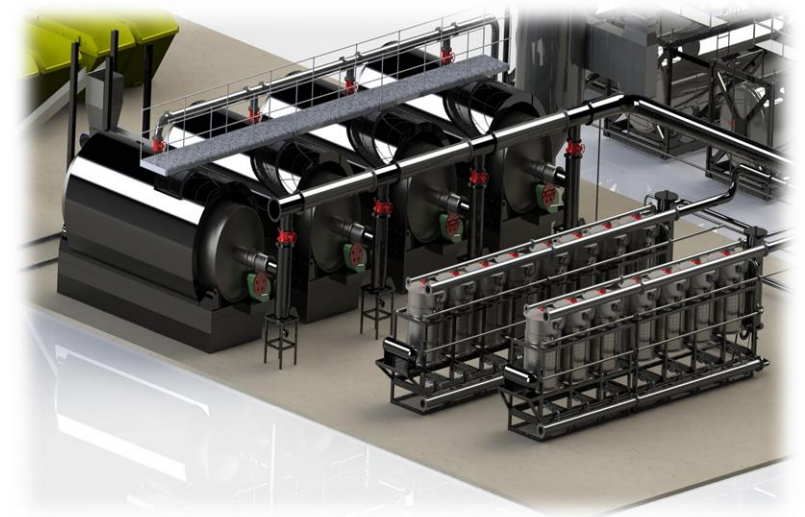




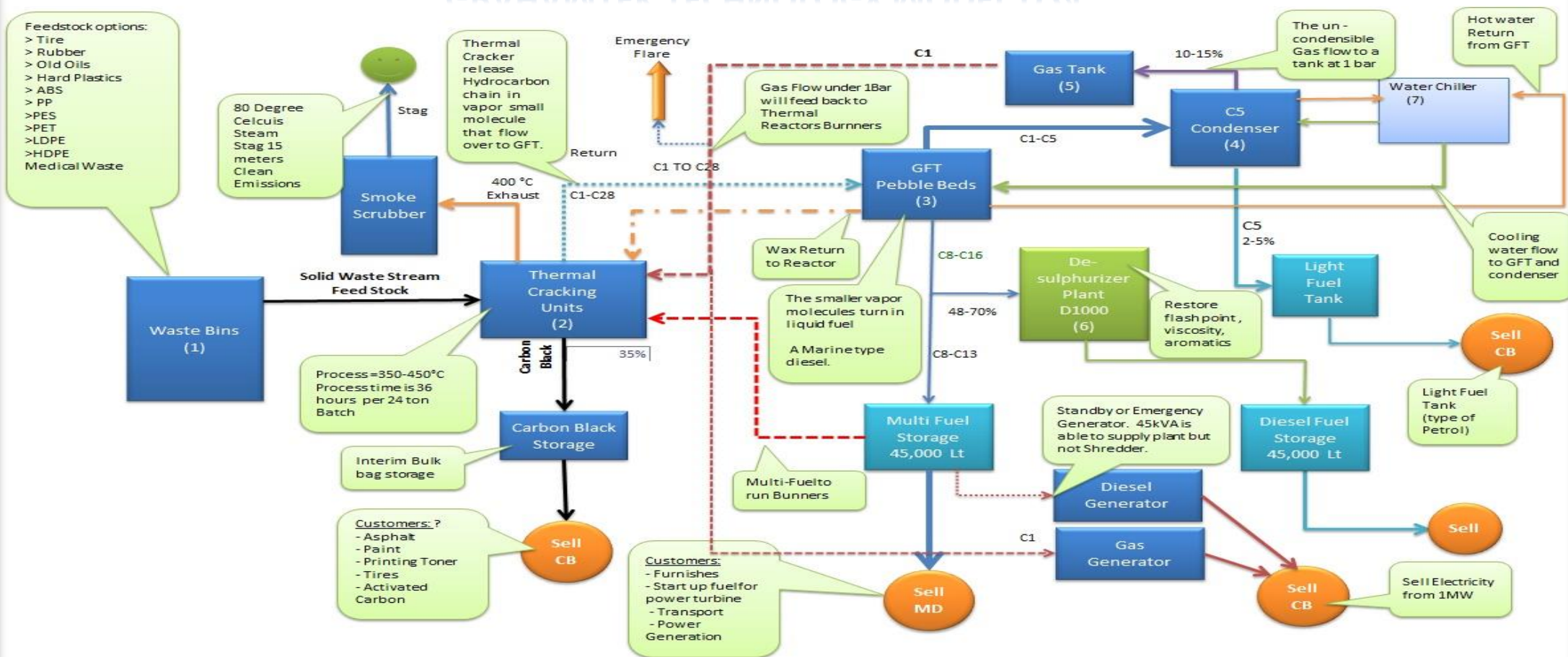
HOW DOES IT WORK?

- ➔ The technology is a patented process of thermal mechanical cracking (TMC) where the long carbon chains in the carbon waste are divided into smaller carbon chains, which changes the physical attributes of the waste.
- ➔ Hydrocarbon based general waste is inserted into a thermalization chamber and is decomposed under heat and varying pressure creating a vapor in the absence of oxygen and any chemical catalysts.
- ➔ The vapor is condensed where the carbon chain is “cracked” through a mechanical process that is part of the uniqueness of the technology and a significant part of the Intellectual Property that resides in this technology.
- ➔ The vapor forms a synthetic gas or SYNGAS that is converted into furnace or bunker oil as it passes through the condensers and atomizers.
- ➔ The furnace oils can be further converted into diesel that meet the SANS 342 standard quality and will be an energy source that will reduce reliance on fossil fuels.
- ➔ There is no combustion or incineration of the waste.
- ➔ The technology is a closed loop system designed for zero emissions throughout the process with a series of scrubbers and condensers ensuring no hazardous gases, ash or other hazardous materials are released from the system.



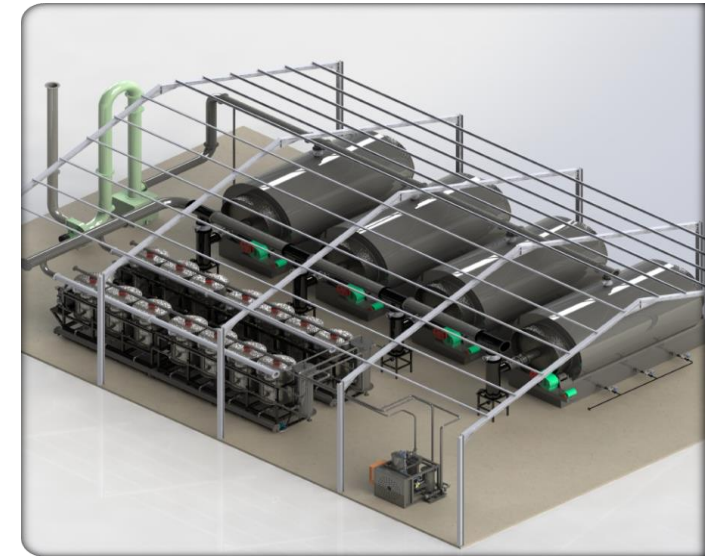
PROCESS FLOW DIAGRAM

THERMAL DECOMPOSITION
GRAHAMTEK TECHNOLOGY MODEL D24



KEY BENEFITS OF THE TECHNOLOGY

- ➔ Innovative hybrid solution and technological advancement of basic pyrolysis into a process of thermal treatment where most hydrocarbon are Degumming and Dewaxing through a GTS-X2 fitted to our system for the prevention of retrograde of the production fuel oil. Type plastics GW51: - Plastic 01 – Polyethylene Terephthalate (PET) 03 – Low Density Polyethylene (LDPE) 04 – Polypropylene (PP) 05 – Polystyrene (PS) 06 – Other Plastics (HDPE) Except PVC Plastic.
- ➔ The technology is modular and scalable.
- ➔ One production unit can process 400 tonnes per month which equates to approximately 5000 tonnes of waste or approximately 20 000 Cubic Meters of waste per annum that can be prevented from going to landfill.
- ➔ The technology will be a solution to the government goals of zero waste to landfill.
- ➔ Flexibility to adapt to feedstock variations with various blending formulations.
- ➔ It utilizes a technology where carbon chains are mechanical divided to extract oil - no reliance on catalytic chemicals.
- ➔ No other chemicals used in the process
- ➔ Developed with environment in mind – low emissions and environmental impact



TECHNICAL SPECIFICATIONS

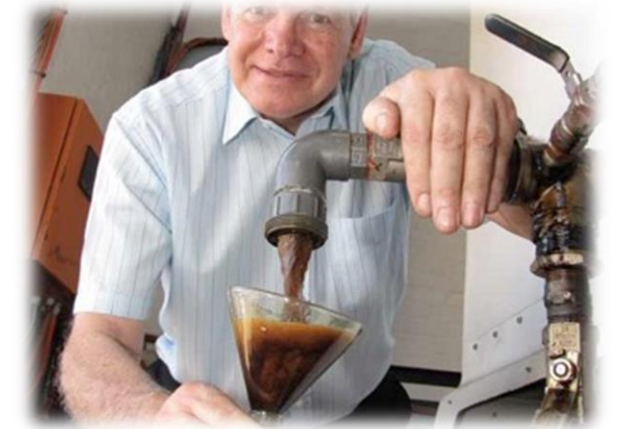
- ➔ 4 x Reactor Chambers of 30 m³ each and load capacity of 5 tonne each (Load Factor is +/-80%)
- ➔ Infeed: 20 tonne per Cycle @ 80% Load Factor
- ➔ Cycle Duration (End-to-End): 36 Hours (Load, heating, gasification, cooling, unloading)
- ➔ Cycles per month: 17 Cycles (5 days per month are set aside for risk and any other mitigation management, but can be used for production if no mitigating needs or risk needs arise during the production month)
- ➔ Subject to Feedstock Type, the MGO Yields are: +/-45/50% for Tyres and 65/72% for High Yield plastics
- ➔ +/-6-8% less if further refining to Diesel specification
- ➔ Subject to Feedstock Type, the Carbon Black Yields are: +/-30% for Tyres and 18% for High Yield Plastics
- ➔ Subject to Feedstock Type: +/- 11/13% of generated energy is re-used in the process.
- ➔ Energy consumption is low at 50kW/hour.



5-TON REACTOR

ADDITIONAL PRODUCTION NOTES

- ➔ The standard equipment group is optimized for oil production but electricity can be generated as an alternative to fuels
- ➔ Each Equipment Group can have 2 Feedstock blending formulations meaning multiple waste streams per Equipment Group
- ➔ The process is a "Batch Controlled Process" and not a "Continuous Feed"
- ➔ The system is designed as a closed loop system meaning that it utilizes 40% its own energy generation to fire the heating burners or generates its own electricity for the operations
- ➔ The Plant has a minimal processing footprint of 500m² under roof and a further 500m² to sort and process the incoming waste and the residue waste from the process.
- ➔ The plant has several built in safety features including fire, pressure, flow rates, and mechanical stoppage.
- ➔ There is minimal noise pollution <70db



TEST RESULTS:

100KG TYRE WASTE

- ✓ 45 Liters of Burner Fuel
- ✓ 33Kg of Carbon Black
- ✓ 10Kg of Steel recovery
- ✓ Or 1 Mwh of Electricity from Gas



100KG MEDICAL WASTE

- ✓ 60 Liters of Burner Fuel
- ✓ 28Kg of Carbon Black
- ✓ 3Kg of Landfill Waste
- ✓ 5kg of Glass and Metal recovery
- ✓ Or 1 MWh of Electricity from Gas



100KG E-WASTE

- ✓ 55 Liters of Burner Fuel
- ✓ 32Kg of Carbon Black
- ✓ 7Kg of Landfill Waste
- ✓ Or 1 Mwh of Electricity from Gas



**EXISTING PRIVATE-OWNED
PLANT AT BOT RIVER, SOUTH AFRICA**

