

# Our Carbon Transform Biosolids into a Valuable Resource

Advanced BioDrying and Pyrolysis Technology



# FILTEC – Water & Wastewater Treatment Specialists

Inspired by our commitment to making water safer, FILTEC has been delivering water and wastewater treatment solutions to customers in New Zealand since 1991, and in Australia since 2017. We design, construct, supply equipment to, and service wastewater treatment facilities across New Zealand, Victoria, and Queensland.

*Our expertise spans both large municipal wastewater facilities as well as major dairy and food manufacturers.*

We specialise in UV systems, filtration media, chemical dosing and feed pumps, instrumentation calibration, belt replacements and plant upgrades.

FILTEC prioritises quality and reliability, providing tailored wastewater treatment solutions that meet unique customer needs and regulatory standards.



## FILTEC

Making Water Safer



**110+**  
Team members



**500+**  
water treatment  
plants built



**40+**  
local equipment  
partners and  
installers



**30+**  
years in the water  
industry



**6**  
office locations  
in Australasia

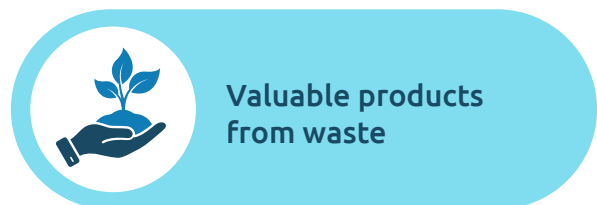
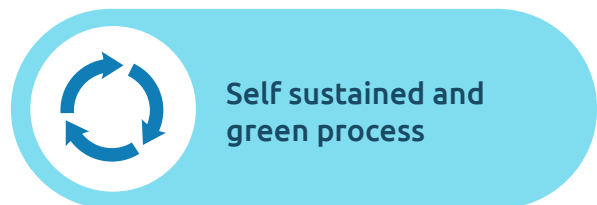


## Bioforcetech - Biomass Management Systems

Committed to protecting nature and human health, Bioforcetech provides technologies that pave the way for a zero-waste future by converting organic waste into sustainable products.

*“Upcycling is the process of transforming waste materials into products of better quality or for better environmental value.”  
At Bioforcetech we embrace this concept and realise it with our sustainable systems.*

Our company specialises in offering biosolids and organic waste solutions utilising efficient and high-value processes, namely the BioDryer and Pyrolysis systems.



 **BIOFORCETECH**  
CORPORATION



# Addressing Sustainable Waste and Biosolid Disposal Challenges

Councils and industrial manufacturers across New Zealand and Australia are increasingly struggling with biosolid accumulation. Traditional disposal methods are becoming more expensive, carbon-intensive, and restricted by limited landfill space and stringent regulations.

FILTEC's advanced Biodrying and Pyrolysis technologies convert biosolid waste into valuable OurCarbon - a unique biochar material - offering a transformative approach to addressing these pressing issues.

## Key Issues in Biosolid Management and Organic Waste Disposal

1

### Accumulating Biosolids

Increasing biosolid volumes are creating challenges as many landfills refuse to accept them.

2

### Limited Landfill Capacity

Diminishing landfill space heightens the need for innovative solutions to reduce landfill dependency.

3

### Resource Recovery

Converting waste into valuable by-products is vital for sustainability and boosts operational efficiency.

4

### Environmental Impacts

Concerns over greenhouse gas emissions and pollution from traditional carbon-intensive waste disposal processes.

5

### High Disposal Costs

Rising costs associated with traditional waste disposal methods, including transportation and landfill fees.

6

### Community Concerns

Addressing public resistance to new wastewater facilities due to odour, pollution, and health risks.

7

### Operational Efficiency

Enhancing waste management processes is crucial to reduce costs and improve efficiency.

8

### Technology Integration

Adapting new technologies into existing systems must be seamless to maximise benefits and ensure compatibility.

# Powered by a Partnership of Innovation and Local Expertise

FILTEC and Bioforcetech have joined forces to bring advanced BioDrying and Pyrolysis systems to wastewater treatment facilities across New Zealand and Australia. By integrating Bioforcetech's innovative technology with FILTEC's installation and maintenance expertise, we deliver a comprehensive solution to efficiently transform biosolid waste into valuable resources, addressing the critical challenges of waste disposal in your operations.

*As the exclusive supplier and installer of Bioforcetech's systems in this region, FILTEC ensures seamless integration and ongoing support to keep your facility at peak performance.*

Together, we provide a complete package—technology, service, and local expertise—tailored to meet your specific needs and regulatory standards.

With FILTEC and Bioforcetech, you get more than just equipment; you get a partnership dedicated to delivering innovative and reliable solutions for a sustainable future.





# OurCarbon

## Transforming Wastewater Sludge into a Valuable Resource

OurCarbon is a groundbreaking material derived from an unexpected source—wastewater sludge. By implementing Bioforcetech’s BioDryer and Pyrolysis systems at wastewater treatment facilities, biosolids are transformed into OurCarbon, a carbon-negative biochar that offers a sustainable alternative to traditional waste disposal methods.

In New Zealand and Australia, councils that adopt this technology can convert wastewater sludge into OurCarbon, contributing to a more sustainable future. This innovative process not only prevents over 1 million tons of biosolids from being landfilled each year—reducing methane emissions—but also creates a material with entirely new, valuable characteristics.

## A Carbon-Negative Resource from Waste

OurCarbon is more than just a byproduct; it’s a versatile, carbon-negative material that significantly reduces Global Warming Potential (GWP). Whether used as a black colorant in inks, dyes, and coatings, an additive in polymers and foams, or a structural concrete aggregate replacement, OurCarbon helps lower the carbon footprint of products while replacing fossil fuel-dependent materials.

# OurCarbon in Building Materials

## Decarbonising the Built Environment

OurCarbon isn't just an eco-friendly innovation; it's a powerful tool for decarbonising the building industry. This carbonised material, derived from wastewater biosolids, can be integrated into various cast and cured building materials, all without compromising structural integrity. In fact, it often enhances performance and contributes to substantial reductions in Global Warming Potential (GWP).

For councils and wastewater treatment operators, the benefits of producing OurCarbon extend beyond environmental impact. By generating a valuable resource that can be used in local construction projects, this technology supports sustainable development within the community.

***OurCarbon is currently being scaled from laboratory applications to real-world use in materials such as wet cast concrete, dry cast concrete, and asphalt.***

Incorporating OurCarbon into building materials not only supports the fight against climate change but also aligns with the growing demand for sustainable infrastructure solutions. By choosing OurCarbon, wastewater treatment facilities can play a crucial role in decarbonising the built environment.



# How Our BioDrying and Pyrolysis Technology Works

FILTEC, in partnership with Bioforcetech, offers BioDrying and Pyrolysis technology that transforms organic waste and biosolids into valuable OurCarbon, significantly reducing waste volume.

These systems can be installed independently or combined for optimal efficiency. For sewage sludge (municipal biosolids or industrial sludge), this combination ensures net-energy processing without needing additives or bulking agents.



## The OurCarbon Production Process

### Step 1: BioDrying

- BioDrying is a rapid heating process similar to the initial stages of composting, which reduces the moisture content and overall weight of biodegradable material.
- Our modular drying system efficiently removes moisture from biosolids, consuming 50% less thermal energy compared to traditional gas-heated systems like belt dryers.
- This process supports sustainable biosolids management and prepares the material for the next stage of producing OurCarbon.

### Step 2: Pyrolysis

- Pyrolysis involves heating the dried biosolids without oxygen, which thermally decomposes the organic material.
- The pyrolysis process converts organic waste into OurCarbon, which can be used as a soil amendment, for carbon sequestration, or for industrial applications.
- The system operates with net-energy efficiency, generating more energy than it consumes supports a sustainable waste management cycle.

***By integrating BioDrying and Pyrolysis systems, wastewater treatment facilities can efficiently and sustainably manage organic waste and biosolids.***



# Benefits of BioDrying and Pyrolysis Technology for Wastewater Treatment Facilities



## Up to 90% Volume Reduction in Biosolids and Organic Waste

BioDrying and Pyrolysis systems convert organic waste and biosolids into stable OurCarbon, significantly reducing waste volume. This not only frees up space in landfills but also minimises the need for costly waste disposal methods.



## Integrates Easily with Existing Wastewater Infrastructure

Our solutions seamlessly integrate with the existing infrastructure of wastewater treatment facilities. This ensures a smooth transition without the need for extensive modifications or disruptions to operations.



## Up to 100% Less Thermal Energy Consumption

Our BioDrying and Pyrolysis systems use advanced, low-energy technologies, in contrast with traditional waste treatment methods. This results in substantial thermal energy savings and contributes to a more sustainable waste management process.



## 90% Less Trucks and Reduced Landfill Usage

Reducing waste and biosolid volume decreases the frequency of waste transportation, leading to fewer trucks on the road. This conserves fuel, reduces emissions, and extends landfill lifespan, lessening the need for new landfill sites.



## Improved Environmental and Social Impact

BioDrying and Pyrolysis solutions mitigate odours and visual pollution from wastewater treatment facilities, benefiting the surrounding communities. They help reduce greenhouse gas emissions, minimising the environmental impact of wastewater facilities.



## Low Operational and Maintenance Costs

Engineered for reliability and efficiency, these solutions offer minimal operational and maintenance costs. Their durable components and minimal upkeep ensure longterm savings throughout the system's lifespan.



# BioDryer System

Utilising controlled air and bacteria, the BioDryer system dries biosolids in a three-phase process, drying 8 wet tons in just 56 hours. Compared to belt and drum drying, it uses only 50% thermal energy and 30% electricity, ensuring high efficiency.

The BioDryer is modular, allowing independent or system-wide operation to meet specific drying needs. Each unit can dry approximately 1,000 tons of biosolids annually, enhancing solid content from 17% to 90%.

## What is BioDrying?

BioDrying rapidly heats biodegradable material in initial composting stages to reduce moisture, effectively decreasing weight. It's the most efficient method for removing water from biosolids and organic waste.

## Features

- **Outstanding Performance**  
The BioDryer is expertly designed to maximise energy efficiency, saving both electrical and heat energy while effectively drying a significant volume of biosolids annually.
- **Modularity**  
The modular BioDryer treats 1,000 wet tons annually per unit and scales easily. Installing additional units in parallel can increase biosolid treatment capacity by up to 12,000 wet tons yearly.
- **Automation and Process Control**  
The BioDryer uses advanced automation and IoT technology for precise control. Remote operation is accessible via web browser. Detailed data logging aids analysis and predictive maintenance. It integrates easily with existing facilities through SCADA connections and modern Restful APIs.
- **Built with Biology**  
Harnessing nature's processes, the BioDryer dries biosolids using air and bacteria in a three-step method, similar to sludge digestion. Tailored for biosolids, it efficiently handles organic waste from diverse industries, utilising the energy generated by bacterial activity.





# Pyrolysis System

Revolutionising organic waste management, our Hybrid Pyrolysis system offers a compact design, precise temperature control, and full automation. By leveraging the robust bonds between carbon molecules during pyrolysis, it ensures the production of a securely fixed carbon product.

This technology efficiently processes various organic materials, including biosolids, wood chips, and yard waste, ensuring eco-friendly operations with optimal performance and sustainability.

## What is Hybrid Pyrolysis?

Hybrid Pyrolysis is an advanced technology for large-scale continuous organic waste carbonisation. It utilises two heat sources: thermal fluid from exhaust gas and electrical resistors. Thermal fluid captures renewable energy from waste exhaust gas to reach operational temperatures.

Electrical resistors maintain precise temperatures, ensuring consistent performance with minimal energy use. This approach ensures efficient and sustainable waste management by optimising temperature and residence time.

## Features

### ✔ Design

- Modular units are easy to transport and can be coupled over time as feedstock quantities grow.
- Compact design that fits within a 40-foot container
- Multiple feedstock capabilities

### ✔ Contaminants

- Zero production of tars or bio-oil
- PFAS – CECs elimination
- Clean output material

### ✔ Operation

- Fully automated system control
- Automated feedstock variations adjustments
- +/- 16°C Pyrolysis temperature control precision

### ✔ Energy

- Low thermal energy consumption
- High energy output (0.55 MMBtu/h hot water up to 96°C)
- Automated energy optimisation

## Get in Touch



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