WCS Environmental Engineering

HiPAF®

High performance aerated filter packaged wastewater treatment plants

Meeting the precise needs of clients

HiPAF Range

The HiPAF package wastewater treatment system is designed for areas without mains drainage. It serves from 1 to 2,000 population equivalent (PE) and is known for its durable and flexible design, ensuring cost efficiency throughout its lifespan.

At WCS Environmental Engineering, we work with you to maximise efficiency and profitability. Our support includes initial consultation, dedicated account management, and ongoing technical assistance throughout your project.

Key highlights:

- **Fully compliant**
- **Meets standards for Sites of Special Scientific Interest (SSSI)**
- **Phosphate removal is available with additional process technology design including chemical dosing**
- **Minimum of 25 years design life process guarantee***
- **Can cope with seasonal variable flows and load**
- **Scalable to accommodate growing populations**
- **Modular design to overcome site access and footprint restrictions**
- **Compact footprint size minimises excavation**
- **Up to 65% energy saving - timer for blower(s)**
  - Energy saving timer can be retrofitted into an existing HiPAF
- **Low operator maintenance with no electrical or moving parts within the tank**
- **Hire, new build, refurbishment and repurpose options**

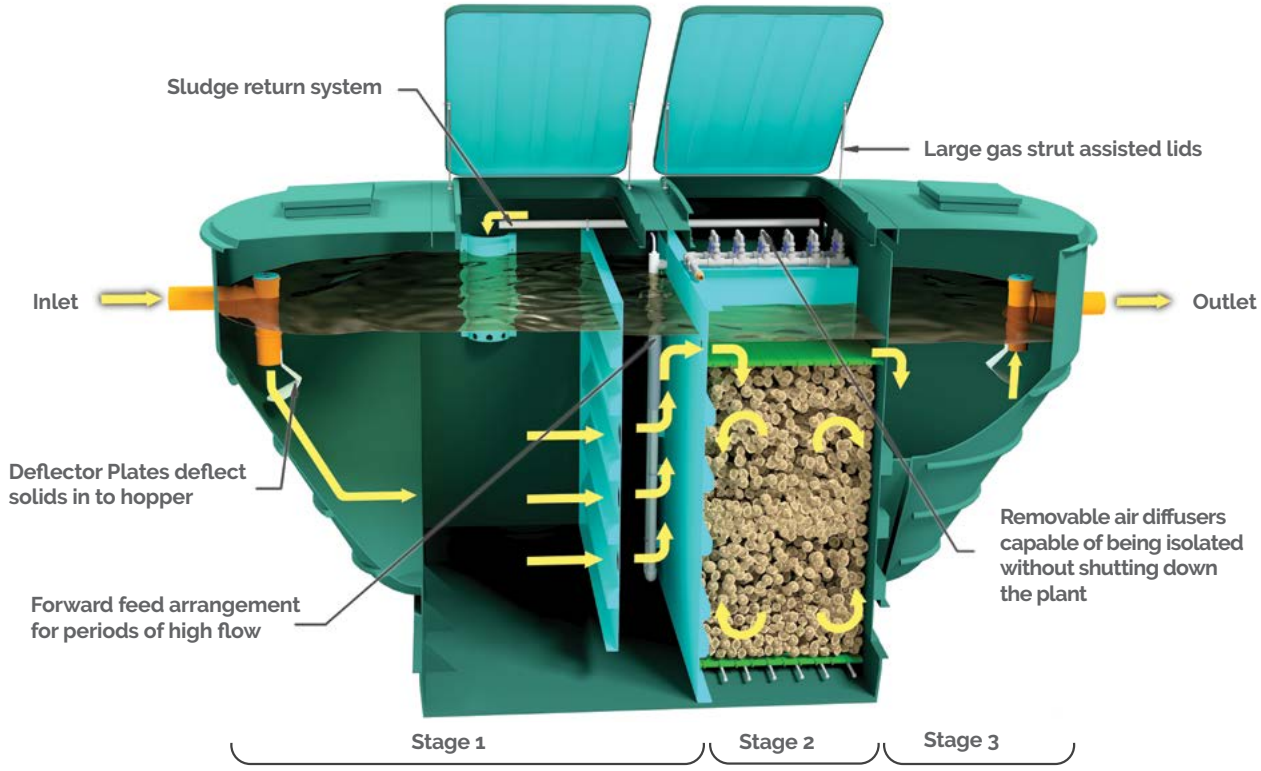
*process guarantee is subject to the correct, consistent influent conditions and regular plant maintenance as per the manufactures instructions.

Full features and benefits click here.

The HiPAF range is most appropriate for domestic and commercial applications where the site is not connected to mains drainage and is well suited to complex requirements, such as the treatment of animal waste.

Three-stage system for safer processing

HiPAF midi packaged sewage treatment plant illustration



Stage 1

Primary settlement - unique forward-feed arrangement uses an airlift to deposit wastewater into the biological treatment stage, which keeps peak flows from entering the system and prevents hydraulic surges.

Stage 2

Biological treatment - enhanced hydraulics for high-rate processing. The segmented biozone process chambers eliminate the risk of process short-cuts and mitigates risks associated with variable loads.

Stage 3

Final settlement - an airlift automatically transfers settled humus sludge back to the primary settlement section for co-settlement. The final effluent is discharged through gravity displacement to either a watercourse or a sub-surface irrigation field.

Internal access:

- Accessed from the large, gas strut assisted lids.
- Diffusers can be isolated / removed without need to shut down the plant.
- No mechanical and electrical components within the tank.
- Lockable lids.

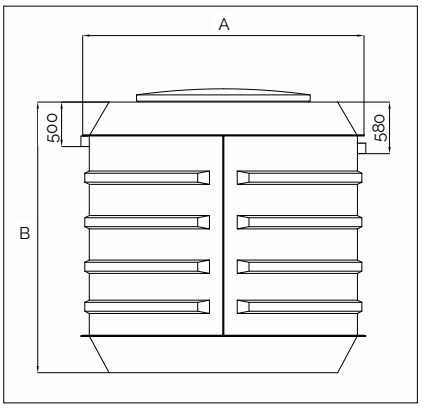
Technical Specification

Please use the tables below as an indicative guide to selecting the right packaged treatment plant for your site. For technical advice or more information on the range please contact us or a qualified contractor.

HiPAF compact system 1 to 60 PE

Model PE	Standard Consent*	A Diameter (m)	B Height (m)	Inlet Invert (mm)	Outlet Invert (mm)
10	20:30:20	2.32	2.64	500	580
20	20:30:20	2.32	2.80	500	580
30	20:30:20	2.61	2.70	500	580
40	20:30:20	2.86	2.70	500	580
50	20:30:20	3.20	3.00	500	580
60	20:30:20	3.20	3.20	500	580

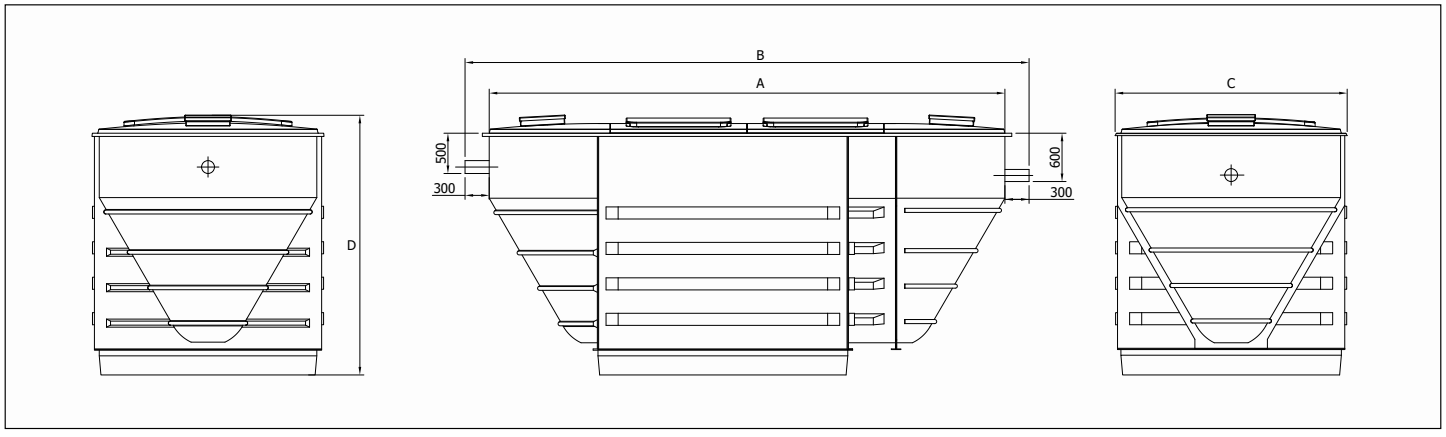
*Typical consent standards shown, tighter consent standards available to meet all requirements specified by the EA



HiPAF midi system 60 up to 300 PE

Model PE	Standard Consent**	A Length (m)	B Length w/pipes (m)	C Width (m)	D Height (m)	Inlet Invert (mm)	Outlet Invert (mm)	Weight (Tonne)
70	20:30:20	4.30	4.90	2.88	3.20	500	600	1.60
90	20:30:20	4.80	5.40	2.88	3.20	500	600	1.90
110	20:30:20	5.20	5.80	2.88	3.20	500	600	2.25
130	20:30:20	5.80	6.40	2.88	3.20	500	600	2.50
150	20:30:20	6.40	7.00	2.88	3.20	500	600	2.90
175	20:30:20	7.00	7.60	2.88	3.20	500	600	3.40
200	20:30:20	7.60	8.20	2.88	3.20	500	600	3.90

** Typical consent standards shown – tighter consent standards available to meet all requirements specified by the EA. For options above 200PE please contact us.



The tables are an indicative guide only. All applications are specified to comply with the British Water Code of Practice for Flows and Loads. Further technical information can be found on our website.

Design parameters

Design Criteria	British Water's Flows and Loads 4	
Peak flow treatment	Generally 3 dry weather flow	
Invert depth	0.5m as standard, other invert depths available up to 1.5m	
Discharge standards		
	Standard	**Final effluent quality**
	Biochemical oxygen demand (BOD 5)	20mg/L
	Total suspended solids (TSS)	30mg/l
	Ammoniacal Nitrogen (NH 4-N)	20mg
	Standard with tertiary treatment	
	Biochemical oxygen demand (BOD5)	10mg/l
	Total suspended solids (TSS)	10mg/l
	Ammoniacal nitrogen (NH 4-N)	2mg/l
	Higher NH 4-N and BOD 5 removal is achievable. Option of phosphate removal is available with additional process technology design including chemical dosing.	

Design options

- Invert depths available up to 1.5m with turret extensions
- Pumped inlet flow control
- Control panels are available to cater for single and three phase electrical supplies
- Alarm beacon for mechanical failure and loss of air pressure
- Duty/duty stand-by and variable speed drive blower(s)
- GSM telemetry for remote monitoring of the plant
- Technologies such as a sand filter or microscreen can improve final effluent quality

The weatherproof kiosk is acoustically-lined to house the control panel, air distribution manifold and air blower(s) on site. Ten metres of high temperature resistant airline hose is supplied to connect blowers to the treatment plant – extra lengths can be supplied.

Case Studies

Home Farm Holiday Centre

Population equivalent: 1000

The Somerset holiday park needed a new treatment plant to replace its aging 1950s system, requiring low noise and maintenance.

Two below ground HiPAFs were installed with a flow splitter allowing the operators to switch between the two systems or use both at once, subject to load.

The site has grown considerably over the years and the adaptability of HiPAF system allows it to treat down to 10% of the site's capacity.

Discover more here

The Lakes Distillery

Population equivalent: 177

At a distillery in the Lake District National Park, the treated water from the plant is discharged into the River Derwent, a site of special scientific interest (SSSI), meaning pollutants must be thoroughly removed from wastewater to meet statutory regulations.

The custom HiPAF midi can be controlled in such a way to guarantee removal of organic pollutants and total nitrification to meet surface water discharge consents even in SSSI's

Discover more here

The Sill: National Landscape Discovery Centre

Population equivalent: 500

The Sill visitor centre is sited within a National Park where some of the highest quality river water in England flows. The custom HiPAF system treated effluent is released into a natural stream while sludge is periodically tankered offsite.

It was very important to supply back-up blowers and enable the facility to connect a generator in the event of a power failure.down to 10% of the site's capacity.

Discover more here

Trevaylor Manor: Dementia Care Home

Population equivalent: 300

A new point of discharge, to a nearby brook, meant more stringent Environment Agency permit conditions were stipulated, requiring enhanced levels of effluent treatment for the care home in Cornwall.

The old plant was replaced with a HiPAF system which included a tertiary stage of ultraviolet (UV) treatment.

Discover more here

Capital Homes

Development of 23 properties

Located in Embley Park, Romsey, an 18th-century estate known for its beauty, strict Environment Agency discharge permits arenecessary due to the sensitive waters in the area.

To ensure compliance is met, a custom HiPAF solution was designed, which also included reducing the tank's original size by one metre, to fit narrow access roads.

Discover more here

Yorkshire Village

Population equivalent: 107

In Letwell village, Severn Trent Waterneeded a high-standard effluent treatment plant.Since gravity flows weren't necessary, an above-ground solution simplified installation and maintenance.

The custom HiPAF system in steel was designed for above-surface installation. The tank was finished with a green coating to ensure its presence was weather protected. A fitted staircase was included to allow for easy top-level sampling and maintenance.

Discover more here

Dogs Trust

Animal Waste

A site expansion and tightening environmental consents led to an upgrade of the onsite wastewater treatment plant at Dogs Trust Ballymena, Country Antrim. Animal waste is categorised as controlled waste, with treatment governed by more stringent regulations than domestic waste.

The modular HiPAF system including RADS has provided significant savings in tankering costs alongside a sand filter for tertiary treatment.

Discover more here

Momentum Logistics

Treatment capacity for 1,380 workers daily

Momentum logistics scheme is designed as a 'carbon neutral, sustainable space that meets occupiers' responsible business and environmental, social and governance obligations'.

A full treatment system with primary, secondary, and tertiary stages was designed to treat flows to tight environmental standards. Including a Hybrid-SAF and sand filter.

Discover more here

Case Studies

Toby Carvery - repurposing

Population equivalent: 300

Over the years, the number of diners eating in the Coventry-based eatery hassignificantly increased.

Cost was kept down by repurposing theexisting HiPAF system to create an underground primary settlement tank. Two additional units were then connected in series to provide a new biozone and conical final settlement tank.

Discover more here

Scottish Neolithic Settlement

Population equivalent: 500

Thousands visit the Neolithic settlement in Orkney yearly. The site's visitor centre required a sewage treatment plant upgrade, a compact HiPAF midi system was installed to maintain high environmental standards without chemicals.

This stable solution handles fluctuating visitor numbers and extreme weather conditions, including power cuts.

Discover more here

DP World London Gateway

150 office workers

At a smart logistics hub in London, the package plant meets strict Environment Agency standards which discharges into an environmentally sensitive swale connected to the Thames Estuary.

The below-ground HiPAF and sand filter system delivers ammonia removal, with a dosing unit to improve final effluent according to site-specific consent requirements. Additionally, a small pumping system and pumped flow return chamber are included due to the drain's depth.

Discover more here

Fyne Ales Microbrewery

Industrial wastewater

The client at a Scottish Microbrewery wanted to ensure minimal visual impact on the beautiful surroundings and maintain the view from their nearby family home.

A HiPAF solution was chosen to address fluctuating flows and loads, strict discharge standards, low visual impact, and tight site access.

Discover more here

Our Roots

WPL (which is now a part of WCS Environmental Engineering) has been at the forefront of wastewater treatment technology for over 30 years, with international experience of technical design, quality of manufacture and supply of environmental wastewater solutions.

Our high level of expertise means that we offer all of our customers, from the individual homeowner to large municipal communities and industrial markets, robust wastewater treatment process solutions that are environmentally compliant.

Contact

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