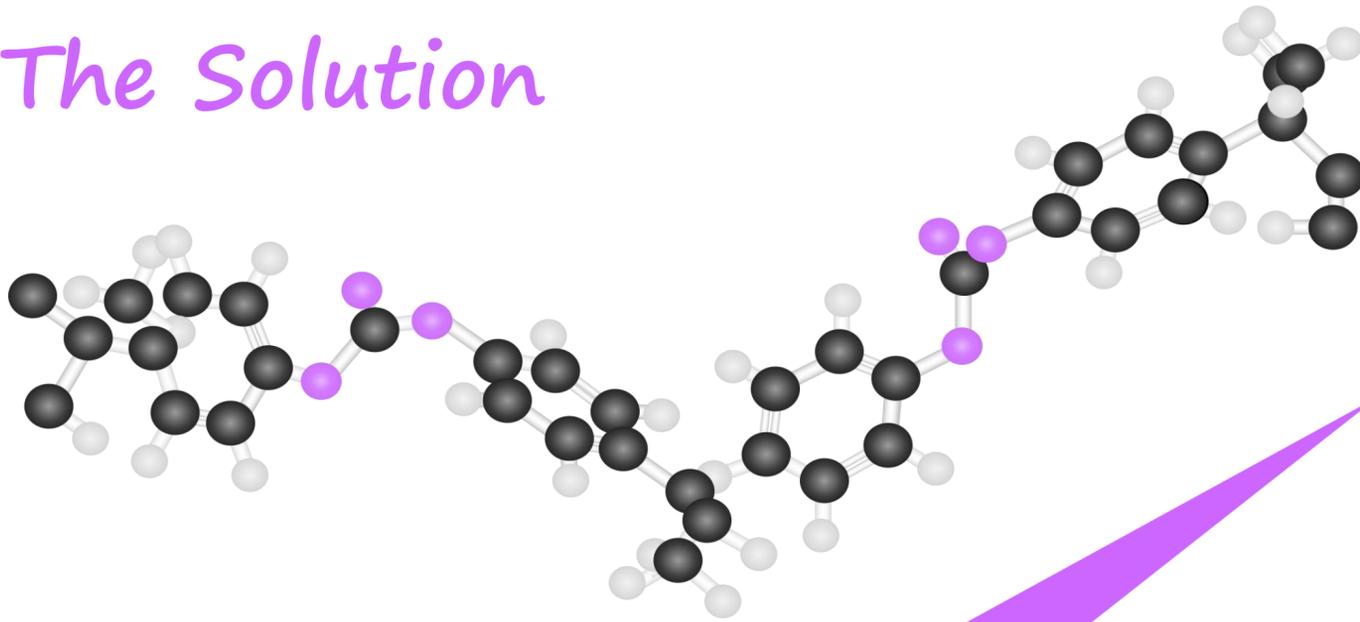


The Solution



PLASTIFISSION



Thermomolecular Decomposition Technology
Technology serving nature



TTL USA INC
TECHNOLOGY TRANSFER LABS

THE NEW SOLUTION

WOW

★ ENERGY PRODUCTION FROM PLASTIC ★
2 sReactors
Electricity
3 150 MWh/y
& Heat Energy
17 000 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
17 000 GJ/year

5% CARBON *
58,8 tons
* Incl. 0.5-1% other solid fraction

70% OIL
946 680 liter

1,2 thousand tons/year
Mixed Plastic Waste

25% GAS
294 000 m³

ELECTRICITY
3 150 MWh/year

TCC

OUR TECHNOLOGY

ENERGY PRODUCTION FROM PLASTIC

Energy production

2 „S” reactors:
140 kg/h (308 lbs/h)
capacity unit provides
1,200 homes (in the EU)
with electricity (and
heat) each year.

Job creation

One waste treatment plant
employs **9 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 **700 m²** (7,535 sq ft)

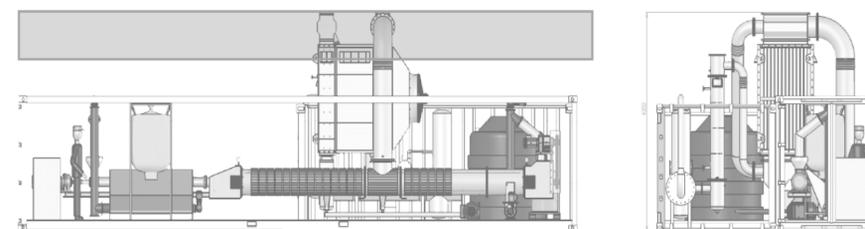
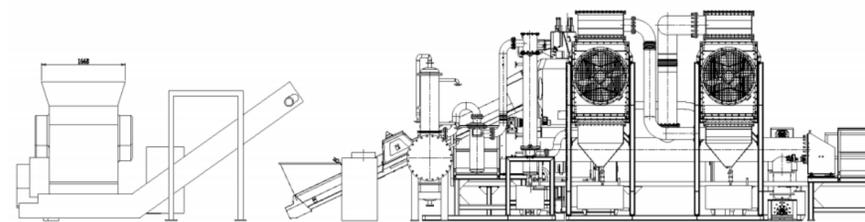
ADVANTAGE RECAP



CE certified



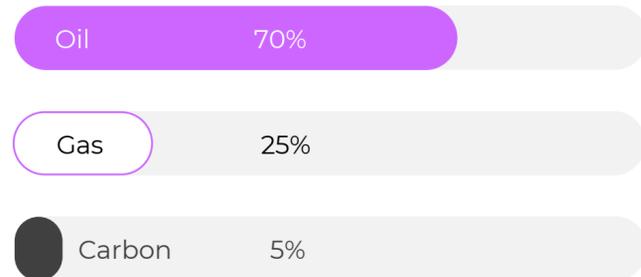
Our technology does not require cleaned plastic and works as a closed system without harmful emissions.



OUR TECHNOLOGY

ENERGY PRODUCTION FROM PLASTIC

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

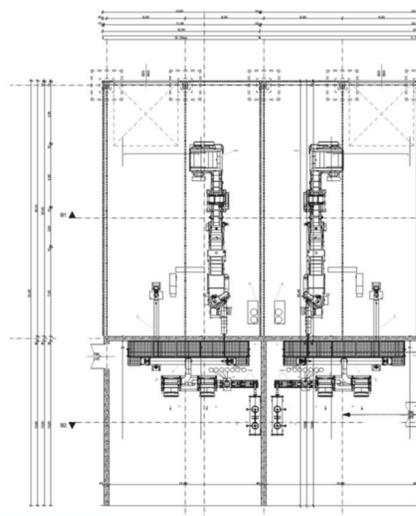


During heat decomposition, the input waste breaks down to elementary pieces and thereafter the heat builds chemical bonds and transforms the waste to oil, gas and carbon in solid phase respectively.

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OUR PORTFOLIO

SCHEMATIC DIAGRAM OF PLASTIFISSION



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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)



TTL -TMD 70

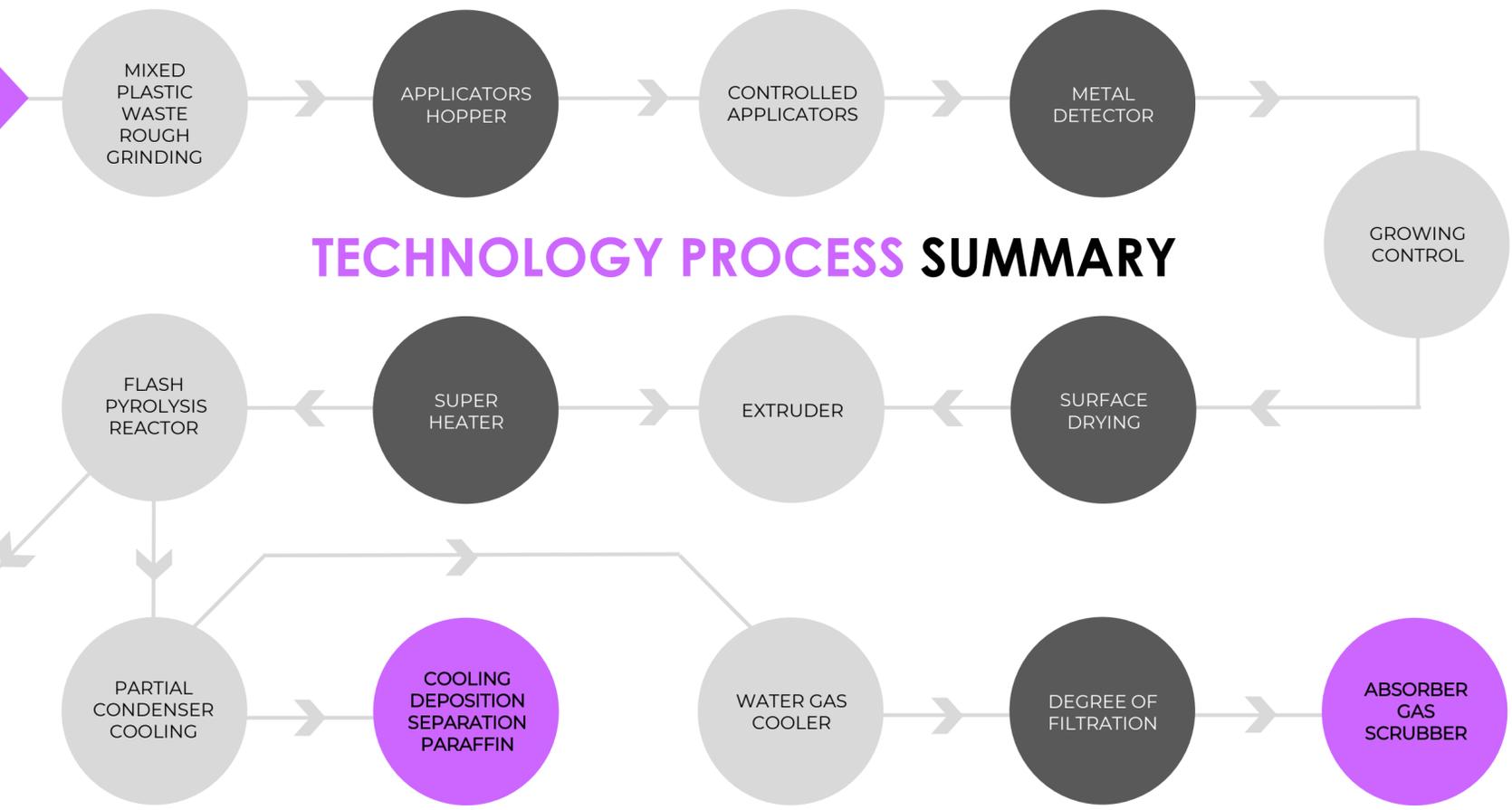
A schematic diagram of 1 block (2 reactors)

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

MIXED PLASTIC WASTE

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

DOUBLE EXTRUDER SLAG (CARBON) REMOVAL

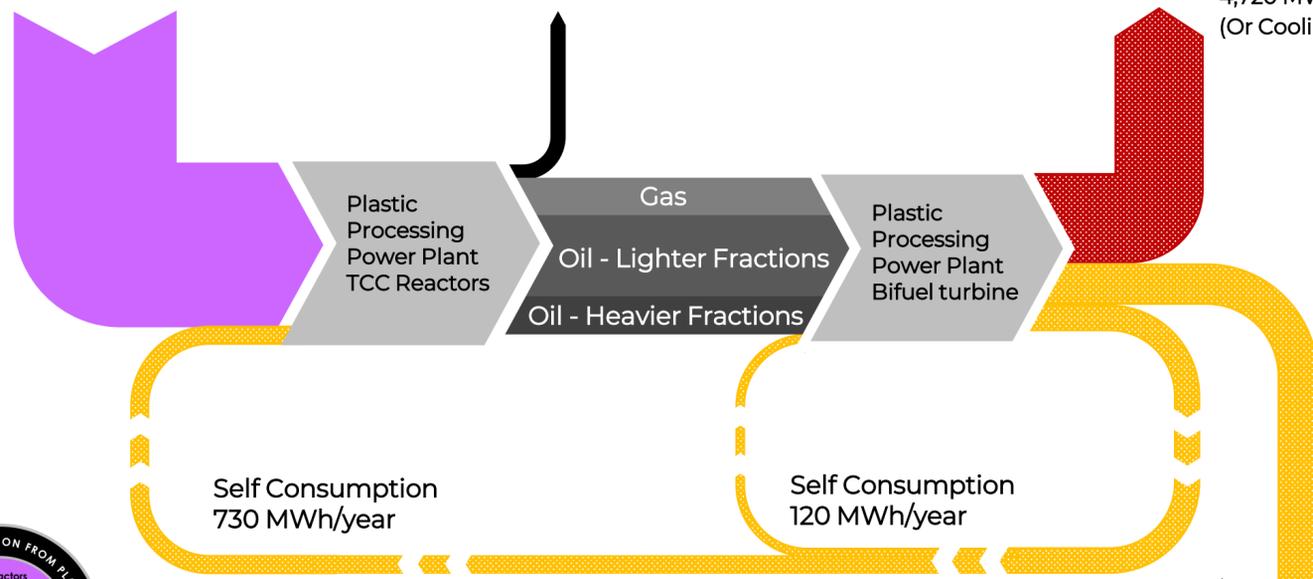


TECHNOLOGY PROCESS SUMMARY

Plastic waste (mixed)
1,200 tons/year

Carbon
58.8 tons/year

Heat Energy
17,000 GJ/year
4,720 MWh/year
(Or Cooling energy)



ENERGY PRODUCTION FROM PLASTIC
2 Reactors
Electricity
3 150
& Heat Energy
17 000
GJ/y
POWER BY PLASTIFISSION TECHNOLOGY

ENERGY BALANCE & YIELD

Electricity
2,300 MWh/year

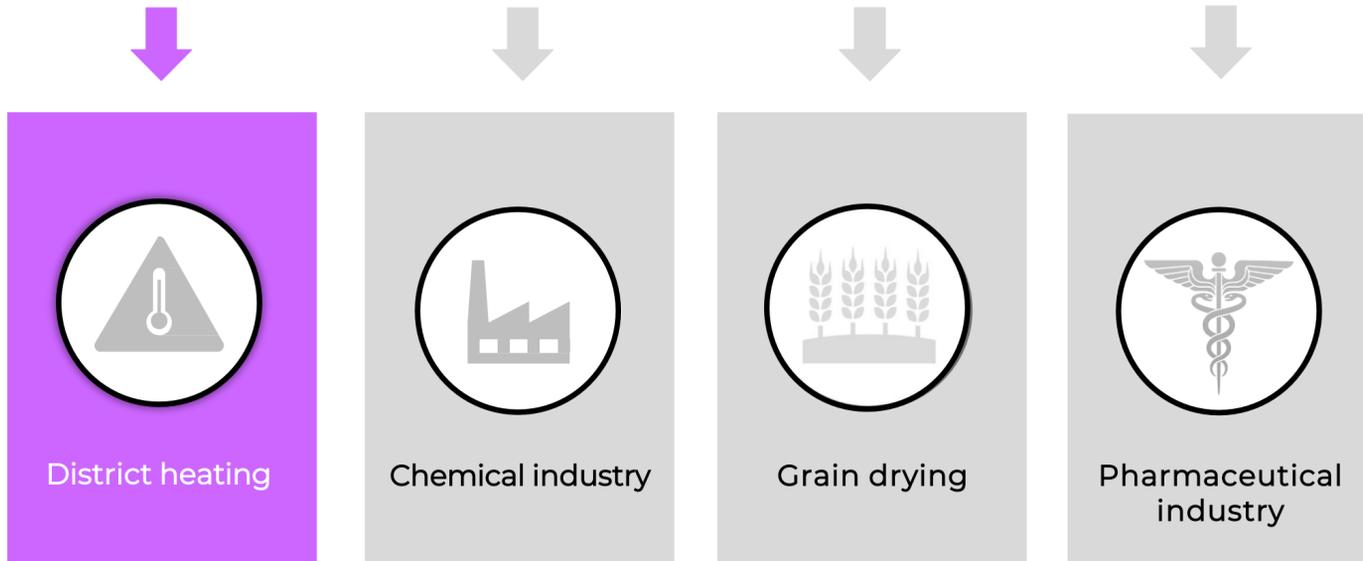
TECHNOLOGY

USE

OF HEAT BYPRODUCT



THERMAL ENERGY UTILIZATION: SELECTED POSSIBILITIES



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



OUTPUT

Heat Energy
17,000
GJ/year



58.5
tons/year

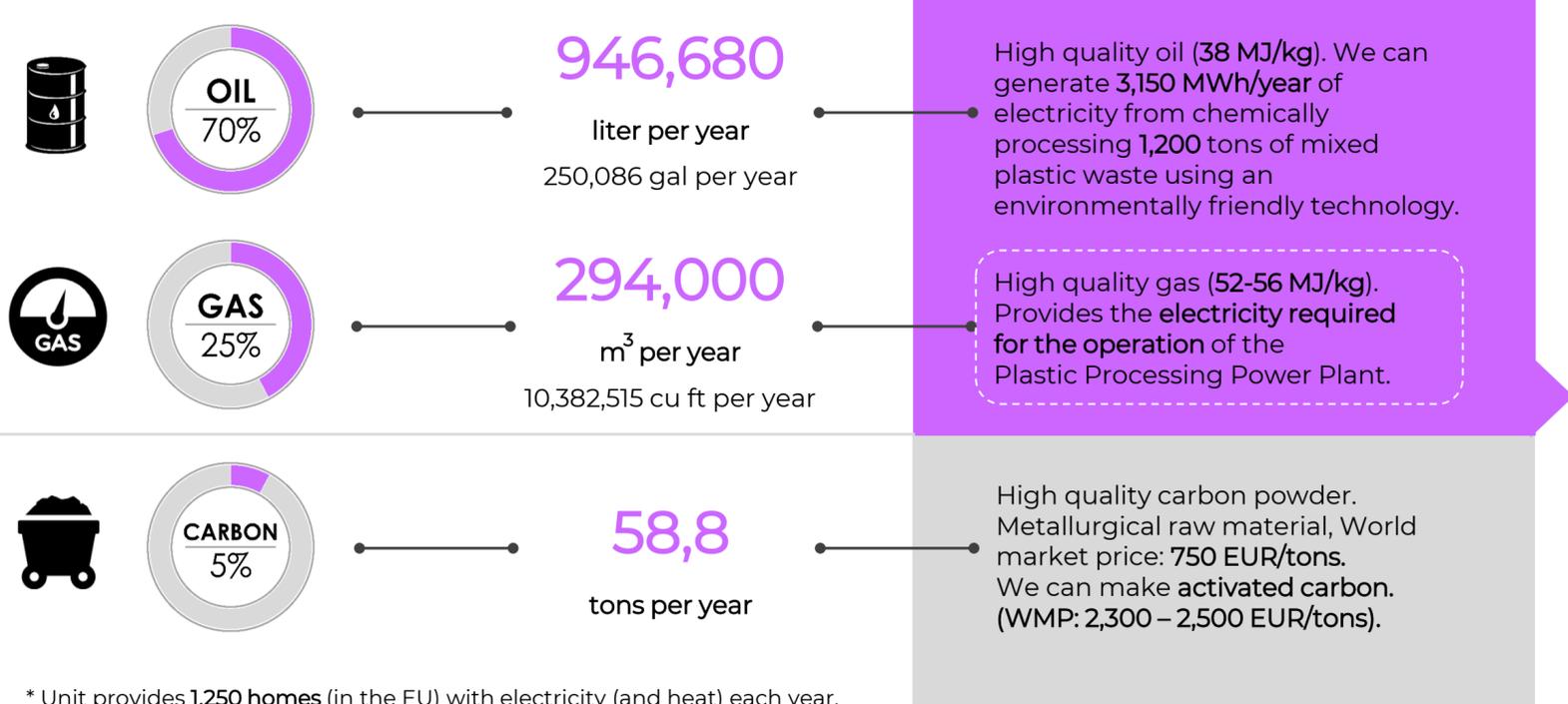
CARBON

KEY EXPERTISE

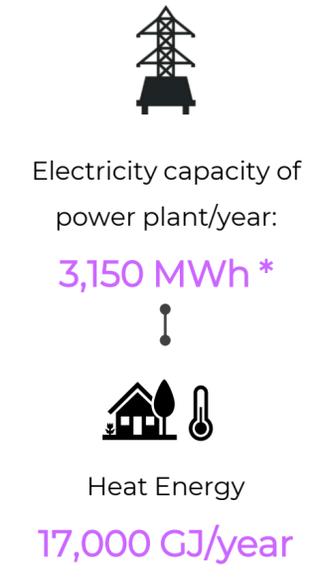
BUSINESS POSSIBILITY - PLASTIFISSION 2 (S) REACTORS

Mixed plastic waste processing capacity: 1,200 tons/year (140 kg/h or 308 lbs/h) Operating time: 8,400 hours/year.

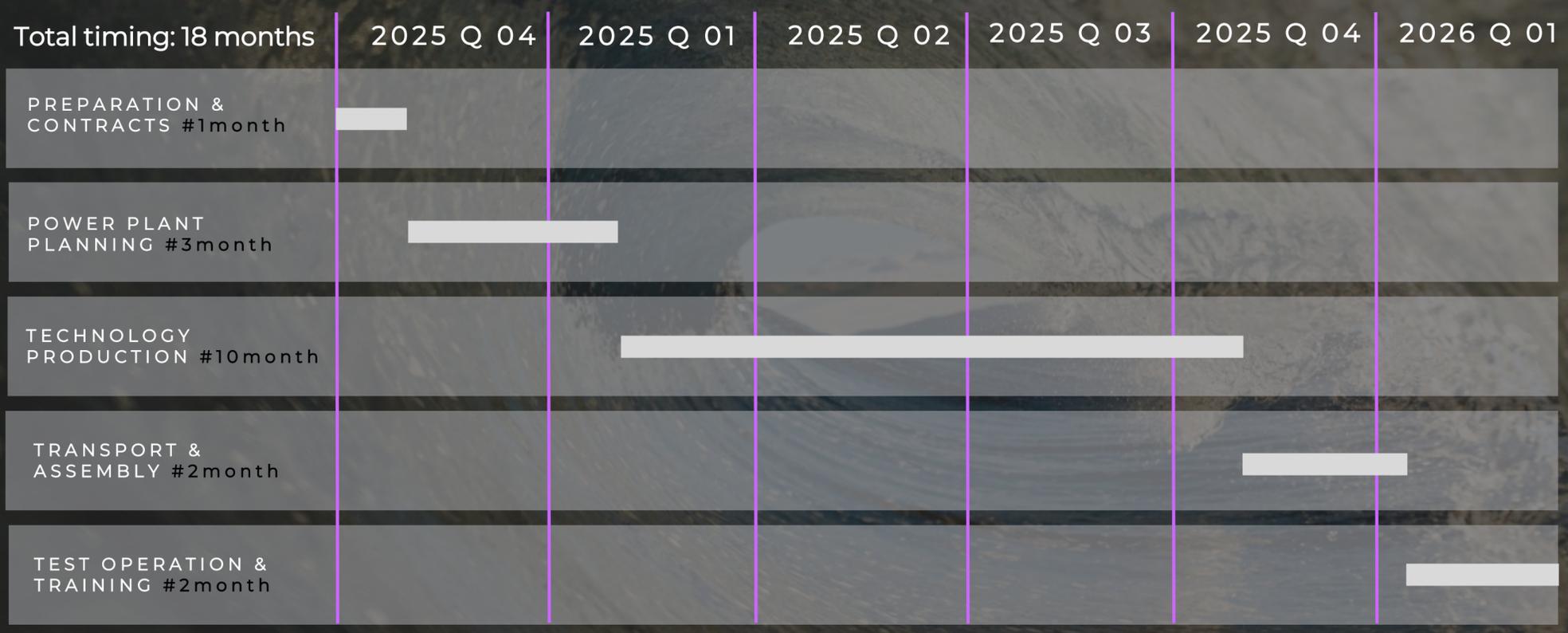
CHEMICAL THERMAL DECOMPOSITION



* Unit provides 1,250 homes (in the EU) with electricity (and heat) each year.

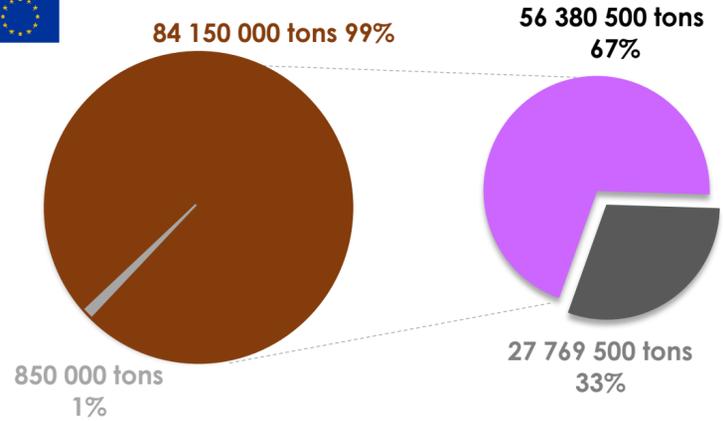


SCHEDULE PROJECT TIMELINE



STATISTICS

PLASTIC WASTE IN EU PER YEAR

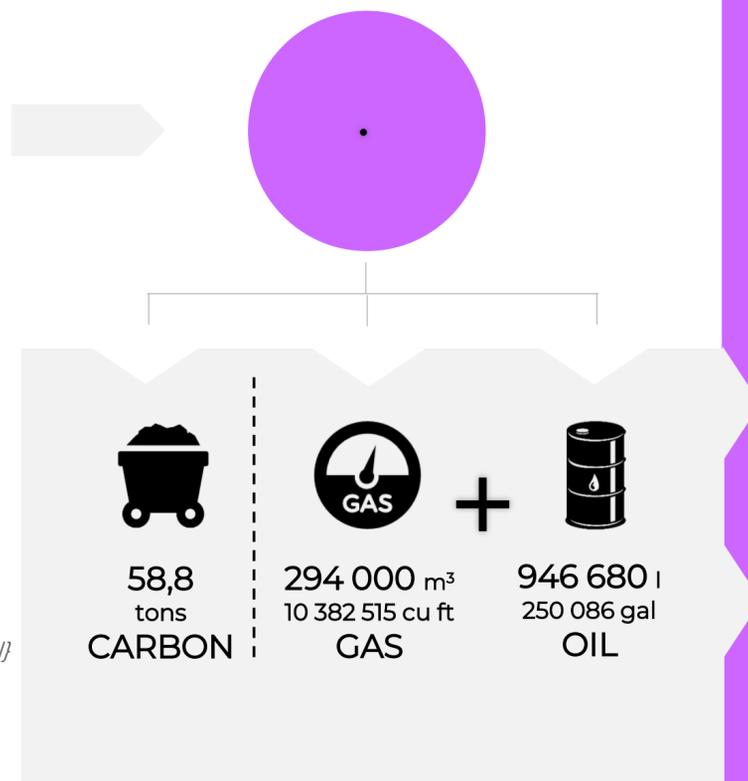


- Metal and textile pollution in EU/year
- Mixed plastic waste deposed in EU/year
- Mixed plastic waste in EU/year
- Mixed plastic waste material recycled



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

Raw material - Mixed Plastic Waste
53,56 million tons/year



MIXED PLASTIC WASTE
1 200 tons /year



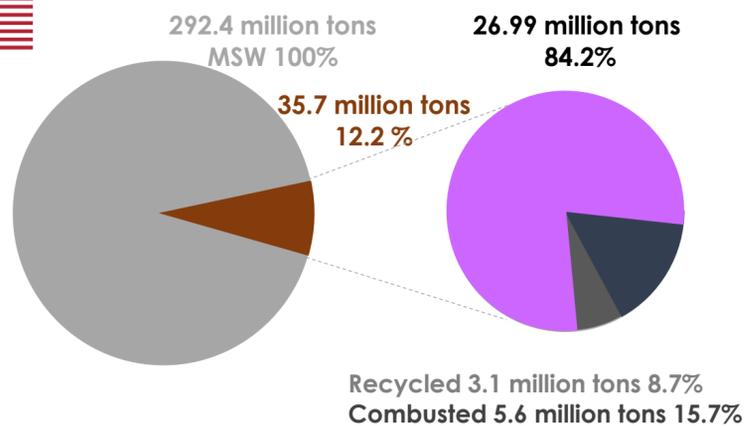
3 150
MWh /year
ELECTRICITY



17 000
GJ /year
HEAT ENERGY

STATISTICS

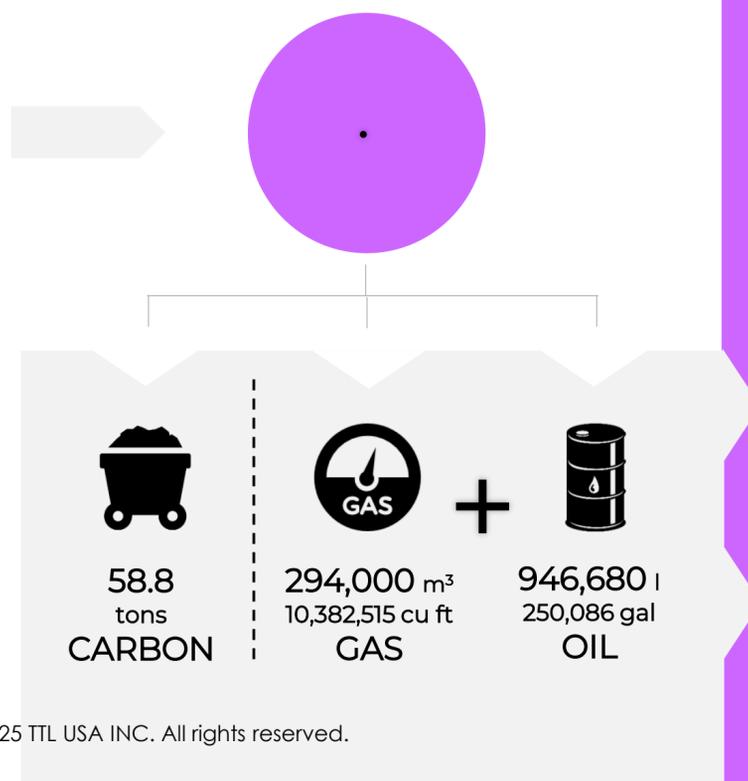
PLASTIC WASTE IN USA PER YEAR



- Municipal solid waste (MSW) in USA/year
- Mixed plastic waste deposed 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
25.54 million tons/year



MIXED PLASTIC WASTE
1,200 tons /year



3,150
MWh /year
ELECTRICITY



17,000
GJ /year
HEAT ENERGY



Technology used and details

Raw material processed per year

Volume produced per year

Carbon footprint per year



1 200 tons of mixed plastic waste

3 150 MWh Electricity and 17 000 GJ Heat energy

915 tons CO₂



Oil extraction, and Refining

1 200 tons Oil (crude oil)

3 150 MWh Electricity and 17 000 GJ Heat energy

2 860 tons CO₂



Waste Incineration Plant

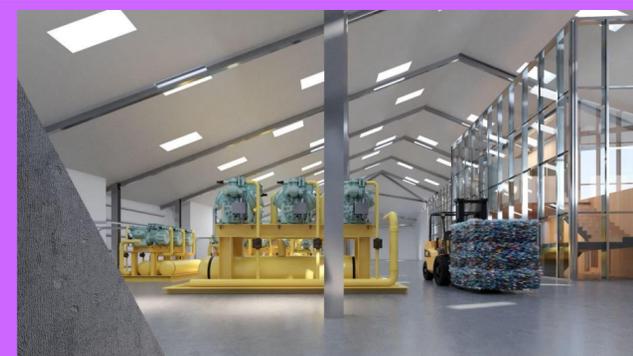
1 200 tons of mixed plastic waste

1 470 MWh Electricity and 10 575 GJ Heat energy

3 522 tons CO₂



PlastiFission Demonstration Visitor and Research Center



TTL USA INC
TECHNOLOGY TRANSFER LABS



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