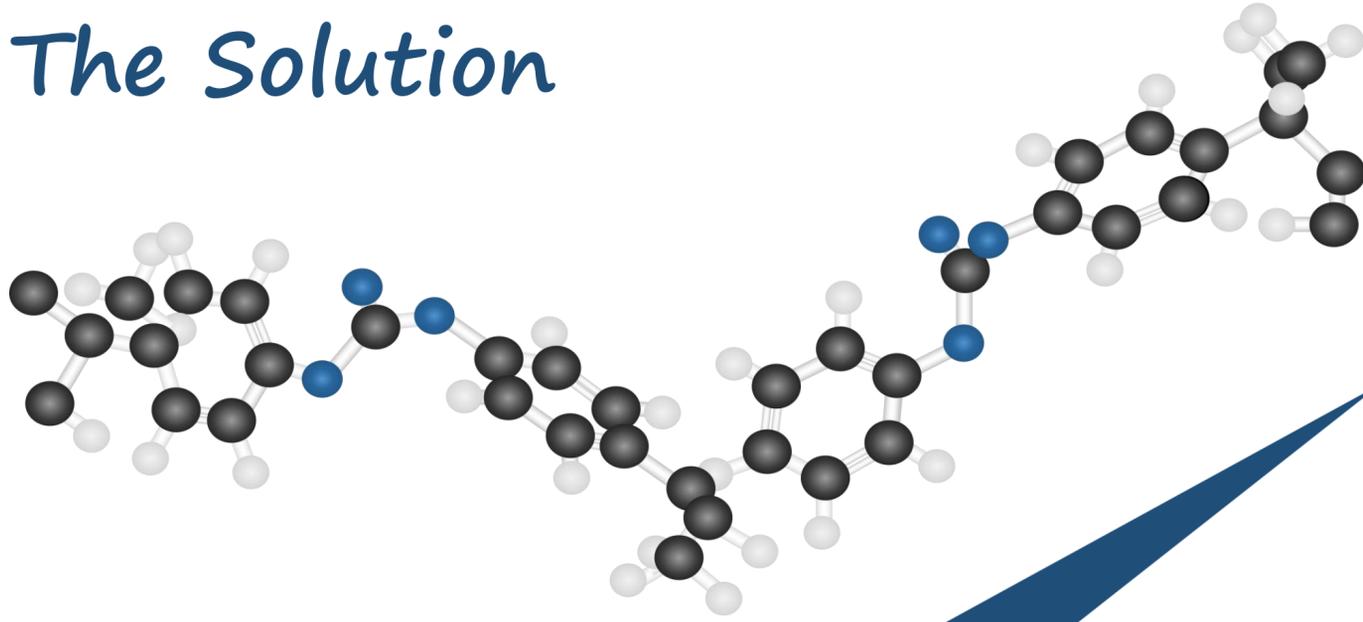


The Solution



PLASTIFISSION

40
TMD
REACTORS

Thermomolecular Decomposition Technology
Technology serving nature



TTL USA INC
TECHNOLOGY TRANSFER LABS

THE NEW SOLUTION

WOW

ENERGY PRODUCTION FROM PLASTIC
20 Reactors Electricity
247 000
& Heat Energy
1 333 500
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
1 333 500 GJ/year

94 thousand tons/year
Mixed Plastic Waste

5% CARBON *
4 704 tons
* Incl. 0.5-1% other solid fraction

70% OIL
75 734 400 liter

25% GAS
23 520 000 m³

ELECTRICITY
247 000 MWh/year

TCC

TCC

TCC

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OUR TECHNOLOGY

ENERGY PRODUCTION FROM PLASTIC

Energy production

40 reactors:
11,200 kg/h (24,692 lbs/h)
capacity unit provides
100,000 homes (in the EU)
with electricity (and heat) each year.

Job creation

One waste treatment plant employs **68 people**.
Additional employment opportunities include collection, selection, storage, and transportation of plastics.

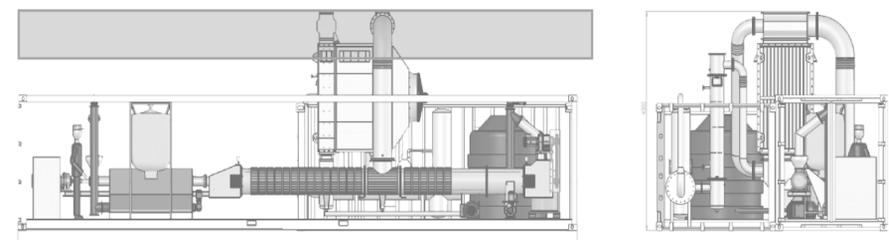
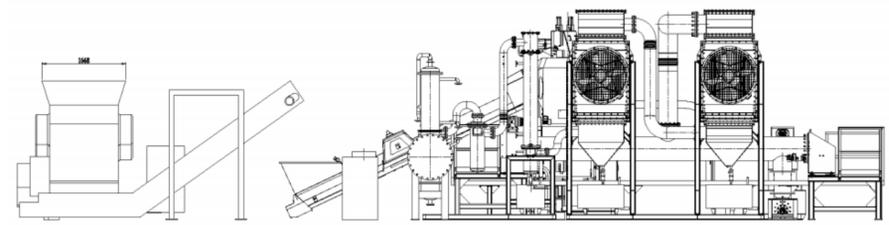
Flexible output materials

Scalable processing capacity
Adjustable power output
Stored energy
Distributed power generation
Modular design in mobile systems on **16,000 m²** (172,222 sq ft)

ADVANTAGE RECAP



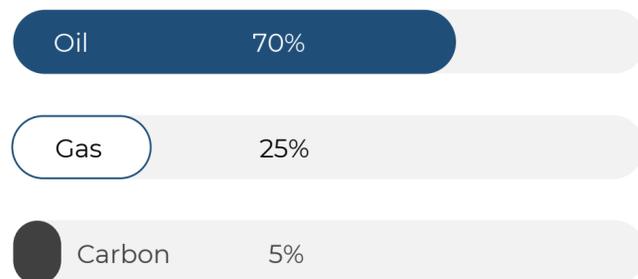
Our technology does not require cleaned plastic and works as a closed system without harmful emissions.



OUR TECHNOLOGY

ENERGY PRODUCTION FROM PLASTIC

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



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.

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FROM 1,000 KG (2,204 lbs) MIXED PLASTIC WASTE

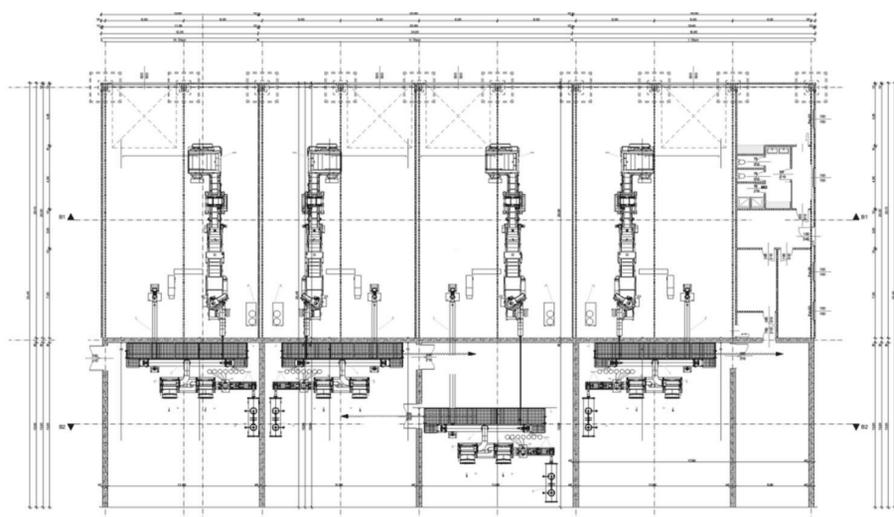
70% Oil
700 kg
(1,543 lbs)

25% Gas
250 m³
(8,828 cu ft)

5% Carbon
50 kg
(110 lbs)

OUR PORTFOLIO

SCHEMATIC DIAGRAM OF PLASTIFISSION



TTL-TMD 300

A schematic diagram of 1 block (4 reactors), 10 blocks (40 reactors)

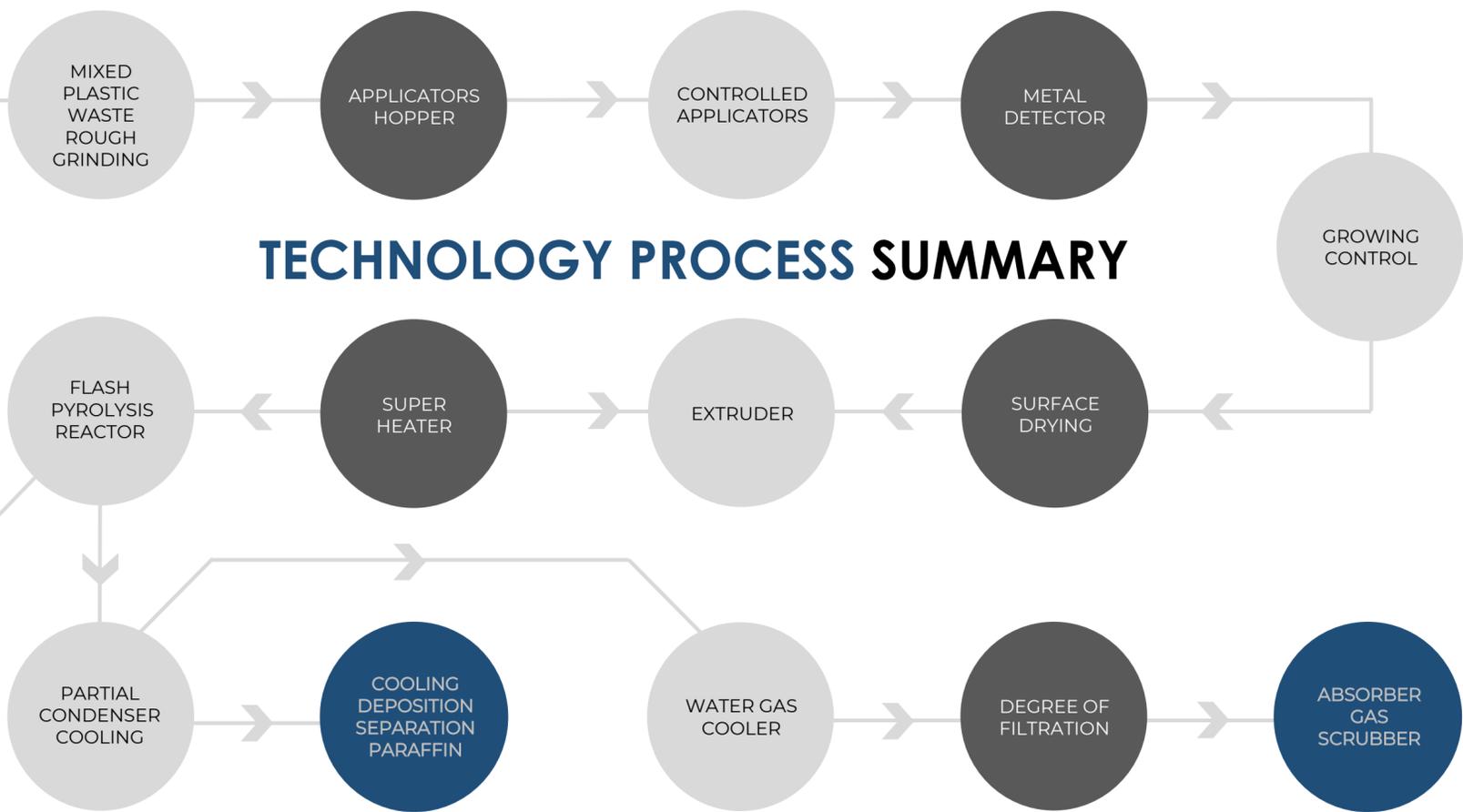
01. Raw material conveyor belt
02. Raw material storage silos
03. Thermomolecular reactor
04. Solid fraction quenching
05. Solid fraction quenching pipe
06. Partial condensers
07. Gas chillers
08. Drop separators
09. Common gas cleaner
10. Electric heating element
11. Electricity generating units

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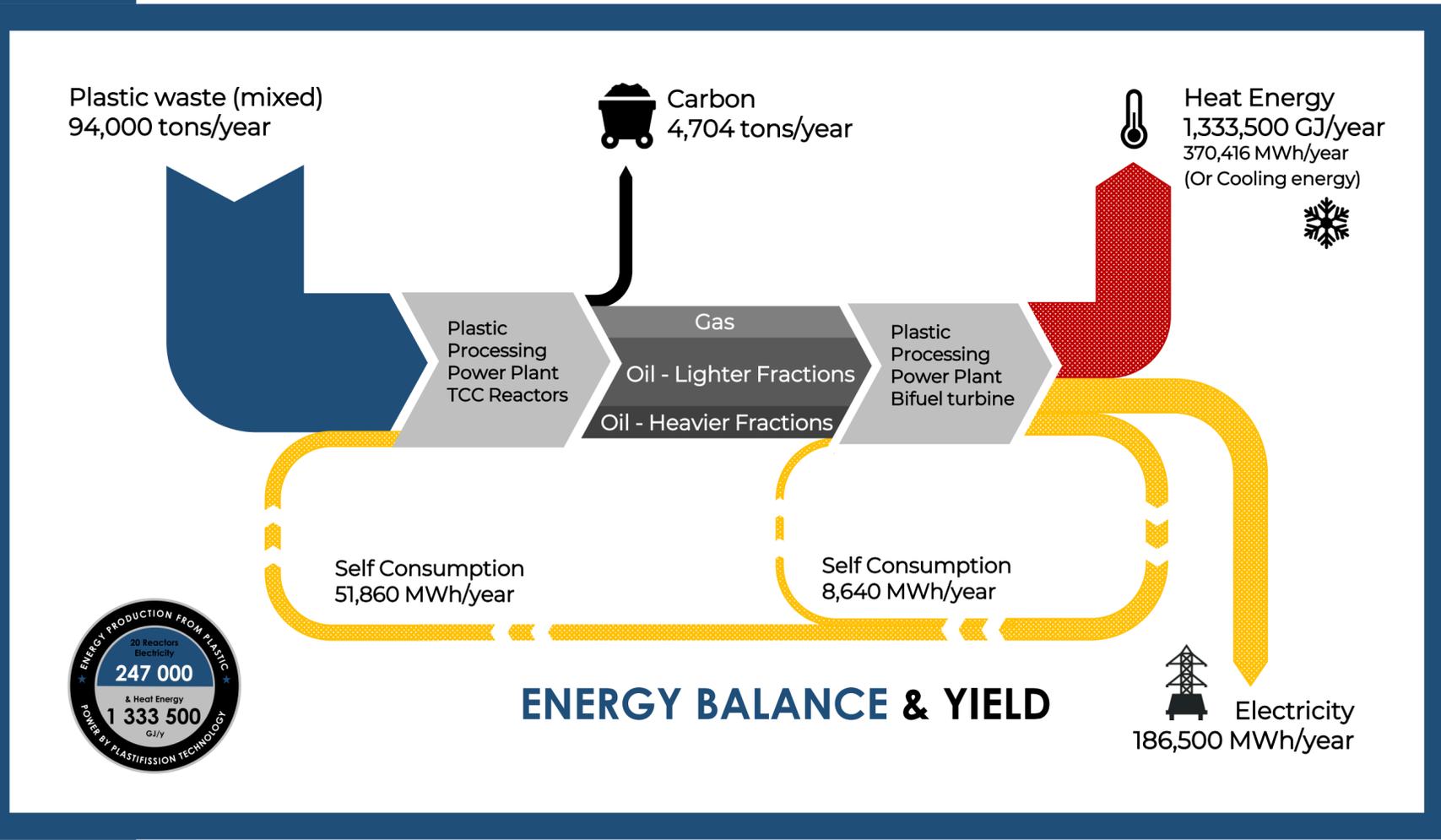
MIXED PLASTIC WASTE

- ABS
- Acrylonitrile
- butadiene styrene
- PA
- Polyamide
- PC
- Polycarbonate
- PE
- Polyethylene
- PS
- Polypropylene
- PS
- Polystyrene

DOUBLE EXTRUDER
SLAG (CARBON)
REMOVAL



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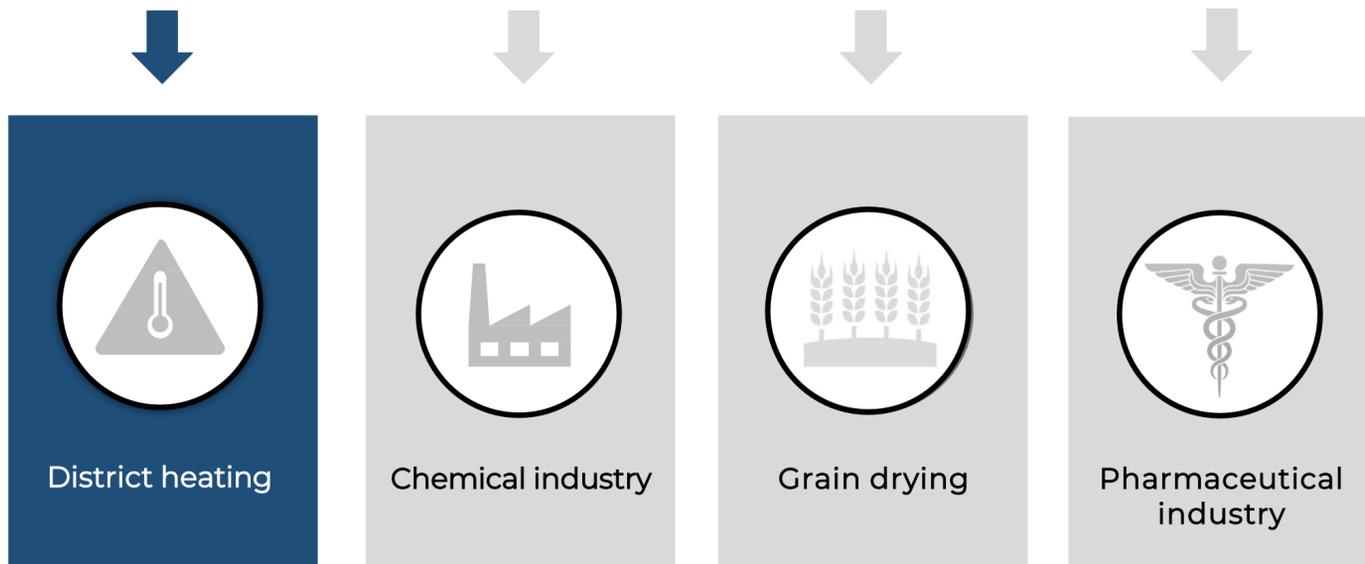
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TECHNOLOGY

USE OF HEAT BYPRODUCT



THERMAL ENERGY UTILIZATION: SELECTED POSSIBILITIES



OUTPUT

Heat Energy
1,333,500
GJ/year



TECHNOLOGY

USE OF CARBON BYPRODUCT

CARBON UTILIZATION: SELECTED POSSIBILITIES



- 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



4,704
tons/year

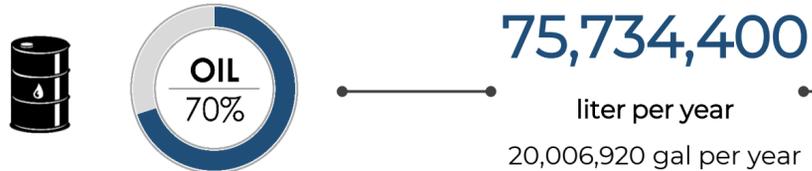
CARBON

KEY EXPERTISE

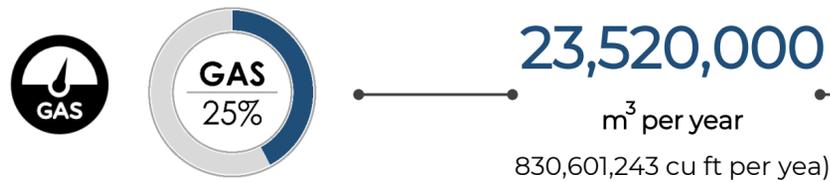
BUSINESS POSSIBILITY – PLASTIFISSION 40 REACTORS

Mixed plastic waste processing capacity: 94,000 tons/year (11,200 kg/h or 24,692 lbs/h) Operating time: 8,400 hours/year.

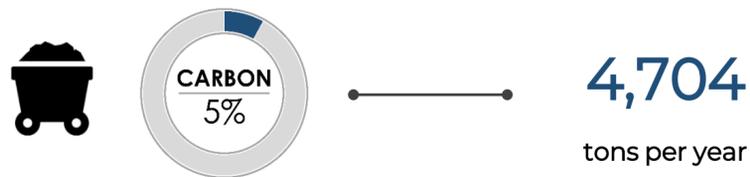
CHEMICAL THERMAL DECOMPOSITION



High quality oil (38 MJ/kg). We can generate 247,000 MWh/year of electricity from chemically processing 94,000 tons of mixed plastic waste using an environmentally friendly technology.



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



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).



Electricity capacity of power plant/year:

247,000 MWh



Heat Energy

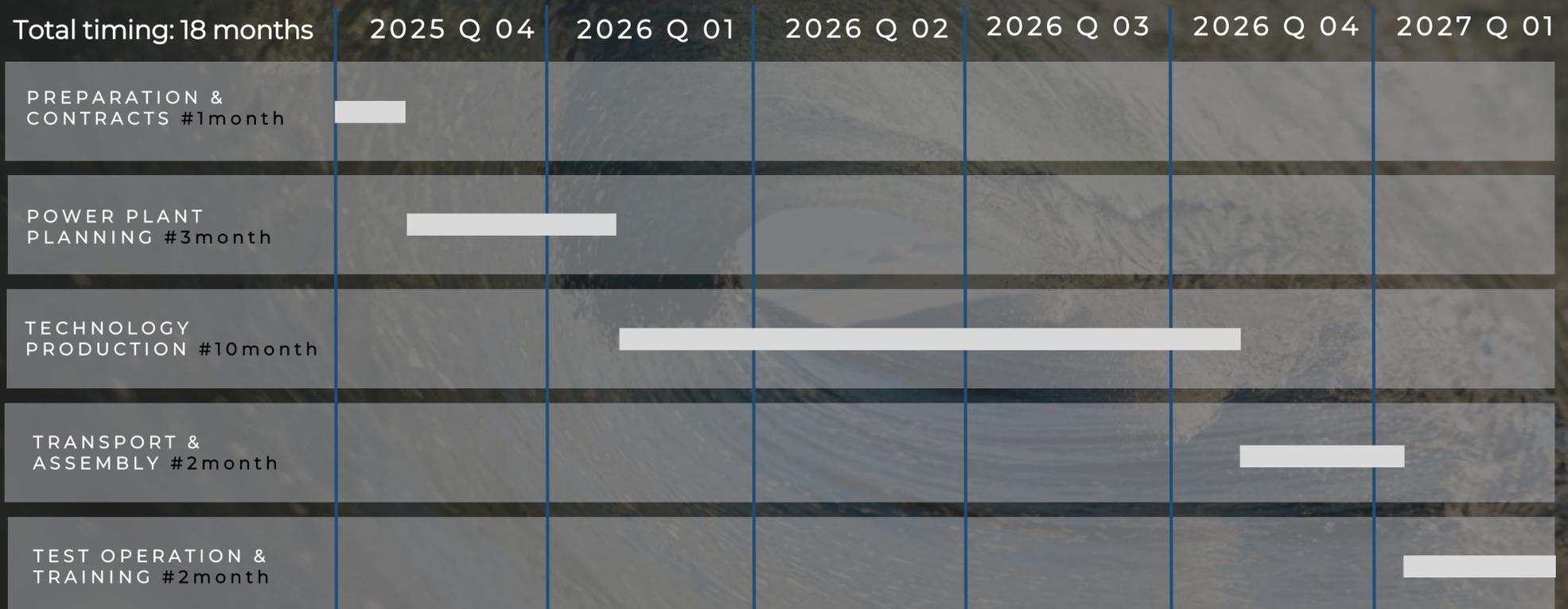
1,333,500 GJ/year

* Unit provides 100,000 homes (in the EU) with electricity (and heat) each year.



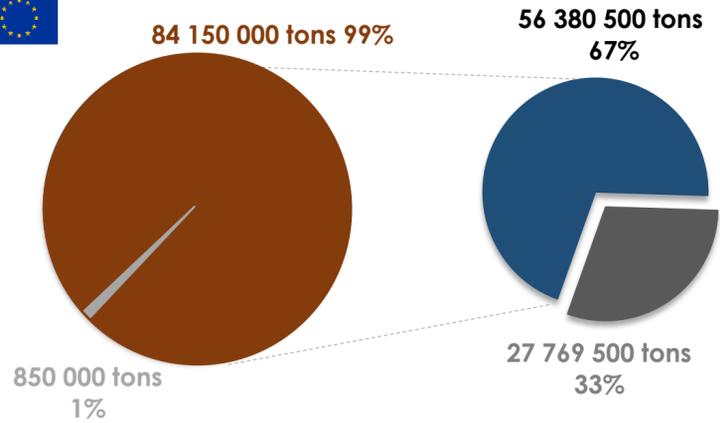
SCHEDULE

PROJECT TIMELINE



STATISTICS

PLASTIC WASTE IN EU PER YEAR

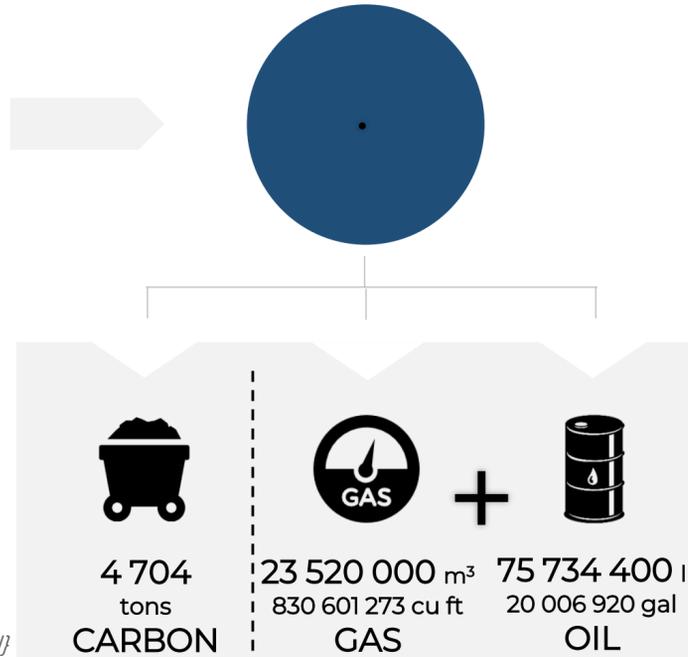


- Metal and textile pollution in EU/year
- Mixed plastic waste deposited in EU/year
- Mixed plastic waste in EU/year
- Mixed plastic waste material recycled



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

Raw material - Mixed Plastic Waste
53.56 million tons/year



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MIXED PLASTIC WASTE
94,000 tons/year



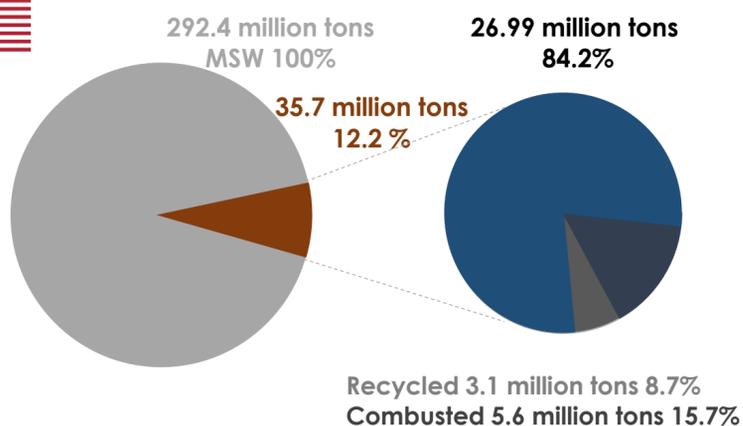
247,000
MWh/year
ELECTRICITY



1,333,500
GJ/year
HEAT ENERGY

STATISTICS

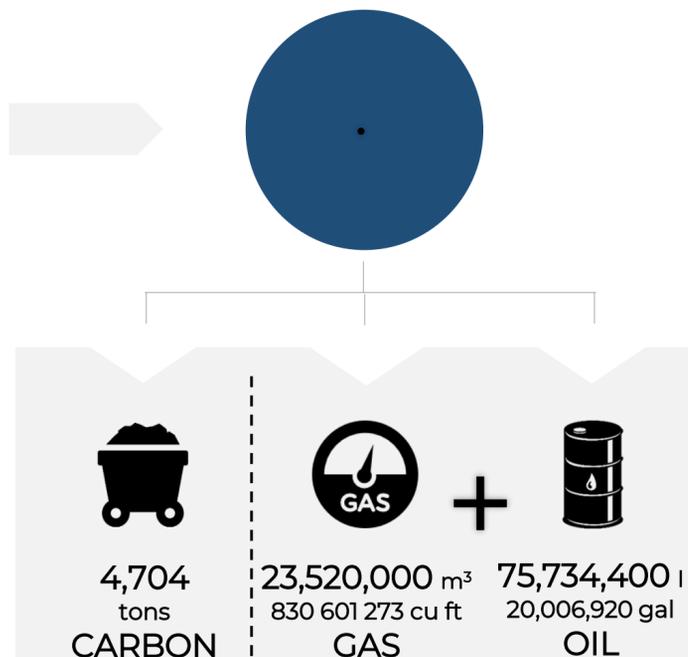
PLASTIC WASTE IN USA PER YEAR



- Municipal solid waste (MSW) in USA/year
- Mixed plastic waste deposited 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

Raw material - Mixed Plastic Waste
53.56 million tons/year



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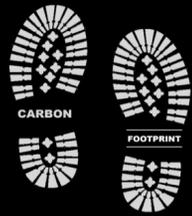
MIXED PLASTIC WASTE
94,000 tons/year



247,000
MWh/year
ELECTRICITY



1,333,500
GJ/year
HEAT ENERGY



Technology used and details

Raw material processed per year

Volume produced per year

Carbon footprint per year



94 000 tons of mixed plastic waste

247 000 MWh Electricity and **1 333 500** GJ Heat energy

70 025 tons CO₂

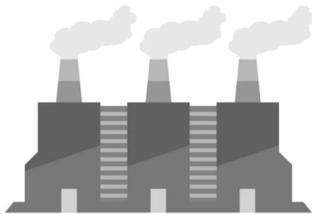


Oil extraction, and Refining

94 000 tons Oil (crude oil)

247 000 MWh Electricity and **1 333 500** GJ Heat energy

218 835 tons CO₂



Waste Incineration Plant

94 000 tons of mixed plastic waste

108 350 MWh Electricity and **780 200** GJ Heat energy

269 380 tons CO₂

PlastiFission Demonstration Visitor and Research Center



TTL USA INC
TECHNOLOGY TRANSFER LABS



www.technologytransferlabs.org e-mail: office@technologytransferlabs.org