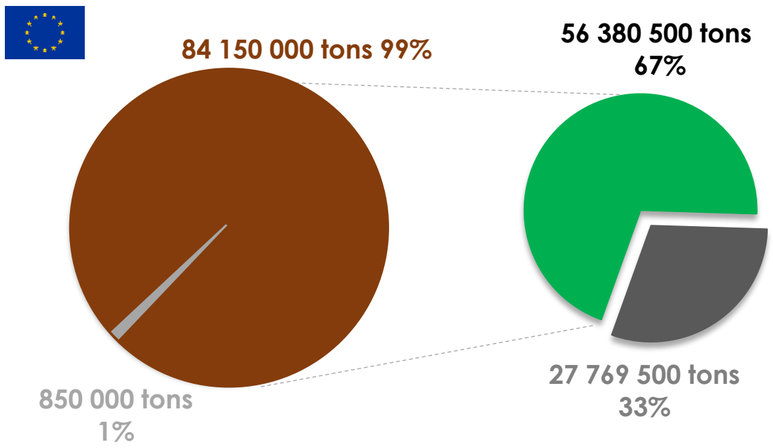
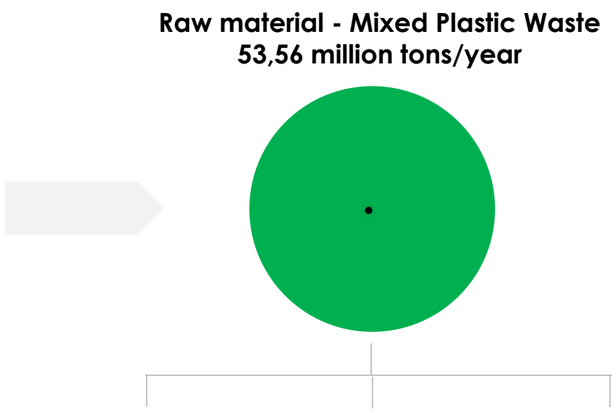
STATISTICS

PLASTIC WASTE
IN EU PER YEAR





Metal and textile pollution in EU/year

Mixed plastic waste depoed in EU/year

Mixed plastic waste in EU/year

Mixed plastic waste material recycled

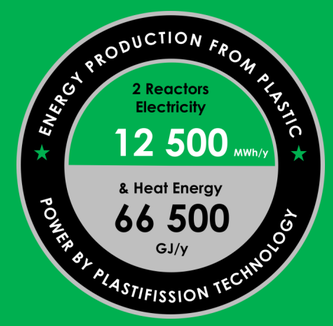
EUROPEAN COMMISSION

Source: EUROPEAN COMMISSION {SWD(2018) 16 final}

235 tons CARBON

1 176 000 m³ 41 530 063 cu ft GAS

3 786 720 l 1 000 346 gal OIL



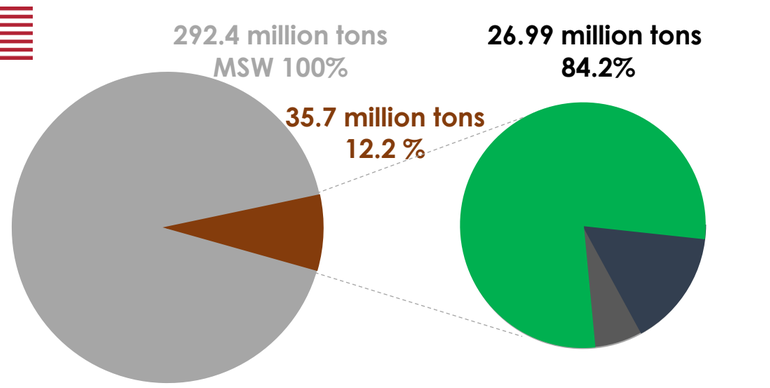
MIXED PLASTIC WASTE 4 700 tons /year

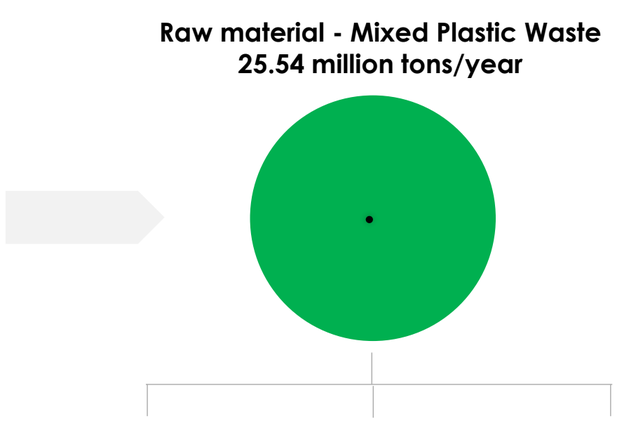
12 500 MWh /year ELECTRICITY

66 500 GJ /year HEAT ENERGY

STATISTICS

PLASTIC WASTE
IN USA PER YEAR





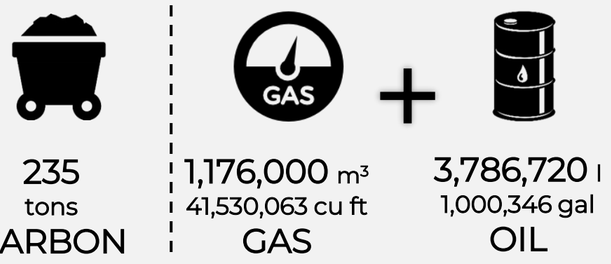
Municipal solid waste (MSW) in USA/year

Mixed plastic waste depoed in USA/year

Mixed plastic waste in USA/year

Plastic waste material recycled & combusted in USA/year

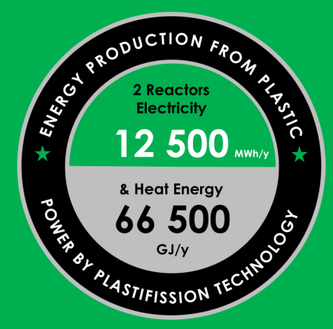
Source (2018): United States Environmental Protection Agency, American Chemistry Council



235 tons CARBON

1,176,000 m³ 41,530,063 cu ft GAS

3,786,720 l 1,000,346 gal OIL



MIXED PLASTIC WASTE 4,700 tons /year

12,500 MWh /year ELECTRICITY

66,500 GJ /year HEAT ENERGY

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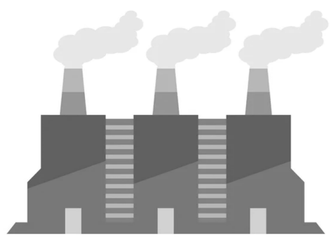
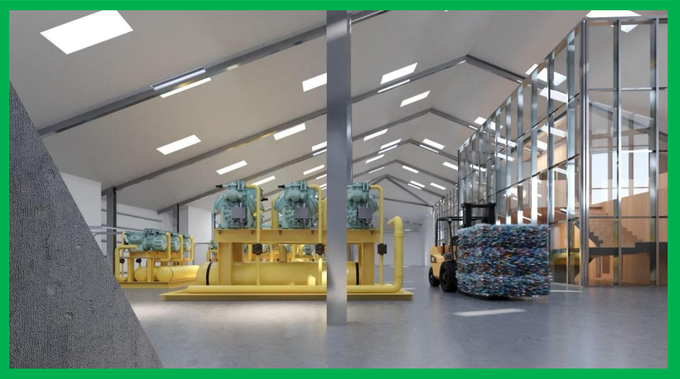
CARBON FOOTPRINT	Technology used and details	Raw material processed per year	Volume produced per year	Carbon footprint per year
	PLASTIFISSION	**4 700** tons of mixed plastic waste	**12 500** MWh Eletricity and **66 500** GJ Heat energy	**3 495** tons CO_2
	Oil extraction, and Refining	**4 700** tons Oil (crude oil)	**12 500** MWh Eletricity and **66 500** GJ Heat energy	**10 920** tons CO_2
	Waste Incineration Plant	**4 700** tons of mixed plastic waste	**5 875** MWh Eletricity and **42 300** GJ Heat energy	**13 440** tons CO_2

PlastiFission Demonstration Visitor and Research Center



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