

FAQ for Partner Section Carbotura

Carbotura is committed to reducing waste and enhancing sustainability for businesses aiming to lower their environmental impact. Our Regenesys process enables full waste diversion from landfills, sans sorting.

We work with existing waste management and recycling firms to cut costs and boost profitability across the value chain, thereby assisting businesses in meeting their sustainability objectives and positively impacting the environment.

Types of inputs

ZeroFill is a circularity service that offers Waste Management and Recycling Companies and Municipalities a way to become 100% Circular, with 100% diversion. Our innovative approach allows us to efficiently process any type of waste liquid or solid other than explosives and radioactive materials, and recycle it up to 100%. We utilize a process called "Waste Regenesys" that rematerializes molecules trapped in waste, so that the waste can be repurposed for use again. This helps us to reduce waste and prevent pollution, while also providing a cost-effective solution for our clients. We are the missing link in sustainability and circularity.

MLW - Municipal Liquid Waste

Carbotura ZeroFill is your go-to service for MLW for liquids and sludges. Our unloading drive through depot offers a fast and efficient solution – it can handle 12 6,000 gallon tankers in just 20 minutes, so nothing has to go into rivers, lakes or the landfill. We provide the perfect solution for all your MLW needs.

Carbotura Zero-Fill services utilize multiphase microwave reactors as a disintegration catalyst to break down PFAS & PFOS into their key base elements; carbon, fluorine, oxygen, and hydrogen, now in safe reusable material form.

What is Carbotura Zero-Fill Services?

Carbotura Zero-Fill Services is an industrial-scale, self-powered waste conversion technology that utilizes industrial multiphase microwave reactors, with both thermal and non-thermal microwave plasma reactors. It can handle any type of waste without sorting and has zero emissions and zero waste. All of our systems are commercially proven with very difficult waste

conversions and are now packaged and available in Carbotura Zero-Fill Services to apply to any Municipal Solid Waste.

Our equipment is not for sale; we integrate it into a comprehensive zero-cost business model that only requires a standing guarantee on garbage supply and recycling fee payment.

We have designed CarboturaZero-Fill services to be rapidly deployed in a modular fashion, so that our clients can enjoy **immediate** 100% recycling, 100% diversion, Zero-Emissions, and zero-waste.

How does Carbotura Zero-Fill Services work?

Our services are designed to augment current waste management processes and are perfect for eliminating contaminated recycling, waste byproducts from incineration, landfill overfills, leachate, and landfill mining. With our technology, there is no need for sorting, combustion of waste, or emissions from processing. Our system can handle any type of waste, including large package formats, bales, whole tires, and sludge.

The Recyclotron is a mass converter that uses advanced technology to convert the mass and energy of Municipal Solid Waste (MSW) into reusable high-quality materials. It does so by breaking down the molecular and atomic structure of the waste, sorting the materials at the molecular and atomic level, and restoring them into usable forms. The process involves the integration of industrial multiphase microwave reactors and thermal and non-thermal microwave plasma reactors that are self-powered using a gas turbine generator with a microwave plasma reactor processing exhaust gasses for a zero emissions, zero-waste process. The system is scalable, efficient, and offers numerous benefits, including zero-waste, zero-emissions, and 100% recycling. The result is a mass converter that can produce high-quality materials from waste, creating a sustainable and circular economy that benefits the environment, the economy, and society.

This process as a whole is called Regenesis.

What is the cost of Carbotura Zero-Fill Services?

Carbotura Zero-Fill services provides a turn-key solution that requires no investment from the customer. We provide all the capital, operations, and maintenance for the duration of the contract. The service is charged at competitive rates per ton of waste eliminated. A contractual guarantee is required for waste and recycling fee payment.

What are the benefits of Carbotura Zero-Fill Services?

- **Eliminating Environmental Risks:** Traditional methods of waste disposal like landfills and incineration produce harmful emissions and can be harmful to the environment. With Carbotura Zero-Fill services, waste is processed using advanced technology that emits no harmful pollutants, ensuring that the environment is protected.
- **Eliminating Financial Risks:** Without the ability to guarantee long-term sustainable waste management, municipalities and waste management companies risk losing business and incurring fines for non-compliance with environmental regulations. With Carbotura Zero-Fill services, clients have the ability to eliminate waste at zero-cost while avoiding the financial risks of non-compliance.
- **Eliminating Health Risks:** Exposure to harmful pollutants and toxins from waste can lead to severe health risks, including respiratory problems and cancer. Carbotura Zero-Fill services provide a safe and healthy environment for both workers and the community.
- **Eliminating Reputation Risks:** In today's socially conscious environment, businesses and governments alike must be careful to maintain a positive reputation. By adopting Carbotura Zero-Fill service, municipalities and waste management companies can be seen as forward-thinking and responsible, which can boost their reputation and public perception.

What is the difference between Carbotura Zero-Fill Services and traditional waste management processes?

Carbotura Zero-Fill Services makes existing waste management practices heroes, because we can take everything that needs disposal, eliminating the need for sorting and incineration or landfilling of waste. It also has zero emissions and zero waste, making it more sustainable and efficient than traditional waste management processes.

How does Carbotura handle the liability for the waste once it is delivered?

Carbotura assumes all waste liability at delivery.

How is the per ton fee for waste elimination calculated?

The per ton fee is subject to a CPI adjustment annually after the 1st full year of production. The per ton fee is calculated once we have a deployment scope completed, fees range from \$65-\$100 per ton regardless of waste type, or contamination levels. This covers our internal cost of capital only, we are not asking clients to cover our total operating costs with their guarantee.

What happens to the materials that are generated from the waste elimination process? *Needs to be Negotiated*****

All materials are recycled and sold, and the revenue generated from the sale is included in the annual rebate if applicable.

Can Carbotura Zero-Fill Services be scaled to handle larger waste volumes?

Yes, the services are scalable to handle large waste volumes, with the capacity to handle up to 10,000TPD in one location.

What is the history of Carbotura as a service or company?

Carbotura was selected as the 2021 World's top 50 most innovative new companies out of 130+ countries. Carbotura is a new large-industrial-scale roll-out of modular facilities with minimal environmental impact. The service has been developed to eliminate Municipal Solid Waste with 100% diversion, plastics of all types, tires, biomass waste streams, and more to create renewable fuels, carbon sequestering critical minerals, nanomaterials, and accomplish large scale carbon capture more efficiently than any solution on the planet.

We have extremely beneficial ESG (Environmental, Social and Governance) and United Nations SDG assessment metrics as a zero waste, Zero-emissions, closed loop system that supports circular and regenerative economies.

The executive team are members of SWANA (Solid Waste Association of North America) and their Sustainable Materials Management technical division. SWANA is an organization of more than 10,000 public and private sector professionals committed to advancing from solid waste management to resource management through their shared emphasis on education, advocacy, and research. For more than 60 years, SWANA has been the leading association in the solid waste management field.

Carbotura provides a modular approach to handling any size project. The entry level facility size processes 500 tons per day to large module arrays handling 10,000 tons per day. Deployments can be incrementally expanded by 100 ton per day increments.

Carbotura is a service of Gravitas Infinitum, LLC, a privately held holding company headquartered in Naples, Florida.

How do you describe the technology or manufacturing process? What is “Regenesis”?

Carbotura's Zero-Fill services are a significant game-changer for the waste management and recycling industry. Our service technology is based on the Carbotura Recyclotron™, which integrates industrial multiphase microwave reactors, with both thermal and non-thermal microwave plasma reactors. The system is self-powered using a gas turbine generator with a microwave plasma reactor processing exhaust gasses for a zero-emissions, zero-waste process.

We also deploy via an Agile Service Model by using modular systems (The Recyclotron). Modularity allows for scaling from small commercial systems to industrial or municipal level facilities. The modular systems can be deployed as a strategic and tactical alternative to current waste recycling, incineration, or composting processes without the regulatory bottlenecks required for full manufacturing operations.

For this reason, deployment is fast, efficient, and lower-cost.

What is a Recyclotron?

Carbotura's Zero-Fill services are a significant game-changer for the waste management and recycling industry. Our service technology is based on the Carbotura Recyclotron™, which integrates industrial multiphase microwave reactors, with both thermal and non-thermal microwave plasma reactors. The system is self-powered using a gas turbine generator with a microwave plasma reactor processing exhaust gasses for a zero-emissions, zero-waste process.

Our services are designed to augment current waste management processes and are perfect for eliminating contaminated recycling, waste byproducts from incineration, landfill overfills, and landfill mining. With our technology, there is no need for sorting, combustion of waste, or emissions from processing. Our system can handle any type of waste, including large package formats, bales, whole tires, and sludge.

One of the key benefits of our services is that they are 100% circular. We divert 100% of the waste from landfills and recycle 100% of the materials. Our system is also 2-3x more efficient than any other method and requires no external power or water. This makes our services the lowest cost in dollars and to the environment.

Another key benefit of our services is that we capture atmospheric carbon and have a carbon negative operating footprint. This is a huge advantage for companies and municipalities looking to reduce their carbon footprint and make a positive impact on the environment.

All trash is tracked from point of origin, and all climate credits are attributed to the client. These are monetized by Carbotura and applied as part of the rebate (up to 100% of the fee), as is materials sales. Production starts 9-18 months (about 1 and a half years) after contract signing.

Do I qualify?

To qualify for our services, a long-term waste elimination contract is required. This guarantees payment and supply of trash as a put-or-pay contract. Clients must have a BBB-credit rating or better or provide a standby letter of credit from a tier one bank. Carbotura provides all the capital, operations, and maintenance for the duration of the contract.

What are the stages of the Zero-Fill manufacturing process?

Stage 1 - Multiphase Microwave Reactors - disintegrate materials into vapors and base solids.

Stage 2 - Multiphase Generators drive up to 1MW of directed Microwave energy (Per Reactor) tuned to the resonant frequencies of the materials.

Stage 3 - Materials condensing and collection, up to 16 discrete materials streams.

Stage 4 - Gaseous and Liquid Fuels Collection for energy generation and sales

Stage 5 - Zero-Emissions Gas Turbine Generator providing for all system power, atmospheric carbon capture, and exhaust gas carbon capture. Value materials are produced on a customized “recipe” basis.

What are the applications to-date? What types of materials have been processed using CZF technology?

- Sorted and unsorted MSW
- Multiple different glass-fiber composites including wind-turbine blades and insulation panels.
- Multiple different types of flooring categories (including vinyl flooring)
- Roof shingles
- Car shredder residues
- Carbon-fiber composites
- Paint waste
- Seats
- Different foams
- Mixed plastics
- PET
- Tires

- Bio & Medical waste
- Rubbers (including silicon rubber, natural rubber)
- Multiple different polystyrene waste streams (including panels)
- PMMA
- EPS
- Biomass (including wood, hemp)
- Labels and films
- C&D: roof shingles, all type of flooring categories including vinyl floorings, foam bases, polystyrene based and glass fiber based insulation panels, paint waste, cables, pipes

What are the Site Requirements for a Zero-Fill Facility?

The deployment requires minimal infrastructure with no unique or high demand resources, infrastructure, or support needs. A typical “entry level” facility can process up to 500 tons per day and requires approximately 30,000 square feet of floor space with 35 feet of overhead clearance. Additional space may be required for intake of waste material streams as well as ISO containers and Tanktainers for material outputs. And storage for incoming MSW, and outgoing materials.

It would be preferable to be co-located at the existing landfill for the ability to simultaneously address legacy waste. It could also be located at transfer stations to divert waste without the need for expensive material sorting or transport. Additionally, it could serve as a materials recovery facility within any existing processing facility, thereby dramatically reducing CAPEX and OPEX for that initiative.

What are the manufactured outputs for offtake? *Only if we can negotiate output percentages*****

Outputs from Carbotura Zero-Fill are as follows:

Renewable Fuels

Conversion of waste to renewable fuels allows our systems to be self-powered, and depending on configuration they can generate excess fuels or power.

Renewable Char

Our modules create a non-toxic char that can be utilized for downstream refining into high value materials (below). Additionally, using char as a soil amendment can replenish lost carbon stocks in degraded lands, beneficially recycling the carbon by-product of a regional industry, and improving soil quality. It can be used as an additive in asphalt, mortar, and concrete, to lower its inherent carbon footprint and enhance both durability and sustainability.

Renewable Activated Carbon

A material used globally can be derived from the char from waste. Activated carbon is used to purify liquids and gasses in various applications, including municipal drinking water, food and beverage processing, odor removal, and industrial pollution control.

Renewable Graphite

Graphite is a highly valued industrial commodity. It is used in pencils, lubricants, crucibles, foundry facings, polishes, arc lamps, batteries, brushes for electric motors, and cores of nuclear reactors. It is a critical mineral to US supply chains as defined by the Dept of Energy. There is currently no graphite production in the US and over 80% of the market is controlled by China and the second largest reserves in Turkey.

Renewable Graphene

A nanomaterial that is used in supercapacitors, semiconductors, solar panels, coatings, concrete, foams, and gels. Graphene is a one-atom-thick sheet of carbon atoms arranged in a honeycomb-like pattern. Graphene is considered the world's thinnest, strongest, and most conductive material of electricity and heat. Graphene has the potential to revolutionize entire industries - in the fields of electricity, conductivity, energy generation, batteries, sensors, 3D Printing and more.

Other Outputs include distilled water, Silica, and entrained recycled metals.

Carbon Credits

Carbotura is a Carbon Credit originator. Credits will be sold through the Puro Earth marketplace (www.Puro.earth), a NASDAQ owned company that lists their live carbon credit pricing and exchange. Puro is one of the largest marketplaces servicing carbon credit purchases from JP Morgan, Swiss Re, Microsoft, Stripe, Shopify, The Chan Zuckerberg Initiative (CZI), and many more. <https://puro.earth/carbon-removal-index-price/>

Initially up to 16 raw materials streams, and unlimited number of post-processed materials Outputs will be identified with Circular (www.circular.com). Circular is the leading sustainable supply chain traceability provider. Headquartered in the UK, with a global footprint across Germany, the U.S., Singapore, and Australia. Circular enables businesses to fully analyze, track, and manage their supply chains to ensure responsible sourcing and improve sustainability. Circular does this by providing an enterprise software platform, which creates a reliable chain of custody of materials and attaches GHG emissions and other ESG data directly to the flow of materials. Circular provides sustainable supply chain solutions for companies such as Hitachi, Volvo Cars, Polestar, BHP, Total Energies, Jaguar Land Rover, Southwire, Trafigura, Blackstone Minerals, Urbix Inc, Element 25, and more with a focus on North American expansion.

The outputs are all containerized in ISO containers and Tanktainers for local and global distribution.

Are there any synergies or opportunities for local and regional businesses, resources

Co-locating near landfills to simultaneously address legacy waste. Since the outputs include large volumes of renewable raw materials entering local supply chains, this creates tremendous opportunities for manufacturing companies, shipping and logistics companies and the local economy.

Carbotura will seek and secure appropriate synergistic partnerships with local vendors, suppliers, and educational institutions, located within and outside the County. Carbotura would retain and obtain products and services with these strategic and tactical partners as part of the planning and implementation process to devise the optimal solution. This would include obtaining quotes from Industrial and mechanical suppliers, logistics and trucking operators, engineering and construction firms, and other local vendors and suppliers that would be of critical use and need.

Carbotura can also supply certified circular materials to local manufacturers.

Is the Zero-Fill service market-ready for deployment today?

This is not a monolithic plant/facility development, it is a deployment of rapid response equipment that once manufactured can be assembled on site and operational within 30 days. In addition to funding 100% of the cost, Carbotura can address staffing, recruitment, partnering with local service providers on shipping, and transportation, hauling, and tipping efficiently as needed.

How is the Zero-Fill service structured for rapid deployment?

There is no financing or funding required from any City, County, or State if a long-term commitment is made to provide a continuous waste stream to the facility. Ideally, a 20-30 year capacity agreement is required dedicating the contracted waste-stream volumes to the Carbotura facility including all municipal solid waste, plastics, tires, and any other applicable waste material under Community management or direction with no sorting necessary. Under these terms, Carbotura would fund the entire deployment of services. Our services can be standalone or co-located with waste handling facilities. We can also supply baling, wrapping, loading, and containers for shipping to our nearest service center.

What are the short and long term benefits and impacts of your solution and services?

Our processes are zero-waste, negative emissions, and carbon capture systems. Additionally, Carbotura Zero-Fill becomes a containerized virtual endless landfill in just a fraction of the space, improving overall land-use management and air quality for the city and local region. Renewable Energy is a key feature of a Carbotura facility. After initial startup power, each facility is 100% powered by self-generated renewable fuels. It can provide additional renewable energy or fuels to support the local micro-grid if desired.

These facilities produce clean water and reintroduce critical raw materials to local and global supply chains in various industries from automotive and industrial to agricultural. This results in a more resilient community with lower overall emissions and environmental impacts.

When co-located with landfills, we can uncap and process legacy waste, remediating the long-term environmental liabilities and improving land-use management and air quality.

We can also process the leachate from the existing landfill and eliminate PFAS chemicals. PFAS are forever chemicals found in cleaning products, water-resistant fabrics, such as rain jackets, umbrellas and tents, Grease-resistant paper, Nonstick cookware, personal care products, like shampoo, dental floss, nail polish, and eye makeup, Stain-resistant coatings used

on carpets, upholstery, and other fabrics. These “forever” chemicals have been finding their way into the environment around the world including rainwater and are a major concern expressed by the EPA and the CDC. Current and traditional waste management options do not address the remediation of PFAS.

A recent review from the U.S. Centers for Disease Control and Prevention (CDC) outlines a host of health effects associated with PFAS exposure, including cancer, liver damage, decreased fertility, and increased risk of asthma and thyroid disease.

We provide 100% of the funding, lowering the cost to the community while having the capacity to make the community zero waste with 100% diversion within 3 years. The Carbotura SDG Assessment was 96.8% across all the United Nations Sustainable Development Goals (SDG's) with the average benchmark in the U.S. below 40%, making this solution the pinnacle of regenerative infrastructure, producing the critical raw materials for the next stage of modern civilization.

Job Creation

Each enterprise level Carbotura facility can generate up to 100 new high-tech jobs and positions that are high-value and sustainable for the development and future operations. The average salary of these jobs is ~\$124,600 per year.

What makes Carbotura Unique

- Zero-Now! Zero-Waste, Zero-Emissions
- 100% Recycling
- 100% Diversion from landfills
- Any type of waste
- No sorting
- No Combustion of waste
- No Emissions from processing
- No waste from processing
- No Capital Required, just good credit
- Can handle large package formats, bales, whole tires, sludge, etc.
- Scalable to exceptionally large sizes 10,000 TPD
- 100% circularity
- Atmospheric Carbon Capture
- Carbon negative operating footprint
- 2-3x more efficient than any other method
- No external power or water required.
- Can provide microgrid energy source

- Lowest cost in dollars and to the environment

Sole Source Certification

We certify that Carbotura Zero-Fill services are unique and a proprietary service that is not available from any other company or vendor. Our Service is based on our proprietary technology, known as the Recyclotron, it is capable of recycling 100% of unsorted municipal solid waste (MSW) and converting it into valuable materials, all while achieving zero-emissions and has a carbon negative footprint.

Carbotura Zero-Fill services provides a turn-key solution that requires no investment from the customer. We provide all the capital, operations, and maintenance for the duration of the contract. The service is charged at competitive rates per ton of waste elimination, and clients can qualify for annual rebates of up to 100% of any fees for zero-cost waste elimination. This is because Carbotura monetizes the climate credits and materials sales, which are attributed to the client, and applies them as part of the rebate.

Our technology is self-powered and does not require external power or water, making it the most efficient and cost-effective solution for waste management. Carbotura Zero-Fill service also creates jobs and saves money for municipalities and corporations.

What MSW do you take?

Everything, except explosives, munitions, and radioactive wastes. Some wastes may require incoming handling permits and specialized processes. These are defined in the deployment planning stages.