



Hygimed Bifunctional PY-MED Technology for Medical waste treatment A Sustainable Proposal

Executive Summary

EWA Technologies Group proudly presents the Hygimed Bifunctional PY-MED Technology, a leading-edge solution designed for the environmentally responsible treatment and recycling of infectious medical waste. Leveraging advanced Pyrolysis technology, this comprehensive proposal offers a path to convert medical waste into fuel, emphasizing our commitment to sustainability through low environmental impact, minimal carbon emissions, and efficient solid material recycling. The system's dual-functionality supports semi-continuous or continuously operation modes, effectively handling medical waste while concurrently transforming plastics and tires into fuel.

About us, a Pioneers in Environmental and Medical Innovation, since 1997.

EWA Technologies Group, a company's organization established in 2016, has consistently led in developing innovative solutions for infection control, waste-to-energy conversion, and eco-friendly agriculture. Operating under the Hygimed® and IQS brands, our team's expertise in medical waste treatment technologies dates back to 1997 with the launch of the evolutionary onsite medical treatment equipment, SteriMed®. Our global footprint spans over 44 countries, underscoring our dedication to combating global warming and advancing sustainable practices across multiple domains, including environmental management and agricultural enhancement.

Since its establishment in January 2016, EWA Technologies Group, has been at the forefront of innovation in infection control, waste-to-energy conversion, and green agriculture. Producing under the Hygimed® brand in Asia and Latin America, and IQS in Europe, GEWA is renowned for its scientific prowess and industry recognition. GEWA's team is in the global forefront of innovative technologies for medical waste treatment since 1987, when the first product, SteriMed® (USA), was launched and been used in more than 44 countries around the globe. Committed to the environment and sharing the efforts fighting the global warming, GEWA keep commitment spans across various fields, offering cutting-edge solutions in environmental management, medical waste treatment, and agricultural enhancement.



Medical field:

- ❖ Comprehensive, AI controlled monitoring and solutions for medical waste management, treatment and recycling.
- ❖ Disinfection and sterilization solutions
- ❖ Various medical supplies and devices

Environmental field:

- ❖ Waste to Energy solutions, including Pyrolysis, gasification and biogas.
- ❖ MSW sorting and recycling system
- ❖ CB and AC deashing, activation and recycling.

Agriculture field:

- ❖ Electrolyzed water generator for organic agriculture
- ❖ Composting, granulated organic fertilizer and dry biogas system
- ❖ Anti-viral epidemic control system for ASFV (African Swine Virus) and H5N1 (Avian influenza)

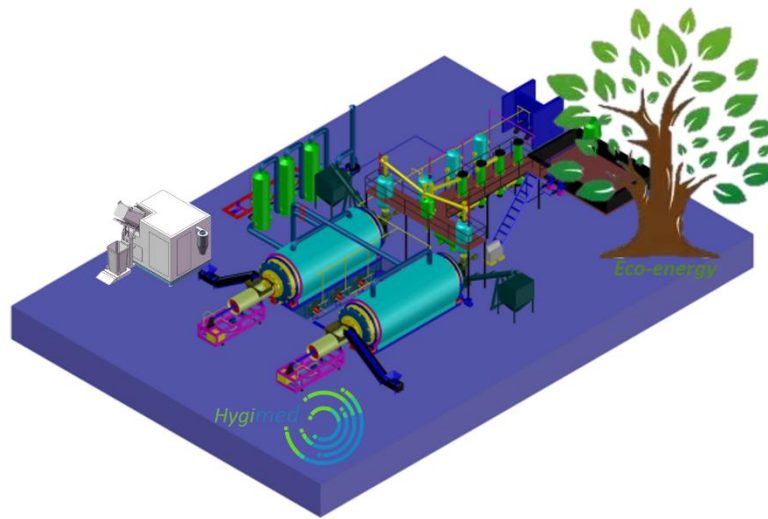
Our proposal - Transforming Waste into Green Energy

Our proposal introduces a centralized, bifunctional system that not only recycles waste into energy but does so with remarkable efficiency and environmental stewardship.

Featuring the Hygimed OnSite 700 for shredding and disinfection, and the Hygimed Py 2xK6 system for thermal waste-to-fuel conversion, our technology offers significant daily treatment and recycling capacities. The process, operating under air-free



conditions and powered by syngas, minor investment in energy, ensures no toxic emissions and minimal carbon footprint.



Why choose our Bifunctional Hygimed PY-MED

- ✓ **Innovative and Efficient:** The Bifunctional Hygimed PY-MED 2xK6 system emerges from rigorous research and development, boasting the highest production-to-size ratio. It operates independently through syngas and is built with durable, superior materials to ensure peak performance. By merging Hygimed 700 with Py 2xK12, our system utilizes moderate temperature pyrolysis for medical waste treatment. This process is air-isolated, preventing oxidation, minimizing energy consumption, and eliminating the formation of dioxins or smoke, while converting waste into synthetic fuel.
- ✓ **Advanced Non-Incineration Technology:** The Bifunctional PY-MED employs a novel Dry-disinfection Alternative technology for medical waste treatment. This approach, in line with the STAATT III Protocol, integrates pre-treatment with chemical disinfection and thermal decomposition in an anaerobic environment, preventing air exposure.
- ✓ **Eco-Friendly and Compliant:** The Bifunctional Hygimed PY-MED was engineered to reduce environmental impact and adheres to international standards, holding both CE and ISO certifications. It meets the STAATT International Protocol standards, guaranteeing reliability and quality.
- ✓ **Safe Pre-treatment Disinfection Process:** Pre-treatment is a critical technical and regulatory step in medical waste management. The Hygimed 700 utilizes a novel (patented) activated disinfectant that produces short-lived, potent radicals. This ensures a high level of disinfection without harmful residues.
- ✓ **Cost-Effective:** The Bifunctional PY-MED 2xK6 stands as the most economical pyrolysis solution available, providing unparalleled efficiency and flexibility. It supports modular upgrades to cater to future requirements.



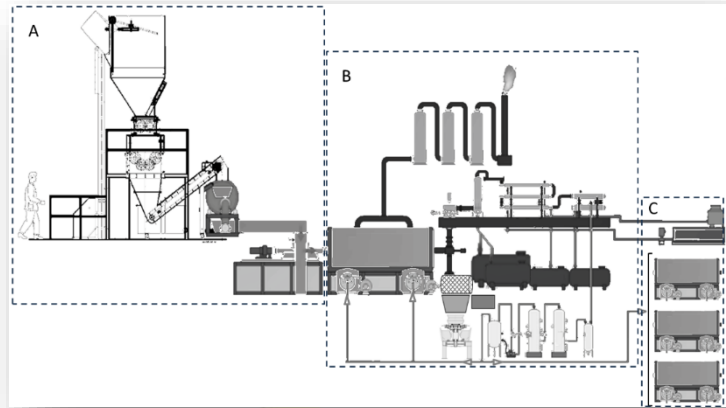
✓ **Self-Sustaining Operation:**

The Bifunctional PY-MED 2xK6 is self-powered, eliminating the need for external energy sources. It operates effectively on syngas, ensuring a clean, low-emission output.

✓ **Minimal Infrastructure Requirements:**

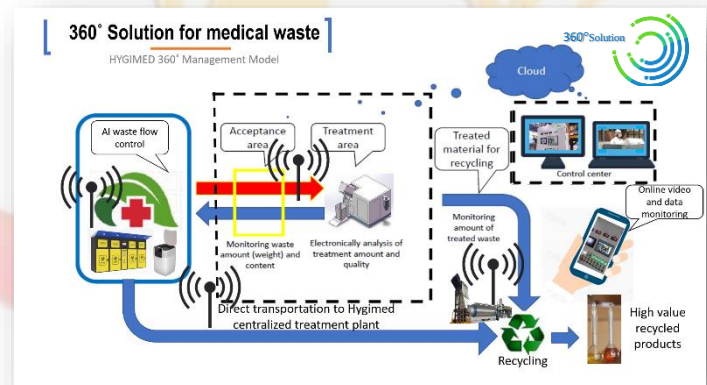
The Bifunctional PY-MED's design is compact, requiring only 375m³ of space and a height of 4 meters, facilitating easy integration.

✓ **Durability and Efficiency:** Constructed from premium materials, the Bifunctional PY-MED system was designed for longevity and maximal efficiency.



Bifunctional Hygimed PY-MED, what it is about

The Bifunctional Hygimed PY-MED represents the fusion of the world's leading chemical treatment technology for medical waste with the cutting-edge Py 2xK6 thermal decomposition system, which converts waste to fuel. It is NOT incinerator, it is NOT Autoclave, it is NOT chemical disinfection, it is above it all. This innovative system, patented for its unique operational mode, efficiently transforms medical waste into fuel while also converting other forms of waste into ECO-ENERGY (synthetic gas rich with hydrogen). It achieves this with minimal carbon emissions and without producing toxic gases or liquid waste, all at a low operational cost. The Bifunctional Hygimed PY-MED Developed in 2020 as a part of the comprehensive Hygimed 360° solution, it aims to combat the COVID-19 pandemic and other infectious diseases, like Hepatitis, HIV, and tuberculosis.





How Does It Work?

The process is divided into two main stages:

Stage A: Medical waste is loaded, chemically disinfected with a non-toxic, activated disinfectant, and then shredded. The liquid is separated from the solids, with the latter entering the Py K6 reactor. The disinfectant undergoes a recovery process for reuse. Each K6 reactor can treat and process up to 6 tons of waste per cycle.

Stage B: The K6 reactors are sealed, and the decomposition process begins. They are heated to temperatures between 420–480° C using syngas produced in a previous cycle and stored for this purpose. The system can operate in two modes: one reactor processes medical waste while the other handles plastics or tires, with the syngas from the latter powering the decomposition in the medical waste reactor. This stage results in the conversion of waste into synthetic fuel, with approximately 50% of the solid waste volume converted into non-standard diesel. The remaining solid residues, primarily carbon black, are sorted to remove metals and glass. The carbon black is then compressed into briquettes with a calorific value of 4,000–6,000 kcal/kg, which can also be sold.





Main components of the Bifunctional Py-Med 2xK6

Hygimed Onsite700					
Model	Treatment Capability(200kg/m3)	Size(cm)	Weight (Ton)	Electricity(kw) Consumption/ Pick	Chemical Consumption(L/T)
Onsite 700	960 L/h (190 kg/h, ratio calculated as 5:1)	250x210x225	5	5/18	9-11
Advantage - Small size, optimal size/capacity ration, up to 4 Ton/Day - Best energy consumption (5KWH/25KW/Ton) - One touch auto-operation - Auto waste weighting, Auto database management - Optional Mobile system - Suitable for centralized cites and for backup - No gas discharge, no odor - No heat, no steam, no pressure - High disinfection level, low chemical consumption (recyclable) - Compatible to solid recycling system (W2E, W2F)					
					

Mini Py K6					
Model	Treatment Capability	Dimensions (cm)	Weight (Ton)	Electricity(kw) Consumption	Chemical Consumption (catalyst)
Mini Py K6	0.5-1T/Continuous per hour	910x244x259†	7	12kW/h	0
Advantage - Small size - Optional operating at batch or continuous loading cycle - Air-free, autothermal process - non incinerating technology - Simple installation - No hazardous solid or liquid discharge - Auto-thermal (not consume fuel) - No steam, no pressure - Zero discharge, produce fuel and carbon black suitable to be use as RDF - Low electricity consumption, only 1.5kWh/ton waste - Suitable for various type of waste					
					

Equipment	Function	Capacity	Power (electricity) approx.	Picture
Hygimed 700	Shredding medical waste and plastic Medical waste pretreatment	250-500kg/h	5kwh	
Py 2xK6	Thermal decomposition Waste to fuel	12-24T/day	2kw/ton per hour	
Continuous feeder				
Magnetic metal separator				
Briquettes forming machine		500-800kg/h		

Economic and Environmental Benefits

The Bifunctional Hygimed PY-MED system is exceptionally efficient, consuming about 2 kW per ton of waste per hour. The synthetic fuel produced, representing about 50% of the original weight of the solid waste, can be sold for approximately \$500 per ton.



Additionally, the processed solids can generate further income of \$350 per ton. This system stands out as the only profitable medical waste treatment process available, generating revenue not just from waste treatment but also from the by-products of the process.

The Bifunctional Hygimed system create profit not only from the service of medical waste treatment, but also from production of fuel and carbon briquettes. The Bifunctional Hygimed system can produce up to 12 ton of fuel and 8 ton briquettes every day, altogether with market value of \$8,000/day (\$2.6m annually).

Conclusion:

The Bifunctional PY-MED system represents a significant advancement in medical waste treatment, combining efficient pre-treatment with advanced thermal decomposition to produce synthetic fuel and carbon briquettes, all while ensuring complete sterilization and minimal environmental impact. This profitable and sustainable approach not only addresses the challenges of medical waste but also contributes to energy production, offering substantial economic and environmental benefits.

For more information or to request a formal quotation, please contact us.

Kindest regards,

Eytan Bar, CEO

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