OFF-MAINS DRAINAGE PRODUCTS

MARSH

British-made off-mains drainage systems for domestic, commercial, agricultural and leisure sites

Practical products

Easy to install. Built to last

We design our systems to be straightforward to handle, install and maintain. Products that do the job with no surprises.

Built on experience

Proven designs, proven performance

Our team has over 100 years of combined experience in wastewater treatment. We focus on what works - reliable performance and long service life.

Certified compliance

Meets UK and EU regulations

All products are fully type-tested and certified to meet current Building Regulations and environmental standards.

Environmentally aware

Natural solutions

We're committed to minimising environmental impact by providing environmentally sensitive products through responsible manufacturing practices that reduce waste.

Reliable supply

Stock available when you need it

We work with the largest distributor networks in Europe. That means consistent availability and dependable delivery times.

Straightforward support

Technical help when it matters

We offer practical support: site visits, product advice, and tailored solutions. No jargon, no delays.

Our strength

We're only as good as the people behind the product: Our team, and the customers who use our systems every day.

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DOMESTIC AND COMMERCIAL
SEWAGE TREATMENT SOLUTIONS

Tried, tested and trusted

Marsh Industries provides the UK's most comprehensive range of off-mains drainage products, built to serve everything from a single home to sites catering for over 1,000 people.

From the UK's market-leading Marsh Ensign sewage treatment plant (4–50 population equivalent), through to the heavy-duty Marsh Ultra-Polylok (50–1000+ population equivalent), our systems are designed for reliable, long-term performance and are fully tested and certified to the highest standards.

The range also includes the innovative Marsh Nutra-Lite SBR, our latest development in advanced sewage treatment which also provides phosphate and nitrate removal for sites that require strict environmental protection.

Ensign and shallow Ensign
Intensive biological processing for off-mains wastewater
4-50PE

Nutra-Lite SBR
Sequential Batch Reactor
Advanced sewage treatment
6-25PE

Marsh Phos-Lite
The natural solution for phosphate removal
6-25PE

Marsh Gemini
Combining the Marsh Nutra-Lite and Marsh Phos-Lite
6-16PE

Ensign-EL
Shallow sewage treatment plant
With superior ammonia reduction
6-50PE

GEM-APS
Aerated Precipitation System
Controlled chemical dosing
6-1000PE

Ultra:Polylok L
Intensive biological processing for off-mains wastewater
6 and 12PE

Uni:Gem★
Unique septic tank to sewage treatment plant conversion unit
Up to 6PE

Portapura
Portable sewage treatment solutions for temporary buildings
2-5PE

Septic tanks and cesspools
Basic treatment to domestic off-mains wastewater
2800-20,000L

Ultra:Polylok
Advanced biological processing for commercial off-mains wastewater
50-1000+PE

Marsh:Standard
Cost-effective sewage treatment for commercial off-mains wastewater
50-1000+PE

Download full technical guidance, specifications and BIM materials at: www.marshindustries.co.uk/technical-library

Ensign
Sewage treatment plants
Intensive biological processing for off-mains wastewater

Overview

The Marsh Ensign is widely regarded as one of the most efficient, reliable and economical sewage treatment plants on the market.

The standard Ensign has been adapted to improve reliability and the Ensign:Ultra now brings unique enhancements to further improve noise level, treatment efficiency and final effluent quality.

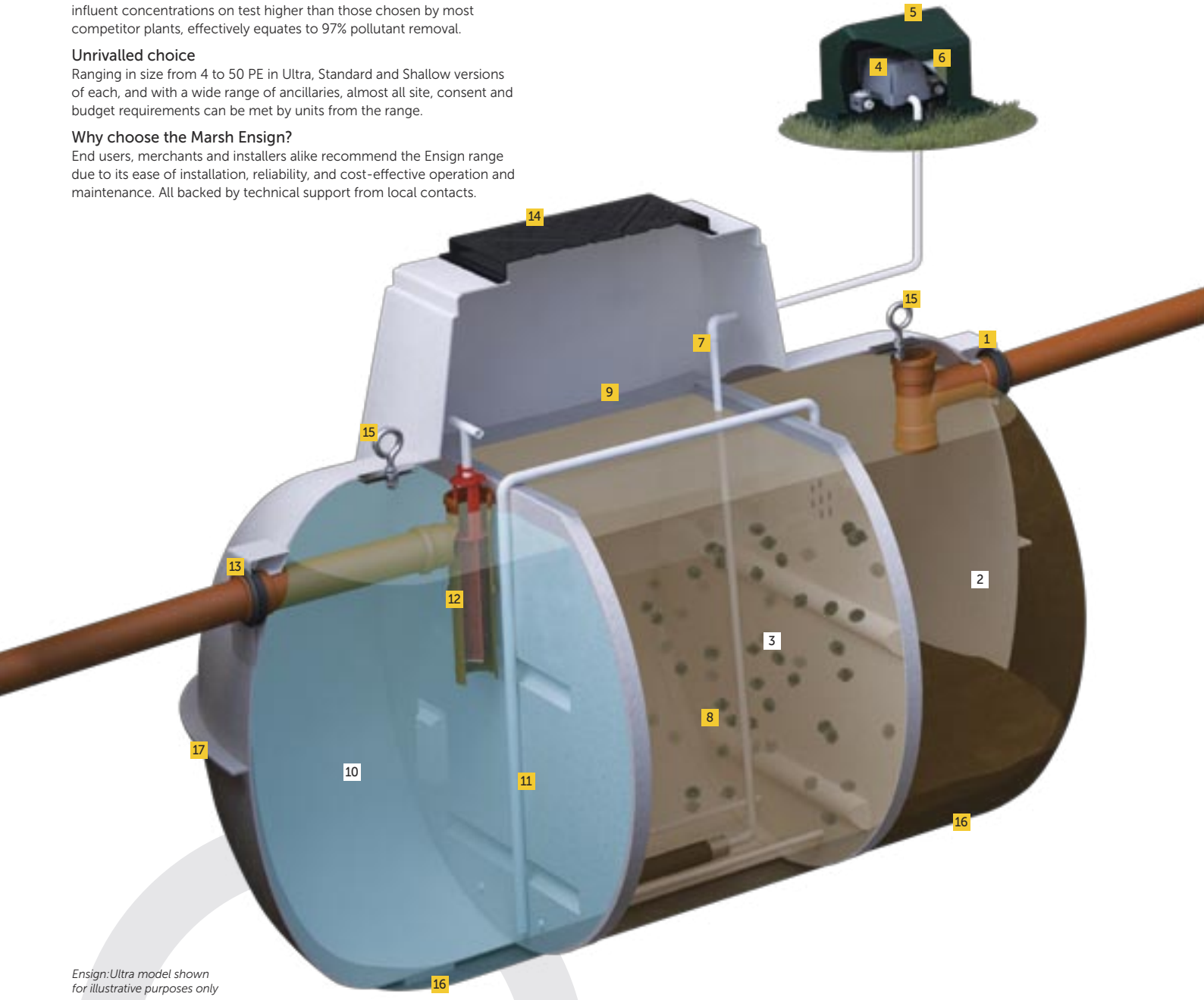
Class leading performance
Tested and approved to BSEN12566-3/A1:2016 all Ensign units provide treatment well within national consent requirements. Published test results of 11.5:19.2:8.4mg/ltr (BOD:suspended solids:ammonia), with influent concentrations on test higher than those chosen by most competitor plants, effectively equates to 97% pollutant removal.

Unrivalled choice
Ranging in size from 4 to 50 PE in Ultra, Standard and Shallow versions of each, and with a wide range of ancillaries, almost all site, consent and budget requirements can be met by units from the range.

Why choose the Marsh Ensign?
End users, merchants and installers alike recommend the Ensign range due to its ease of installation, reliability, and cost-effective operation and maintenance. All backed by technical support from local contacts.

Operating principle

In addition to anaerobic digestion taking place in the primary settlement chamber [2] the Ensign:Ultra unit allows the clarified water to pass into a second 'aeration' chamber [3] where it is treated to remove the dissolved constituents. Here aerobic bacteria, supported by diffused air and mobile media, ensures full treatment is achieved before the treated effluent and 'sloughed off' bacteria flows to a final settlement chamber [10]. The final effluent is then discharged to the drainage field or watercourse via a Polylok filter.



Ensign:Ultra model shown for illustrative purposes only

> The Marsh Ensign is widely regarded as one of the most efficient, reliable and economical sewage treatment plants on the market

Benefits

1 **Inlet with 'Forsheda seal'**
Forsheda seal provides flexibility in the joint for easier installation.
Optional risers to increase invert depth are available.

2 **Primary settlement chamber**

3 **Aeration chamber**

4 **Advanced compressor with alarm (Ensign:Ultra units only)**
Near silent compressor ensures minimal running, maintenance and servicing costs. Integral alarm detects low pressure in air line. (Regular Low-energy compressor on Ensign:Standard models).

5 **Compressor housing - internal or external options available**
The compressor can be housed internally or externally with no difference in cost.
External recommended to increase compressor life, and supplied as standard on 4PE, shallow and pumped outlet versions.

6 **Double socket electrical connection (Ensign:Ultra units only)**
The double socket provides easier installation and proveds a higher degree of safety. (Regular plug/socket connection on Ensign:Standard models).

7 **PVC pressure pipe/diffuser(s)**
Provides a protective conduit for the air diffuser line. Can be easily removed for maintenance and cleaning.

8 **Bio-media**
High specification bio-media (310m^3 per m^2) and membrane diffusers ensure even circulation to eliminate 'dead spots'. The bio-media is contained by a stainless steel securing mesh to ensure no migration during handling or potential flooding.

9 **Stainless steel mesh (Ensign:Ultra units only)**
Retains media in aeration chamber during transportation and handling, and in the event of flooding.

10 **Final settlement chamber**

11 **32mm sludge return**
Larger diameter sludge return prevents the possibility of blockages and improves system circulation. Provides higher effluent quality whilst balancing flow over a 24 hour period or periods of intermittent use.

12 **Unique Polylok tertiary filter (Ensign:Ultra units only)**
The Polylok tertiary filter reduces suspended solids and BOD by a further 40% helping to extend drainage field life.

13 **Outlet with 'Forsheda seal'**
Forsheda seal provides flexibility in the joint for easier installation.
Optional pumped outlets are available.

14 **Impermeable lid (Ensign:Ultra units only)**
Heavy duty lid/frame improves strength and durability whilst blending into the surrounding environment. (Regular lid on Ensign:Standard models).

15 **Integral steadying eyes**
For steadying purposes only. Not to be used for lifting the tank

16 **Stabilising feet**
Stabilising feet prevents the tank from rolling and allows safe and steady transportation and installation.

17 **Unique 'keying-in' lip**
Assists anchoring into granular or concrete surrounds.

Whisspurr
Acoustic Vibration Reduction (AVR) unit
Suitable for all types of diaphragm compressors.
See page 14.

Guidance notes

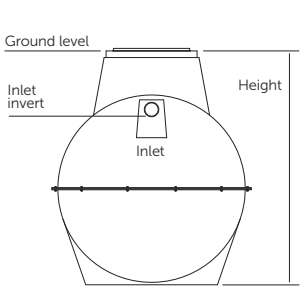
Package Sewage Treatment Plant's (or PSTP's) are often a suitable option where groundwater in the surrounding environment is vulnerable, drainage field percolation values are restrictive, or direct discharge to a water course or surface water sewer is the prefered discharge method.

- *PSTP's should be sized using the latest version of British Water Flows & Loads which provides detailed information on sewage production figures and sizing calculations*
- *Regulatory authorities for the control of pollution in the UK normally require treatment plants conforming to BSEN12566:3 to be demonstrated as capable of producing a minimum effluent discharge quality of 20:30:20 (Biochemical Oxygen Demand;Suspended Solids: Ammoniacal Nitrogen in mg/ltr), although in certain areas more stringent site-specific qualities may be required*
- *No surface water should enter the system as this can reduce the system's capacity and cause solids to be flushed out which may prematurely block drainage field or cause pollution*
- *As with septic tanks sludge should be removed annually or in line with manufacturers instructions*

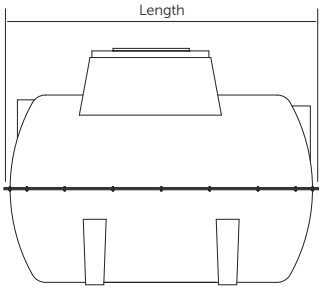
Many domestic sewage treatment plants offered by "internet resellers" claim to hold EN12566-3 compliance. This does not necessarily mean compliance with the UK National Forward, May 2007.

These plants may have been tested in their country of origin but not tested to the same criteria as Marsh Industries, where we strictly adhere to the UK National Forward. Contact contracts@marshindustries.co.uk for more information.

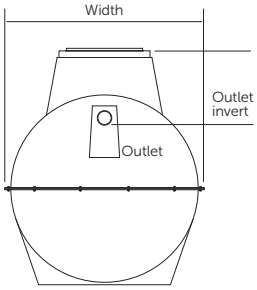
Specifications



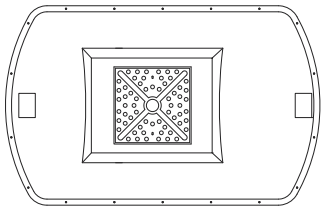
View on inlet end



Typical side elevation



View on outlet end


Typical plan view

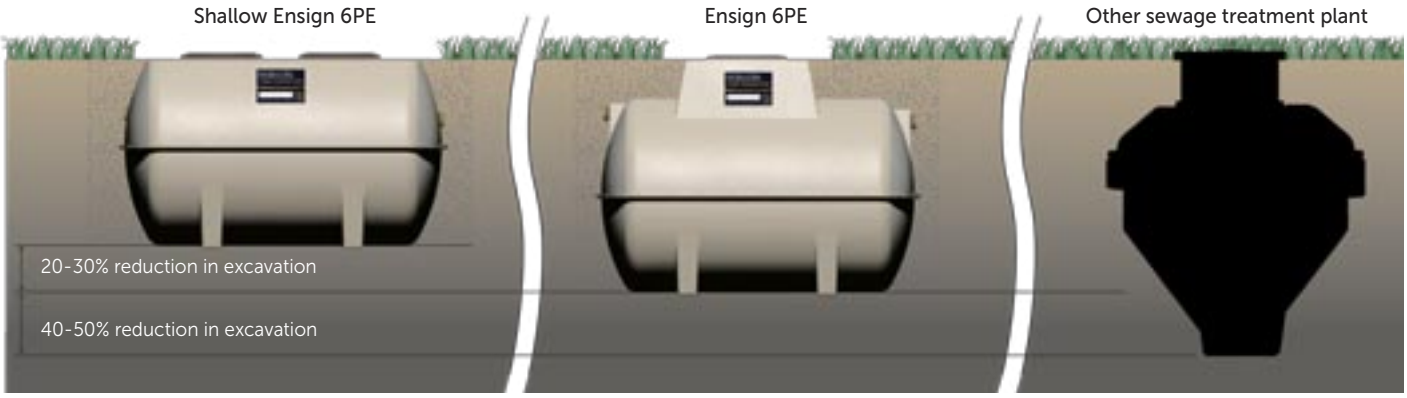
Ensign:Ultra and Ensign:Standard

Model	Plant sizing examples (Approximate)		Length	Width	Height	Inlet		Outlet	
	Residential	Workplace (no canteen)	+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
4	NA	6 people	1620	1352	1575	540	110	600	110
6	4-bed / 6 people	9 people	2602	1650	1935	550	110	625	110
8	5-bed / 8 people	12 people	2602	1650	1935	550	110	625	110
10	2 x 3-bed / 10 people	15 people	2602	1650	1935	550	110	625	110
12	2 x 4-bed / 12 people	18 people	2860	1912	2139	550	110	625	110
16	2 x 4-bed & 1 x 3-bed / 16 people	25 people	2860	1912	2284	720	110	800	110
20	3 x 4-bed / 18 people	32 people	3650	1912	2284	720	160	800	160
25	4 x 4-bed & 1 x 3-bed / 24 people	38 people	3650	1912	2284	770	160	850	160
30	5 x 4-bed or 6 x 3-bed / 30 people	48 people	4200	1912	2284	770	160	850	160
35	7 x 3-bed / 35 people	56 people	4200	1912	2284	770	160	850	160
40	8 x 3-bed / 40 people	72 people	5200	1912	2284	770	160	850	160
45	9 x 3-bed / 45 people	80 people	5200	1912	2284	770	160	850	160
50	9 x 3-bed / 45-50 people	80-90 people	5200	1912	2284	770	160	850	160

Notes:

> *Larger population sewage treatment plants may be supplied as multiple tank configurations.*
> *For plant sizing, precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Ensign:Shallow
Sewage treatment plants
Intensive biological processing for off-mains wastewater

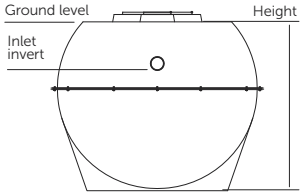


Overview

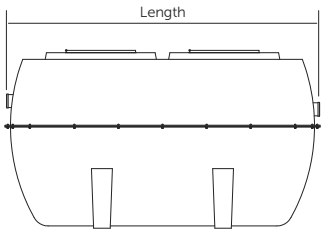
Most sewage treatment plants on the market are over 2.3m in height, which can make installation difficult and sometimes impractical. Marsh Industries offers a range of shallow plants from 4-35PE that measure only 1.6m high. This lower profile makes installation not only possible in more challenging conditions, but also easier and safer.

Benefits

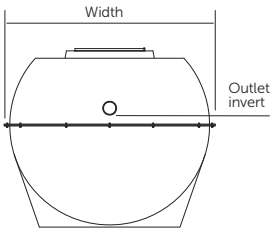
- Lower height (only 1.6m) compared to standard 2.3m+ treatment plants
- Easier and safer installation process
- Suitable for restricted or difficult site conditions
- Cost-effective solution when hard rock prevents deeper excavation
- Saves time by avoiding extensive and disruptive groundwork
- Assists installation in adverse ground conditions during winter



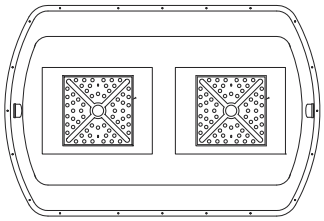
View on inlet end



Typical side elevation



View on outlet end


Typical plan view

Shallow Ensign:Ultra and Shallow Ensign:Standard

Model	Plant sizing examples (Approximate)		Length	Width	Height	Inlet		Outlet	
	Residential	Workplace (no canteen)	+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
6	4-bed / 6 people	9 people	2860	1912	1600	500	110	575	110
8	5-bed / 8 people	12 people	2860	1912	1600	500	110	575	110
10	2 x 3-bed / 10 people	15 people	2860	1912	1600	500	110	575	110
12	2 x 4-bed / 12 people	18 people	2860	1912	1600	500	110	575	110
16	2 x 4-bed & 1 x 3-bed / 16 people	25 people	3650	1912	1600	500	110	575	110
20	3 x 4-bed / 18 people	32 people	4200	1912	1600	500	160	575	160
25	4 x 4-bed & 1 x 3-bed / 24 people	38 people	4200	1912	1600	500	160	575	160
30	5 x 4-bed or 6 x 3-bed / 30 people	48 people	5200	1912	1600	500	160	575	160
35	7 x 3-bed / 35 people	56 people	5200	1912	1600	500	160	575	160

Notes:
> *Larger population sewage treatment plants may be supplied as multiple tank configurations.*
> *For plant sizing, precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Marsh Nutra-Lite SBR

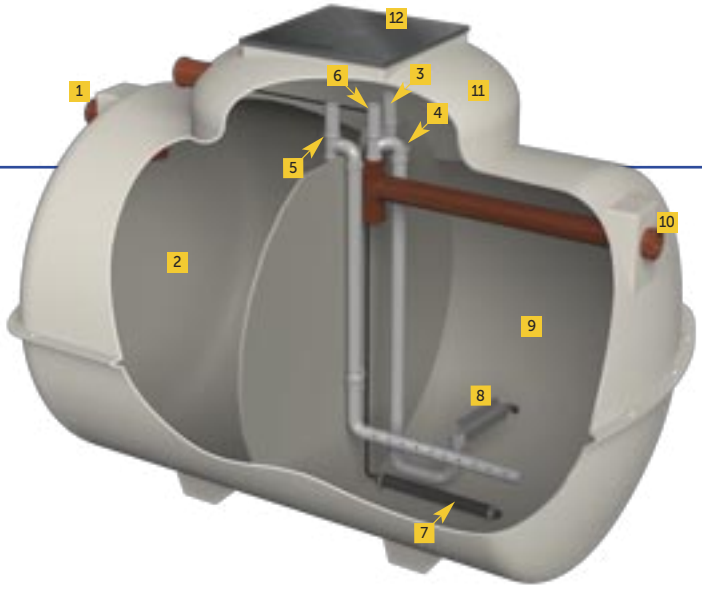
The **natural solution** for advanced sewage treatment, phosphate and nitrate removal

Key benefits

- 84% biological reduction of nitrates
- Exceeds nitrate targets to enable site development
- Certified performance in reducing COD, BOD, and Suspended Solids

Full specifications, technical details and performance guarantee: marshindustries.co.uk/technical-library

SBR technology
for superior nitrate reduction



Overview

Marsh Industries proudly presents the Marsh Nutra-Lite, an advanced Sequential Batch Reactor (SBR) sewage treatment plant designed to enhance effluent quality for off-mains wastewater systems and significantly reduce biological nitrates.

The Nutra-Lite is available in capacities catering to sites for up to 50 people. with state-of-the-art technology and rigorously tested, the Nutra-Lite sets a new standard for sustainable wastewater management.

Can be supplied as a complete system, combined with the Marsh Phos-Lite. See page 24 for Phos-Lite details.

Features

Outstanding discharge quality
The Nutra-Lite boasts the highest overall discharge quality of any plant available today. A unique self-cleaning, self-sealing sediment reduction valve ensures total control over suspended solids. No mechanical parts provide reliability and efficiency.

Nutra-Lite not only excels in phosphate and nitrate removal but also significantly reduces other key effluent constituents:

COD	95.8%	33mg/l
BOD	98.7%	4 mg/l
TNb	83.9%	11.1mg/l
NH_4n	99.1%	0.5mg/l
Ptot	34.3%	6mg/l
SS	97.1%	11mg/l

SBR technology for superior nitrate reduction
The Nutra-Lite harnesses SBR technology, achieving an impressive 84% biological reduction in nitrates. Unlike traditional methods, no chemicals or carbon are used – just biological processes.

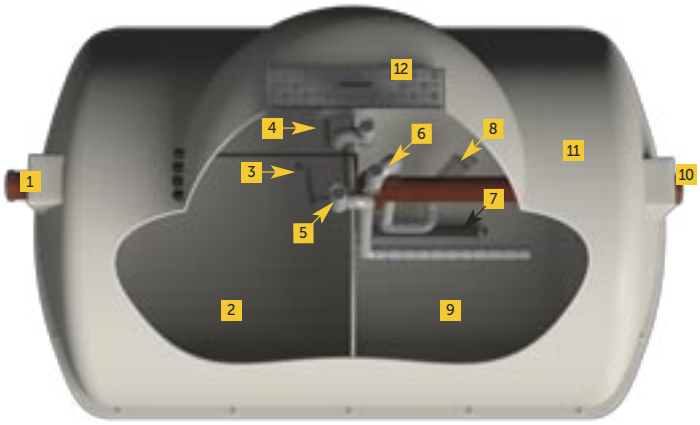
Remote configuration and adaptability
Unique to Marsh Industries, the Nutra-Lite can be adapted to seasonal changes in biological treatment, ensuring optimal year-round performance. Remote configuration allows adjustments based on ongoing nitrate reduction research.

Secure telemetry and alarm monitoring
All Nutra-Lite plants feature bi-directional communication for maintenance and monitoring. Telemetry options include mobile connectivity or homeowner Wi-Fi/internet.

Efficiency and cost savings
A single compressor minimises electrical power consumption without compromising performance. Economy mode further reduces running costs during process changeovers.

Certified performance
Rigorously tested at the world-leading notified test centre, PIA GmbH, in Aachen, Germany, the Nutra-Lite is certified to BS EN 12566-3 after 50 weeks of continuous testing. This system holds accreditation to EN12566-3 Annex B for systems of up to 50 Population Equivalent (PE) and complies with the UK Forward for BSEN12566-3, demonstrating its reliability and effectiveness.

Material strength and fire safety
Marsh Industries' GRP material successfully meets the requirements of EN ISO 11925-2:2010 standards and is tested for direct flame impingement. All units come with a 25-year structural guarantee.



Key

1 Inlet
2 Primary chamber
3 Inflow air-lift pipework
4 Overflow pipework
5 Recirculation air-lift pipework
6 Outflow air-lift pipework
7 Air diffuser
8 Sediment reduction valve
9 Secondary chamber
10 Outlet
11 Heavy duty GRP shell
12 Access cover

Specifications

Model	PE	Length	Width	Height	Inlet		Outlet	
(Pop)		+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
NL6	4-6PE	2602	1680	1865	550	110	625	110
NL10	7-10PE	2862	1952	2139	550	110	625	110
NL16	11-16PE	3612	1912	2284	600	110	675	110
NL20	17-20PE	4252	1912	2284	600	110	675	110
NL25	21-25PE	5252	1952	2284	600	110	675	110

Tank configurations and components are shown for illustration purposes only

Marsh Nutra-Lite

Total process quality

Performance metrics and environmental implications

The Marsh Industries Nutra-Lite SBR delivers exceptional performance, achieving outstanding results in the final discharge as verified by the PIA Test Centre. Against the 20/30/20 targets set by the Environment Agency, the following levels are reached:

Biological Oxygen Demand (BOD): 4 mg/l

- **Significance:** A low BOD indicates the plant effectively removes organic matter, minimising oxygen depletion in receiving waterways
- **Environmental impact:** This protects aquatic ecosystems by ensuring sufficient dissolved oxygen for fish and invertebrates
- **Standard:** Far below UK and EU regulatory limits (<20 mg/l), making it highly compliant

Total Suspended Solids (TSS): 11 mg/l

- **Significance:** A low level of suspended solids ensures high water clarity and reduces sedimentation risks
- **Environmental impact:** Protects aquatic habitats, particularly fish spawning grounds, from having elevated levels of sediment
- **Standard:** Excellent performance compared to general discharge limits (25-30 mg/l)

Ammonia (NH_4-N): 0.5 mg/l

- **Significance:** Exceptionally low ammonia levels highlight efficient nitrification, critical for protecting aquatic organisms, as ammonia is toxic at higher concentrations
- **Environmental impact:** Helps maintain water quality and prevents acute toxicity to fish
- **Standard:** Outstanding compared to most regulations, which often set limits at 5 mg/l or higher

In addition, the unit also delivers impressive nitrate reduction:

Total Nitrate (NO_3-N): 11.1 mg/l

- **Significance:** This controlled nitrate level reflects effective nitrogen management, though nitrate remains present as a byproduct of ammonia removal.
- **Environmental impact:** Helps limit nutrient loading, though further reductions might be desirable in nitrate-sensitive areas
- **Standard:** Meets UK and EU requirements, often set around 10-15 mg/l

Ecosystem protection

- The Nutra-Lite's exceptional results for BOD, ammonia and phosphate make it particularly suited for deployment in environmentally sensitive areas such as rivers and streams

Future proof

- In an ever more environmentally conscious world, the Nutra-Lite SBR offers the client the ability to demonstrate adoption of the most advanced technology that far exceeds existing regulatory targets

Why these results are outstanding

- **Low BOD and Ammonia:** Demonstrate efficient organic matter breakdown and nitrogen conversion
- **Low Suspended Solids:** Protects water clarity and aquatic habitats
- **Verified by PIA:** Testing at the Prüfinstitut für Abwassertechnik (PIA) ensures credible, rigorous and internationally recognised results
- **Compliance:** The results exceed typical UK and EU discharge standards, making the Nutra-Lite plant a robust choice for meeting stringent environmental regulations

Conclusion

The Marsh SBR Nutra-Lite is an innovative sewage treatment plant, providing exceptional discharge quality with industry-leading results. Its performance makes it the most dependable and environmentally friendly solution for protecting waterways and other sensitive sites.

Phosphate targets

The Marsh Nutra-Lite and Phos-Lite combined can achieve ultra-low phosphate levels (0.28 mg/l), far exceeding standards. This prevents nutrient enrichment, combats algal blooms and protects sensitive ecosystems and waterways, making it the ideal solution for sustainable water management in nutrient-sensitive areas.

> The Marsh Nutra-Lite boasts the highest overall discharge quality of any sewage treatment plant

Intelligent SBR
system management

Marsh Nutra-Lite SBR controller

The Marsh Nutra-Lite SBR controller is an intelligent sewage treatment control system, uniquely designed by Marsh Industries for optimal performance in SBR plants.

Engineered with forward-thinking features and future-proof capabilities, the Marsh controller is unmatched in functionality and innovation, offering a suite of controls unavailable in other systems.

Effortless installation and power-efficient design

Designed with simplicity in mind, the Marsh Nutra-Lite SBR Controller comes pre-configured and ready for seamless integration with the plant. Requiring only a standard electrical socket and a compressor connection, installation is swift and user-friendly.

- **Minimal air connections:** Just one air connection links the compressor to the controller, and only four additional connections to the plant's aeration and air-lift systems are needed
- **Motorised valve protection:** These valves require power only during operation changes and will automatically close in case of a power failure, preventing the compressor from flooding
- **Single compressor operation:** The controller is designed to operate the entire plant with a single compressor, enhancing energy efficiency

Smart connectivity and user-friendly access

As an IoT-enabled controller (Internet of Things), the Marsh Nutra-Lite SBR Controller offers convenience through internet and mobile access, allowing users to configure and monitor the system remotely. The intuitive design includes:

- **Simple interface:** Essential operations are accessible via three buttons on the controller itself
- **Mobile browsing:** Installation settings and advanced features are accessible through a mobile phone or tablet, with an easy-to-use interface
- **Flexible connectivity options:** Connect to the internet using built-in WiFi or an optional GSM module for remote management, monitoring, and upgrades

Comprehensive monitoring and remote operations

Remote management is at the heart of the Marsh Nutra-Lite SBR Controller, providing insights and control. Key monitoring and remote operation capabilities include:

- **Alerts and notifications:** Customisable email alerts for multiple users keep end-users informed of plant status
- **Remote operations:** Effortlessly monitor and adjust operations from anywhere, including:
  - *Checking water levels and detecting blockages*
  - *Updating software and setting operational parameters*
  - *Configuring WiFi and GSM connectivity*
  - *Viewing operational hours, ECO cycles, internet status, and calibration settings*
  - *Accessing manual and calibration controls, telemetry, and high-level alarms*

Built-in future-proofing and advanced capabilities

The Marsh Nutra-Lite SBR Controller is engineered with long-term adaptability, ensuring it evolves alongside advancements in wastewater technology. Future-proof features include:

- **Software version control:** Keep your controller up-to-date with the latest performance improvements
- **Effluent volume calculations:** Track the volume of processed effluent for effective management
- **Natural coagulant integration:** As natural coagulants become viable, the controller can accommodate these eco-friendly options
- **Remote upgrades for enhanced performance:** Incorporate the latest SBR research innovations without on-site updates
- **Seasonal maintenance adjustments:** Adapt the controller's performance to seasonal needs
- **Multi-user and plant administration:** Perfect for contractors, installers, maintenance teams, as well as end-users, the controller allows for centralised management across multiple sites
- **Remote assistance:** Installers, maintenance teams and end-users benefit from Marsh's remote support for smooth operations and troubleshooting

Certified excellence and exclusive availability

The Marsh Nutra-Lite SBR Controller is crafted to meet the highest industry standards, boasting the 2024 PIA Certification and exclusively available with the Marsh Nutra-Lite plant, it is the most advanced and feature-rich controller on the market, with advanced technology that is entirely unique to Marsh Industries.

For contractors, installers, and end-users, the Marsh Nutra-Lite SBR Controller offers unrivalled control, automation and efficiency. With this controller, you're investing in a solution that not only meets today's needs but is equipped to grow and evolve with future advancements in SBR technology.

Operating and connectivity options

Operate controller via buttons on unit

Operate controller directly via WiFi access point

Operate controller remotely when controller is connected to household WiFi

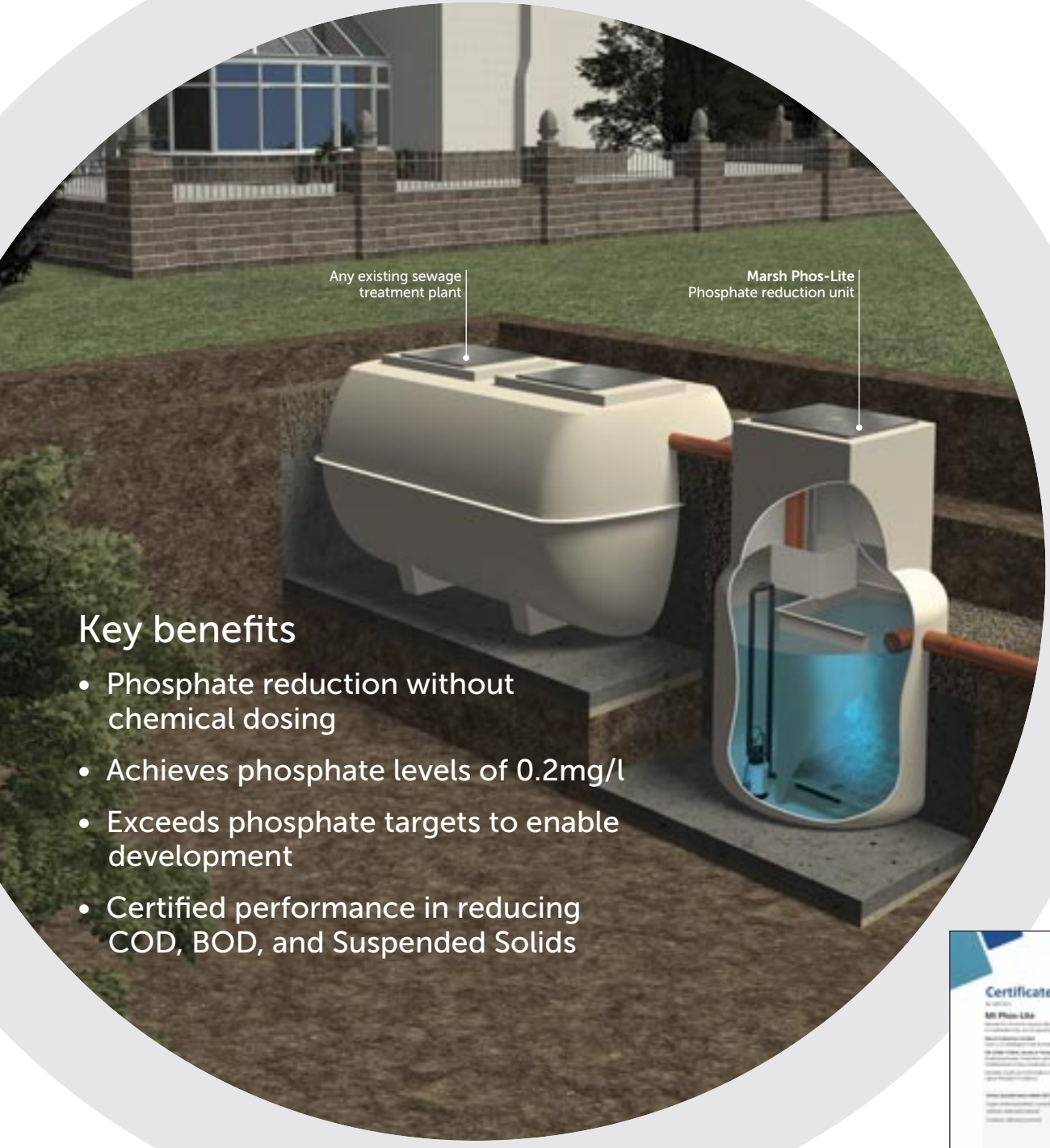
Operate controller remotely with optional GSM module and IoT Sim

Status reporting by email at various intervals (ie, 4-hour, 12-hour, daily)

Error report by email, immediate

Marsh Phos-Lite

The **natural solution** for phosphate removal

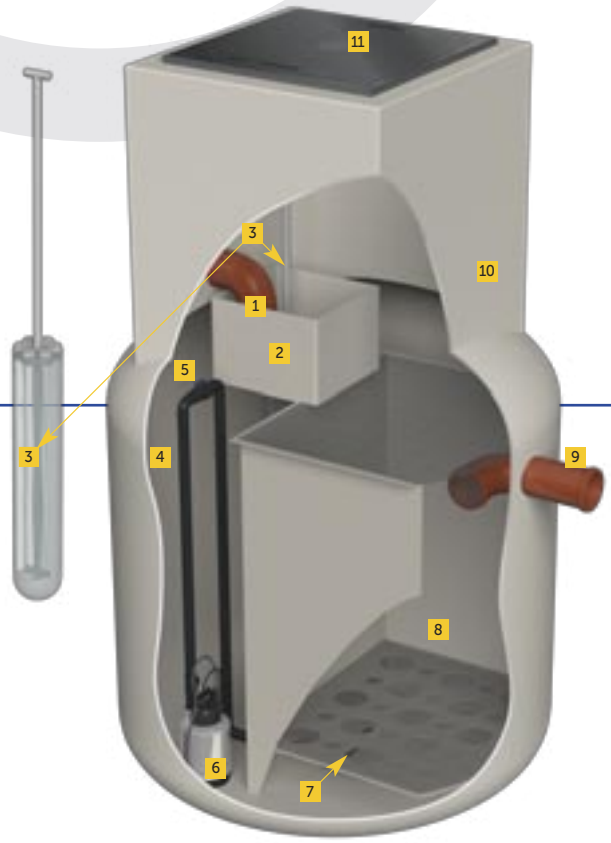


Key benefits

- Phosphate reduction without chemical dosing
- Achieves phosphate levels of 0.2mg/l
- Exceeds phosphate targets to enable development
- Certified performance in reducing COD, BOD, and Suspended Solids

Full specifications, technical details and performance guarantee: marshindustries.co.uk/technical-library

Innovative technology
for cleaner water



Overview

Marsh Phos-Lite is a groundbreaking product designed to efficiently remove phosphate from wastewater. Utilising a unique adsorption process, Phos-Lite binds phosphorus to the surface of its media, which is composed of naturally occurring elements. This ensures long-term performance across varying flow rates and influent concentrations.

Recommended for up to 35PE (population equivalent), Phos-Lite is fully scalable to meet larger demands. The plant is engineered for maximum retention time, guaranteeing stable, low effluent phosphorus concentrations certified by PIA GmbH at 0.2mg/l.

With an electrical consumption of just 0.03 kWh/d, Phos-Lite operates at very low cost. This innovative tertiary treatment solution seamlessly connects to the outlet of both new and existing treatment plants.

Features

Enhanced effluent quality
Phos-Lite not only excels in phosphate removal but also significantly reduces other key effluent constituents.

The Marsh Nutra-Lite treats effluent to the following standards:

BOD	4mg/ltr
Suspended Solids	11mg/ltr
Ammonia	0.5mg/ltr

When the Marsh Nutra-Lite and Marsh Phos-Lite are combined, the effluent quality is further improved to:

BOD	1.62mg/ltr
Suspended Solids	4.3mg/ltr
Ammonia	0.38mg/ltr
PTot	0.26mg/ltr
TNb	10.5mg/ltr

Test results achieved when combined with the Marsh Ensign:EL

COD	56.1%	23 mg/l
BOD	59.5%	4 mg/l
TNb	5.5%	29.6 mg/l
NH4n	24%	0.4 mg/l
Ptot	95.9%	0.2 mg/l
SS	61.1%	4 mg/l

Long-term performance
Designed to retain up to 8.5kg of phosphorus in a 6PE domestic plant (British Water Flows and Load 4), the Marsh Phos-Lite offers reliable performance. Media performance will be assessed at pre-determined intervals and replaced if necessary. The longevity of the media will be influenced by the actual flows and loads entering the plant.

Natural, non-dosing solution
The plant uses Phos-Lite pellets, a natural mineral media, to reduce phosphate levels, simplifying operations and reducing the environmental impact of chemical use.

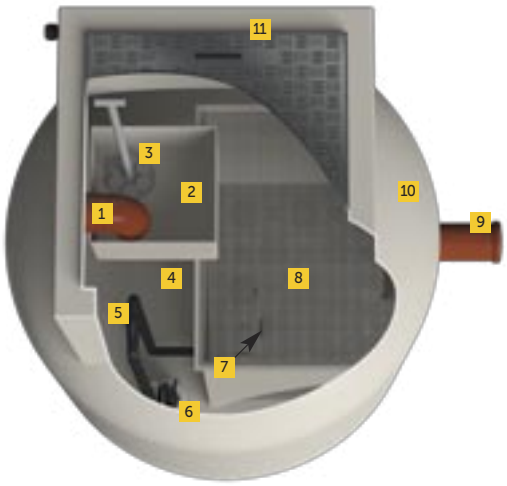
Cost-effective and low maintenance
The non-dosing approach minimises the need for frequent maintenance and chemical adjustments, leading to cost savings over the plant's lifetime.

Enhanced compliance
By achieving phosphate levels of 0.2mg/l, the plant ensures compliance with environmental standards, allowing water companies to meet regulatory obligations.

Ease of integration
The plant is designed for seamless integration into existing systems, making it versatile for new installations and retrofits. Builders' merchants will find this product a valuable addition to their offerings, catering to the growing demand for environmentally responsible wastewater treatment solutions.

Material strength and fire safety
Marsh Industries' GRP material successfully meets the requirements of EN ISO 11925-2:2010 standards and is tested for direct flame impingement. All units come with a 25-year structural guarantee.

Tank configurations and components are shown for illustration purposes only



Key

1 Inlet
2 Inlet chamber
3 Filter sock (hidden from view)
4 Primary chamber
5 Flow control valve
6 Submersible pump
7 Pipework outflow (beneath lower shelf)
8 Phos-Pellet chamber
9 Outlet
10 Heavy duty GRP shell
11 Access cover

Specifications

Model	PE	Dia Ø	Height	Inlet		Outlet	
		+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
PL4	4PE	1200	1865	665*	110	1085	110
PL6	6PE	1200	1865	665*	110	1085	110
PL8	8PE	1200	2139	665*	110	1085	110
PL10	10PE	1200	2139	665*	110	1085	110
PL12	12PE	1500	2284	715*	110	1085	110
PL16	16PE	1500	2284	715*	110	1085	110
PL20	20PE	1500	2284	715*	110	1085	110
PL25	25PE	1500	2284	715*	160	1085	160

** Inlet invert subject to outlet invert on preceding sewage treatment plant*

Marsh Gemini

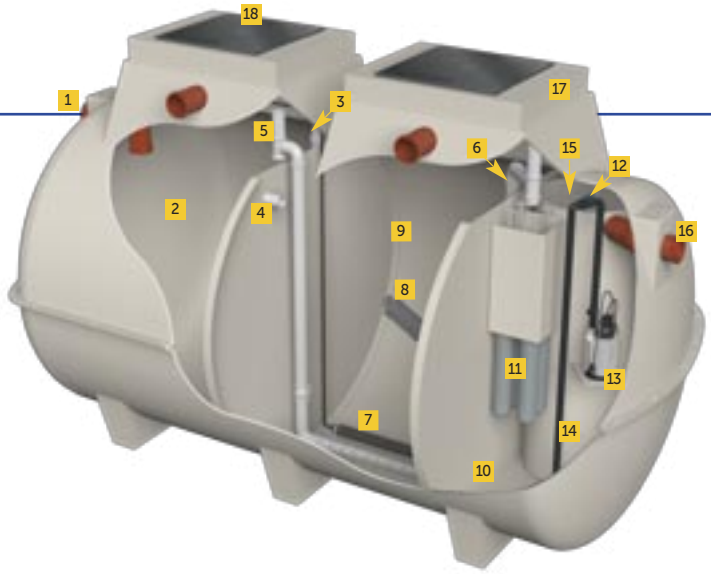
The combined **natural solution** for **compact** sewage treatment, phosphate and nitrate removal

Key benefits

- Combines the benefits of the Marsh Nutra-Lite and Marsh Phos-Lite into one single unit
- Smaller footprint to suit restrictive site conditions
- Exceeds effluent and phosphate reduction targets

Full specifications, technical details and performance guarantee: marshindustries.co.uk/technical-library

Combining the **Marsh Nutra-Lite** and **Marsh Phos-Lite**



Overview

To reduce the footprint of a two-chamber installation, Marsh Industries offers the Marsh Gemini, an 'all in one' solution that combines the Marsh Nutra-Lite and Marsh Phos-Lite into one single unit.

The Gemini is available for sites catering for up to 16 people.

Features

Two-in-one system

The Marsh Gemini enables a compact installation when both of our market-leading natural solutions, Nutra-Lite and Phos-Lite, are required. It also offers adaptability in tank diameters to suit specific site ground conditions.

This single unit houses the two certified systems: Nutra-Lite and Phos-Lite. The Nutra-Lite provides advanced Sequential Batch Reactor (SBR) sewage treatment, while the Phos-Lite further enhances effluent quality and supports the achievement of challenging phosphate reduction targets.

Nutra-Lite significantly reduces biological nitrates through state-of-the-art technology and has been rigorously tested, boasting the highest overall discharge quality of any plant available today.

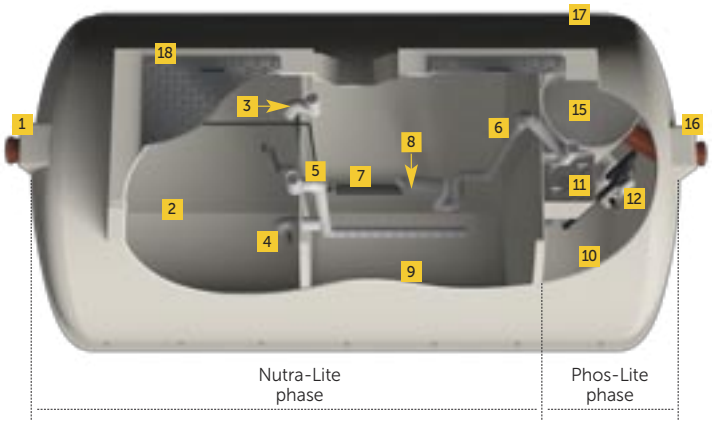
Treated effluent passes from the Nutra-Lite phase to the Phos-Lite phase for the removal of phosphates without the need for chemical dosing. Using a unique adsorption process, the Phos-Lite phase binds phosphorus to the surface of its media, which is composed of naturally occurring elements. This ensures long-term performance across varying flow rates and influent concentrations.

Enhanced effluent quality

The Gemini achieves the following overall effluent quality through its combination of the fully certified and tested Nutra-Lite and Phos-Lite systems:

BOD	1.62mg/ltr
Suspended Solids	4.3mg/ltr
Ammonia	0.38mg/ltr
PTot	0.26mg/ltr
TNb	10.5mg/ltr

This approach is fully approved by PIA, with the technical and hydraulic features of the EN12566-3-certified Nutra-Lite and the EN12566-7-certified Phos-Lite remaining the same in this integrated unit.



Key

1 Inlet
2 Primary chamber
3 Inflow air-lift pipework
4 Overflow pipework
5 Recirculation air-lift pipework
6 Outflow air-lift pipework
7 Air diffuser
8 Sediment reduction valve
9 Secondary chamber
10 Setlement chamber
11 Filter socks
12 Flow control valve
13 Submersible pump
14 Pipework outflow (beneath lower shelf)
15 Phos-Pellet chamber
16 Outlet
17 Heavy duty GRP shell
18 Access cover

Specifications

Model	PE	Length	Width	Height	Inlet		Outlet	
(Pop)		+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
Gemini 6	4-6PE	2862	1952	2139	550	110	625	110
Gemini 10	7-10PE	3652	1952	2283	700	110	770	110
Gemini 16	11-16PE	5240	1952	2283	770	110	850	110

Tank configurations and components are shown for illustration purposes only

Ensign-EL (shallow)
Sewage treatment plant
Superior ammonia reduction 6PE-50PE

Overview

Designed to deliver outstanding ammonia reduction within a shallow, compact footprint, the Ensign-EL sewage treatment plant sets a new benchmark for performance in constrained and environmentally sensitive sites.

Accredited to EN12566-3 Annex B for systems up to 50 Population Equivalent (PE), the Ensign-EL achieves **ammonia concentrations as low as 1 mg/l** through a robust multi-stage process incorporating primary settlement, advanced aerobic biological treatment with specialised biofilm media, and simultaneous nitrification and denitrification.

At just 1.6m in height, its shallow-dig design simplifies installation in challenging ground conditions and high water tables.

COD	92.2% efficiency	63mg/ltr
BOD	95.6% efficiency	14mg/ltr
TNb	53.5% efficiency	28mg/ltr
NH4-N	97.8% efficiency	1.0mg/ltr
Ptot	28.7% efficiency	5.4mg/ltr
SS	94.5% efficiency	21mg/ltr
Accreditation	EN12566-3 test Annex B	

Features

Accredited performance
The Ensign-EL packaged sewage treatment plant is fully tested and certified by PIA (Prüfinstitut für Abwassertechnik) in Aachen, Germany. Ensign-EL is accredited to EN12566-3 Annex B for systems up to 50 Population Equivalent (PE), attesting to its reliability and effectiveness.

Shallow dig
Common sewage treatment plants on the market often exceed 2.3m high. Ensign-EL sewage treatment plants from 4-50PE are only 1.6m in height, meaning installation is not only possible*, but easier and safer too.

Challenges raised by ground conditions and high water tables can be overcome with the 1.6m shallow depth of the Ensign-EL.

Multi-stage treatment
Ensign-EL employs a multi-stage process, featuring primary settlement, efficient aerobic biological treatment with specialised biofilm media, and denitrification, all in one system.

Enhanced materials and fire safety
Marsh glass reinforced plastic (GRP) materials outperform competitors, showing a remarkable 40% increase in strength through rigorous impact testing. Additionally, successful material fire resistance testing meets EN ISO 11925-2:2010 standards.

Key

1 Inlet
2 Primary chamber
3 Biozone 1
4 Biozone 2
5 Air diffusers
6 Final settlement chamber
7 Submersible pump or gravity outlet
7a Polylok filter (gravity outlet only)
8 Pumped or gravity outlet
9 Internal recirculation
10 Access covers
11 Heavy duty GRP shell

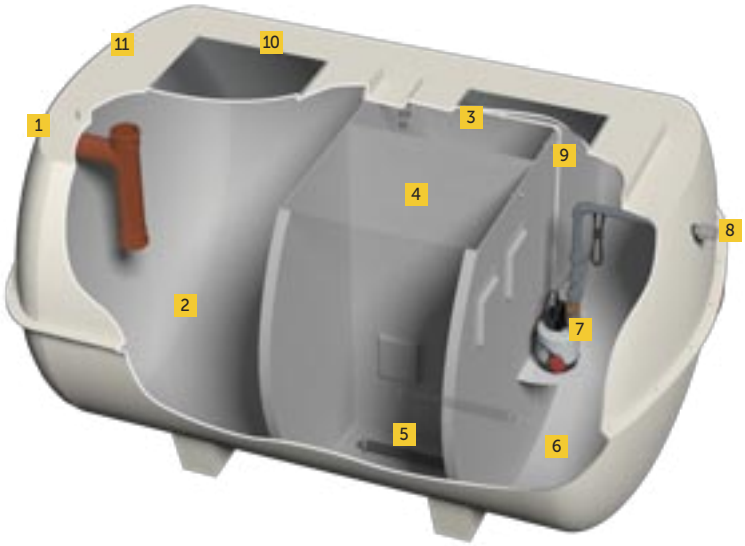
How does it work?

The Ensign-EL shallow sewage treatment plant employs a multi-stage process. It initiates with primary settlement, allowing solid particles to settle out. Subsequently, aerobic biological treatment occurs in two biozones filled with specialised biofilm support media. This unique media ensures highly efficient nitrification, reducing ammonia concentrations to a mere 1 mg/l in the final effluent.

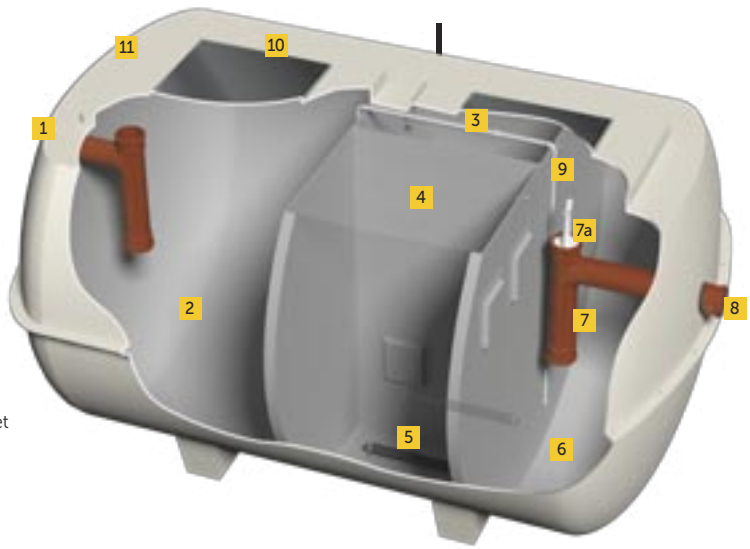
Additionally, simultaneous nitrification and denitrification processes reduce nitrate levels.

This system holds accreditation to EN12566-3 Annex B for systems of up to 50 Population Equivalent (PE) and complies with the UK Forward for BSEN12566-3.

Pumped outlet



Gravity outlet



GEM-APS EN12566-7 Certified Aerated Precipitation System

Controlled chemical dosing 6PE-1000PE

Overview

The Gem-APS is designed to further reduce phosphates, ammonia and BOD from wastewater that has been previously treated in a domestic sewage treatment plant.

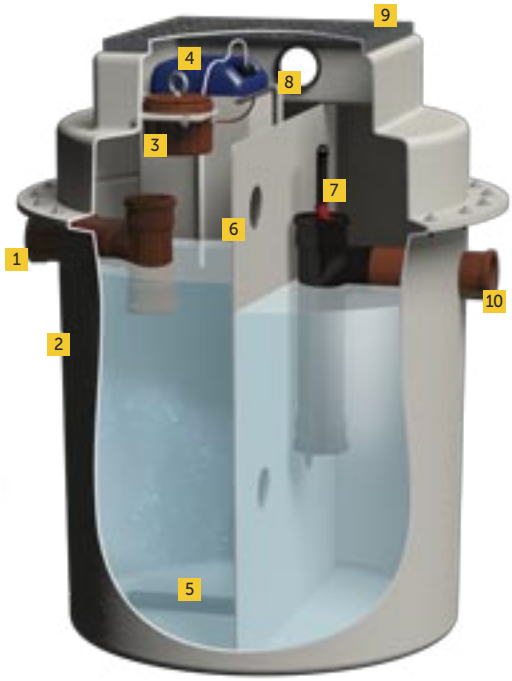
Positioned at the outlet end of any existing sewage treatment plant, the Gem-APS treats the discharged wastewater in a controlled process, involving small volumes of chemical dosing and aeration, in compliance with British Water and local environmental regulations, allowing the remaining effluent to be safely discharged to a river, ditch or drainage field.

Chemical dosing amounts are pre-configured based upon the expected flows and loads of the sewage treatment plant (Full scaleable detail available). The Gem-APS can also be regulated to reduce phosphate levels further.

BOD	2mg/ltr
Ammonia	0.4mg/ltr
Phosphate	0.9mg/l

For precise sizing and product specification, please contact Marsh Industries

Marsh offers commissioning and servicing of the Gem-APS, it is strongly advised to use this service when setting up the unit.



Benefits

- Tested in accordance with BS EN 12566-7 Annex A at PIA GmbH test facility in Aachen, Germany
- Small footprint and shallow dig for easy installation provides enhanced health and safety benefits
- Heavy duty shell as standard enables installation in all ground conditions. Unique 'keying-in' lip assists anchoring into granular or concrete surrounds
- Near silent, energy efficient compressor (located externally) with integral alarm
- Unique Polylok tertiary filter reduces suspended solids helping to extend drainage field life
- Lockable lid for safety and security
- Low level chemical alarm/indicator to ensure continuous phospahte reduction. Remote alert monitoring also available.

Features

1 Inlet
2 GRP tank appropriately sized for the sewage treatment plant
3 Dosing chemical container
4 Dosing chemical pump in watertight housing
5 Aeration diffuser(s)
6 Separating baffle with grate to stop media migration
7 Polylok filter for solids and flocculent capture
8 Pipework and sludge return
9 Lockable lid for safety and security
10 Outlet

Guidance notes

- *The Marsh Gem-APS phosphate and ammonia reduction unit should discharge effluent into a drainage field.*
- *The Gem APS can dose Iron or aluminium*
- *Environment Agency guidance states the following in relation to aluminium discharge limits to surface water:*

"Aluminium is acutely toxic to fish. For discharges to receiving waters with a lower 95-percentile pH value greater than or equal to 6, the EQS is a maximum allowable concentration (MAC) of 1mg/l (total).

However, we will also apply an emission standard of 10mg/l (dissolved) as a maximum concentration in the effluent if dilution is greater than 1:10. These standards reduce the possibility of active aluminium occurring downstream of the discharge. They also minimise deposition of particulate aluminium on the bed of a watercourse. At dilutions of less than 10:1 the total aluminium standard also limits dissolved aluminium in the discharge.

Aluminium limits for receiving waters with low pH

Aluminium in receiving waters with a low pH may remain in solution or re-dissolve. These waters are likely to already contain some dissolved aluminium, so the capacity to accept more will be limited.

We therefore apply different limits for aluminium in discharges to receiving waters that have a lower 95-percentile pH value of less than 6.

For soft waters, where the calcium carbonate concentration is less than 20mg/l annual average, the EQS is a 95-percentile limit of 75µg/l (dissolved).

MAC of 100µg/l (dissolved) we will apply an emission standard of 500µg/l (total) as a maximum concentration in the effluent. For hard waters, where the calcium carbonate concentration is greater than or equal to 20mg/l annual average, the EQS is a: 95-percentile limit of 500µg/l (dissolved).

MAC of 1mg/l (dissolved) we will apply an emission standard of 1mg/l (total) as a maximum concentration in the effluent. For receiving waters that already contain aluminium, we consider discharge limits on a detailed, site-specific basis".

Full specifications, technical details and performance guarantee: marshindustries.co.uk/technical-library

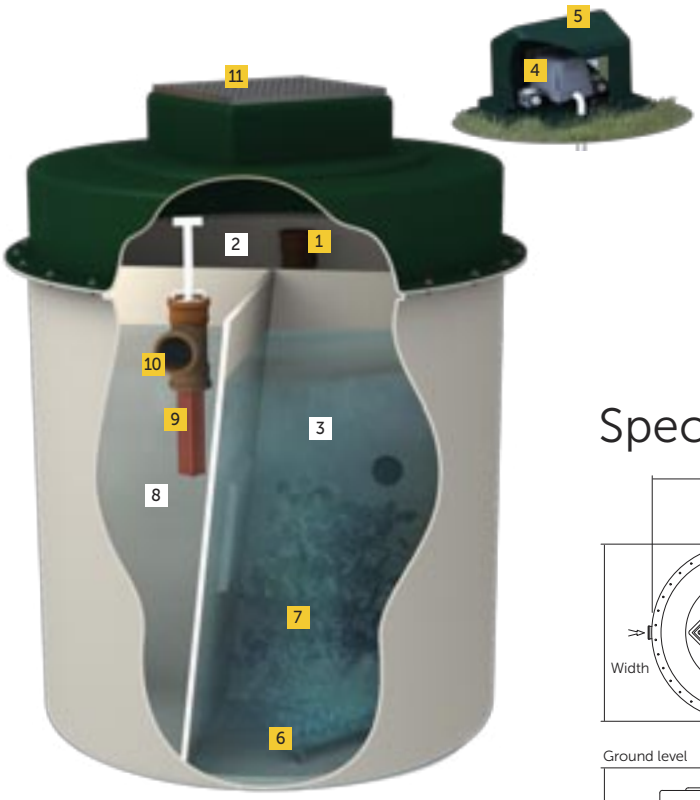
Ultra:Polylok L™
Sewage treatment plants
Intensive biological processing for off-mains wastewater

Overview

The Marsh Ultra:Polylok L (UPL) draws upon Marsh Industries' extensive experience in the industrial and commercial sewage treatment sectors bringing its outstanding performance and high-quality engineering to the domestic sector.

The UPL is available in 6PE and 12PE models, is approved to BS EN12566-3 and carries an impressive effluent quality of 20:30:20, within national consent standards.

Both models are compact and easy to install, meeting the needs of installers and specifiers alike.



Operating principle

The UPL uses a similar operating principle as the Marsh:Ensign.

In addition to anaerobic digestion taking place in the primary settlement chamber [2] the UPL unit allows the clarified water to pass into a second 'aeration' chamber [3] where it is treated to remove the dissolved constituents. Here aerobic bacteria, supported by diffused air and mobile media, ensures full treatment is achieved before the treated effluent and 'sloughed off' bacteria flows to a final settlement chamber [8]. The final effluent is then discharged to the drainage field or watercourse via a Polylok filter.

Key

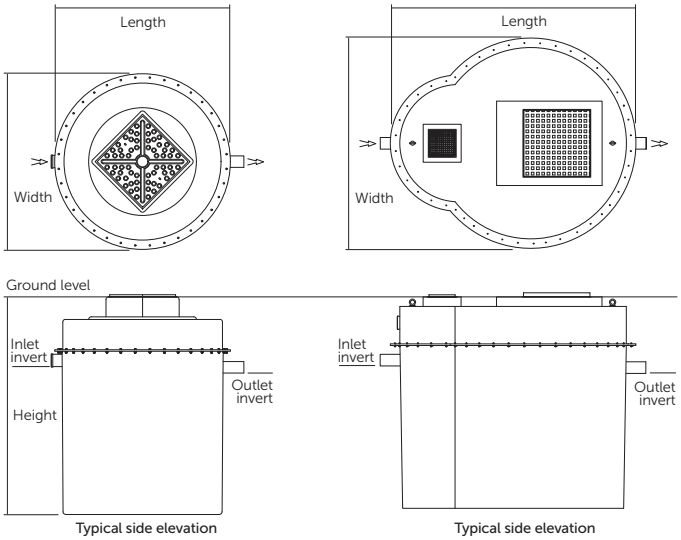
1 Inlet
2 Primary settlement chamber
3 Aeration chamber
4 Compressor with alarm
5 Compressor housing
6 Air diffuser
7 Bio-media
8 Final settlement chamber
9 Polylok tertiary filter
10 Outlet
11 Heavy duty lid

Whisspurr
Acoustic Vibration Reduction (AVR) unit
Suitable for all types of diaphragm compressors.
See page 14.

Benefits

- Tested and approved to the most stringent European Standards: BSEN12566-3/A1:2016
- Small footprint and shallow dig for easy installation provides enhanced health and safety benefits
- Heavy duty shell as standard enables installation in all ground conditions. Unique 'keying-in' lip assists anchoring into granular or concrete surrounds
- Near silent, energy efficient compressor (located externally) with integral alarm (approximate annual running costs of £35 p/annum)
- High specification bio-media (310m^3 per m^2) and membrane diffuser ensures even circulation and maximum treatment efficiency
- Unique Polylok tertiary filter reduces suspended solids and BOD by a further 40% helping to extend drainage field life
- Sludge return pipe improves system circulation
- Variable inverts for ease of installation at various depths – 250, 500 and 750mm risers available
- Pumped outlets available

Specifications



Model	Length	Width	Height	Inlet		Outlet	
(Pop)	+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
UPL 6	1700	1700	2050	650	110	725	110
UPL 12	2300	1992	2003	650	110	725	110

Notes:
> *For precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Uni:Gem★
Septic conversion unit

Unique septic tank to sewage treatment plant conversion unit

Overview

Marsh Industries' Uni:Gem★, is a unique septic tank conversion unit which exceeds EN12566-3 / EN12566-6 standards and conforms with General Binding Rules (GBRs for septic tanks or small sewage treatment plants for domestic use).

Positioned behind any existing septic tank the Uni:Gem★ treats the septic tank discharge to an effluent quality of BOD 12.25:TSS 16:Ammonia 14.845 mg/l (The UK Forward is less than BOD 20:TSS 30: Ammonia 20), meaning final effluent can be discharged safely to a river, ditch or watercourse.

The Uni:Gem★ provides notable benefits for existing septic tank owners, particularly those who need to upgrade or replace their septic tanks.

Benefits

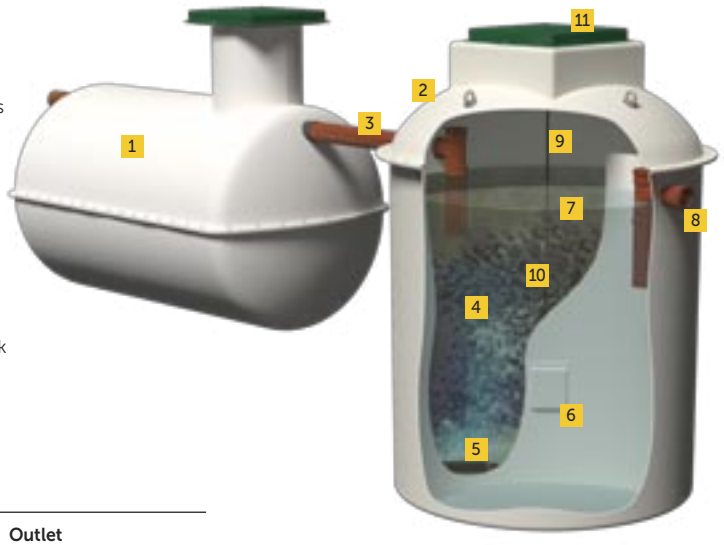
- Converts a polluting septic tank into a fully functioning sewage treatment plant without need for removing and replacing the old tank or building a drainage field
- Tested to EN12566-3 / EN12566-6 and CE-marked to ensure compliance with environmental and Building Regulations requirements
- Outstanding effluent quality of 12.25:16:14.845 (BOD:SS:NH4) ensures discharges well within national consent standards
- Tested and proven to be suitable for all ground conditions, all year round
- Provides a space saving solution for sites and where minimal disruption to surrounding obstructions is required
- Low energy compressor for minimal running, maintenance and servicing costs
- Quick and easy installation provides enormous cost-savings as well as health, safety and environmental benefits
- Offers simple and safe access for maintenance and cleaning
- Horizontal and vertical models available
- Integral steadying eyes for steadying purposes only. Not to be used for lifting tank
- Final effluent is clear and odourless

Operating principle

Effluent from the existing septic tank or sewage treatment plant is transferred to the Uni:Gem★ unit and enters the aeration chamber where it is treated to remove dissolved constituents. Here aerobic bacteria, supported by diffused air and mobile media, ensures full treatment is achieved before the treated effluent (and 'sloughed off' bacteria) flows to a final settlement chamber prior to discharge.

Key

1 Existing septic tank
2 Uni:Gem★ tank
3 Inlet
4 Aeration chamber
5 Air diffuser
6 Transfer to final settlement
7 Final settlement
8 Outlet
9 Air diffuser feed
10 Bio media
11 Manway access



Specifications

Model	Width Ø +/-50mm	Height +/-50mm	Inlet Invert	Inlet Ø	Outlet Invert	Outlet Ø
A **UG-SCS** **Uni:Gem★ up to 6PE** *For shallow cylindrical septic tanks*	1512 1652 over flanges	2300	800	110	900	110
B **UG-SPH** **Uni:Gem★ up to 6PE** *For spherical 'onion-shaped' septic tanks*	1512 1652 over flanges	2540	1040	110	1140	110
C **UG-STP6** **2800L septic tank** **Uni:Gem★ up to 6PE** *EN12566-6 complete package sewage treatment plant*	1870 1512 1652 over flanges	2330 2090	550 590	110 110	590 690	110 110

> Uni:Gem★ supplied with external compressor and compressor housing
> Check your septic tank outlet invert (ground level to the bottom of the pipe)
> Other sizes of Uni:Gem★ are available. Contact Marsh Industries for more information
> *For precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Portapura®
Sewage treatment plants
Portable sewage treatment solutions for temporary buildings

Overview

The Portapura is the most compact and efficient sewage treatment plant we've ever made.

Designed for temporary accommodation, site offices, site toilets and workshops, the Portapura is portable, can be installed above or below ground and treats domestic wastewater to a level that is 25 times better than the recommended EN standard.

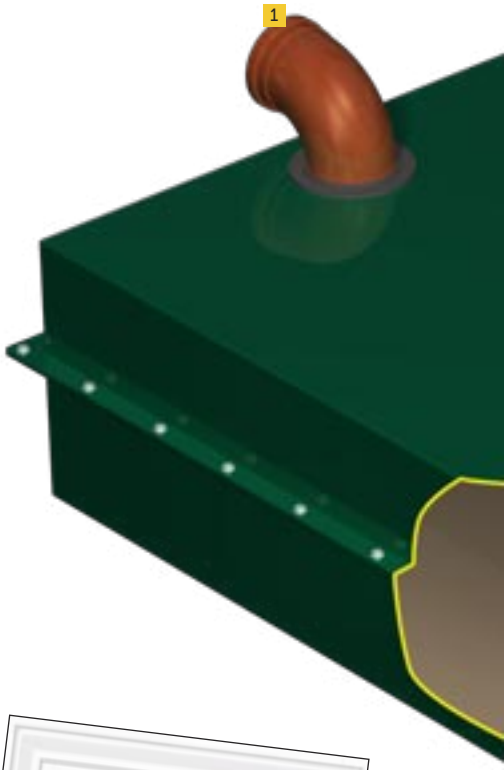
Portapura benefits

- Available in three sizes – *2, 3 or 5 person units (gravity or pumped outlet)*
- Compact, lightweight construction – *No heavy plant required*
- Portable – *Systems can be installed above ground and removed/stored when not in use*
- Cost effective installation – *Below ground installation can be achieved in approximately 2 hours*
- Outstanding treatment efficiency – *14:19:0.7mg/ltr (BOD:Suspended solids:Ammonia)*
- Near silent air compressor – *Ensures minimal running, maintenance and servicing costs*
- Electrical consumption: 1.8kWh/d – *Equivalent to the daily use of a lightbulb*
- CE approved to BS EN 12566
- Fire resistance tested in accordance with EN ISO 11925-2:210
- Tested for structural integrity in accordance with EN ISO 179-1/1eA

Specifications

Model	People served	Length +/-50mm	Width +/-50mm	Height +/-50mm	Inlet Invert (A)	Outlet Invert (B)	In/out Ø
M2	Up to 2	2750	980	415	445	270	Ø110
M3	Up to 3	2050	1500	600	450	245	Ø110
M5	Up to 5	2640	1500	800	650	345	Ø110

Notes:
> *For precise tank sizes and configurations, please contact Marsh Industries*
> *Larger population plants can be supplied*
> *All dimensions in mm*



Operating principle

Wastewater enters the primary settlement chamber A where large solids are removed by settlement and flotation. An accumulation forms at the base of the tank and is removed by desludging

The clarified water is then transferred to the main aeration chamber B. Here it is treated to remove dissolved constituents. Aerobic bacteria, supported by diffused air, ensures full treatment is achieved before the effluent and 'sloughed off' bacteria flows to the filter chamber C for further solids removal.

The final effluent is then discharged to a water course via the final settlement chamber D.

Why choose Portapura?

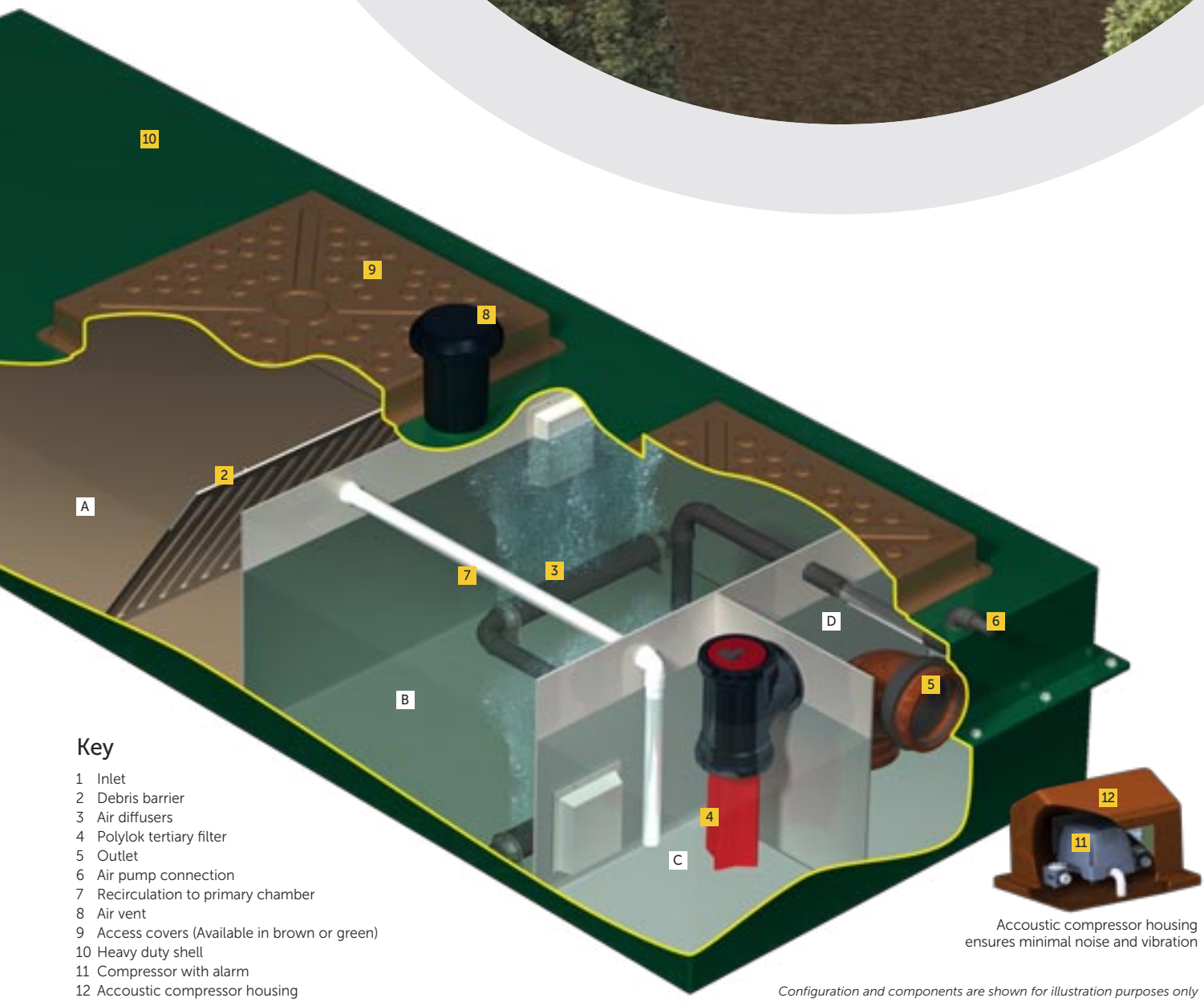
It's more efficient than other sewage treatment options... And more portable than all of them.

It's a space-saving solution... Its compact design provides quick and easy installation with minimum visual impact on the surrounding landscape as well as simple and safe access for maintenance and cleaning.

It's cost-effective... The cost of installing and running the Portapura is minimal when compared to larger, commercial systems.

It's environmentally sensitive... CE approved to BS EN 12566 with an ammonia result that is 25 times better than the recommended EN standard means the Portapura is well within discharge consent requirements.

It's designed specifically for temporary buildings... Design objectives included performance, running costs, installation, transport and storage, making the Portapura the logical choice for sites where temporary buildings are required.



Key

1 Inlet
2 Debris barrier
3 Air diffusers
4 Polylok tertiary filter
5 Outlet
6 Air pump connection
7 Recirculation to primary chamber
8 Air vent
9 Access covers (Available in brown or green)
10 Heavy duty shell
11 Compressor with alarm
12 Accoustic compressor housing

Accoustic compressor housing ensures minimal noise and vibration

Configuration and components are shown for illustration purposes only

Whisspurr®

Acoustic Vibration Reduction (AVR) Unit

Overview

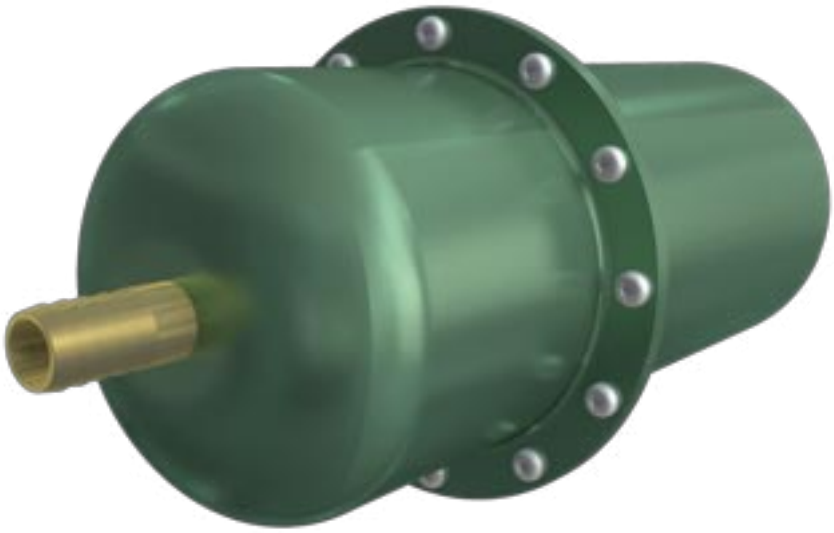
Introducing Whisspurr, the innovative AVR unit designed to reduce noise and vibration from diaphragm compressors used in the water and wastewater treatment sectors.

Fitted inline between the compressor and air diffuser, the Whisspurr significantly reduces noise and vibration generated from the pulsation of the diaphragm compressor whilst enabling a consistent, unrestricted flow to the air diffuser.

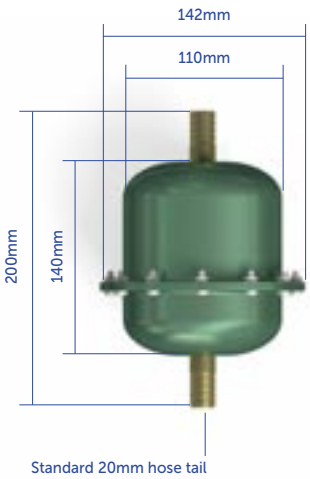
The Whisspurr is suitable for all types of compressor; Bibus Secoh, Charles Austen, Nitto, etc.

For accurate unit sizing, contact Marsh Industries' technical team on 01933 654582.

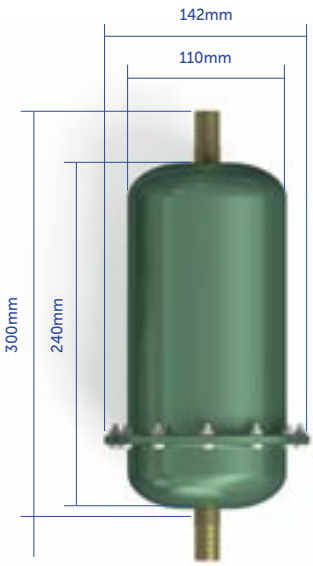
- Significantly reduces compressor volume and vibration, addressing concerns of noise pollution in rural areas
- No reduction in air pressure from the compressor
- No increase in back pressure to the compressor
- Requires no electrics
- Available in four standard sizes
- Easy retrofit to existing compressors
- Hose tail is 20mm standard
- Dark green unit as standard
- Unique UK design, patent pending
- Optional extras include Marsh accoustic compressor housings (Two sizes available depending on compressor size)



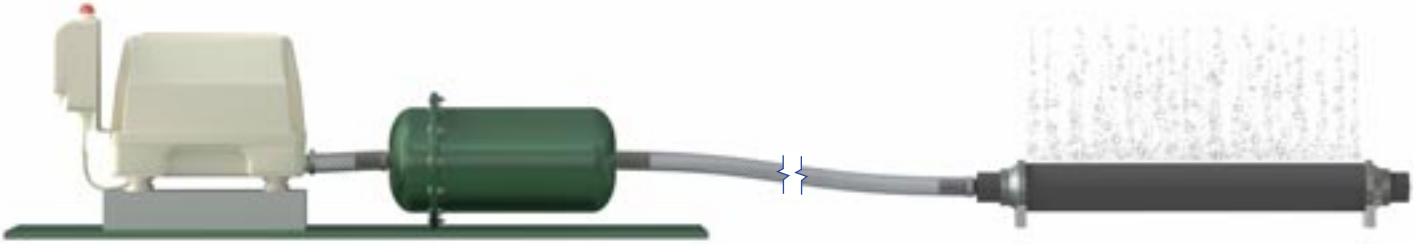
W-AVR1
For Ensign 4 to 10PE



W-AVR2
For Ensign 12 to 25PE



Hear the difference for yourself at marshindustries.co.uk



Septic tanks and cesspools

Basic treatment to off-mains wastewater

Overview

The Euro:Septic offers significant technical improvements and cost-savings over current market options.

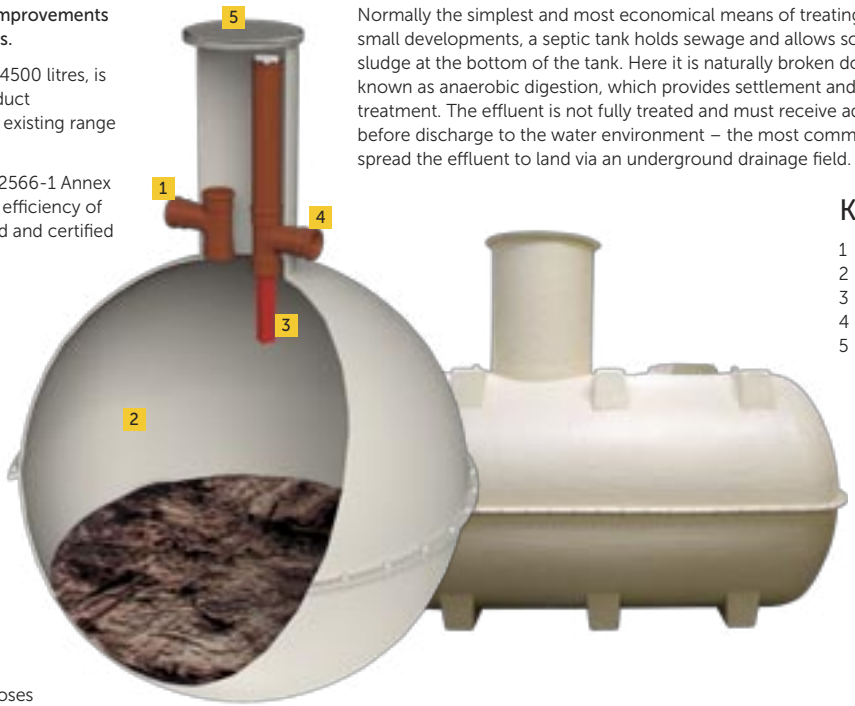
The range, available in capacities from 2800-4500 litres, is CE marked to comply with Construction Product Regulations and compliments the company's existing range of horizontal septic tanks.

The Euro:Septic is tested and certified to EN12566-1 Annex B and benefits from an outstanding hydraulic efficiency of 99.63%. Horizontal septic tanks are also tested and certified to EN12566-1.

Benefits

- Tested to BSEN12566:1 and CE-marked to ensure compliance with latest environmental and Building Regulations requirements
- Traditional 'onion-style' tanks for standard installations
- Low profile versions for high water table or hard rock site conditions
- Unique Polylok filter improves effluent quality and prolongs drainage field life

- Heavy duty shell as standard to enable installation in all ground conditions
- Integral steadying eyes for steadying purposes only. Not to be used for lifting the tank
- 'Keying-in' assists anchoring into granular or concrete surround
- Pedestrian cover included as standard



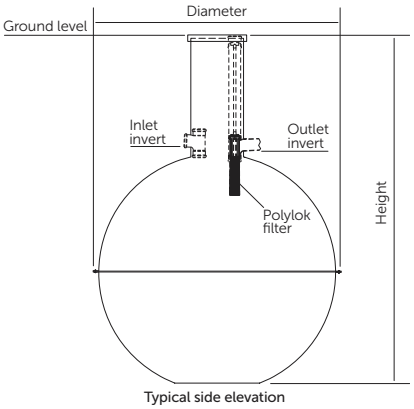
Operating principle

Normally the simplest and most economical means of treating wastewater from small developments, a septic tank holds sewage and allows solids to settle into sludge at the bottom of the tank. Here it is naturally broken down by a process known as anaerobic digestion, which provides settlement and some biological treatment. The effluent is not fully treated and must receive additional treatment before discharge to the water environment – the most common method being to spread the effluent to land via an underground drainage field.

Key

1 Inlet
2 Settlement chamber
3 Polylok filter
4 Outlet
5 Access cover

Euro:Septic

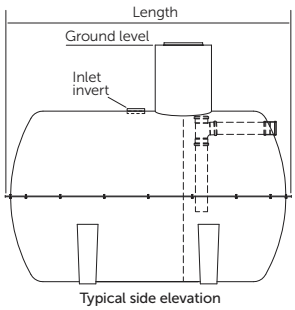


Typical side elevation

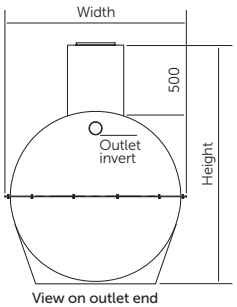
Size	Dia	Height	Inlet		Outlet	
	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
2800L	1870	2780	1000	110	1040	110
3800L	2075	3000	1000	110	1040	110
4500L	2196	3100	1000	110	1040	110

> *For precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Horizontal septic tanks



Typical side elevation



View on outlet end

Size	Length	Width	Height	Inlet		Outlet	
	+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
2800L	3000	1250	1750	500	110	800	110
3800L	4000	1250	1750	500	110	800	110
4500L	2650	1600	2100	500	110	800	110
6000L	2950	1900	2400	500	110	800	110
8000L	3640	1900	2400	500	160	800	160
10000L	4200	1900	2400	500	160	800	160
12000L	5200	1900	2400	500	160	800	160
14000L	5840	1900	2400	500	160	800	160
16000L	6700	1900	2400	500	160	800	160
18000L	7500	1900	2400	500	160	800	160
20000L	8100	1900	2400	500	160	800	160

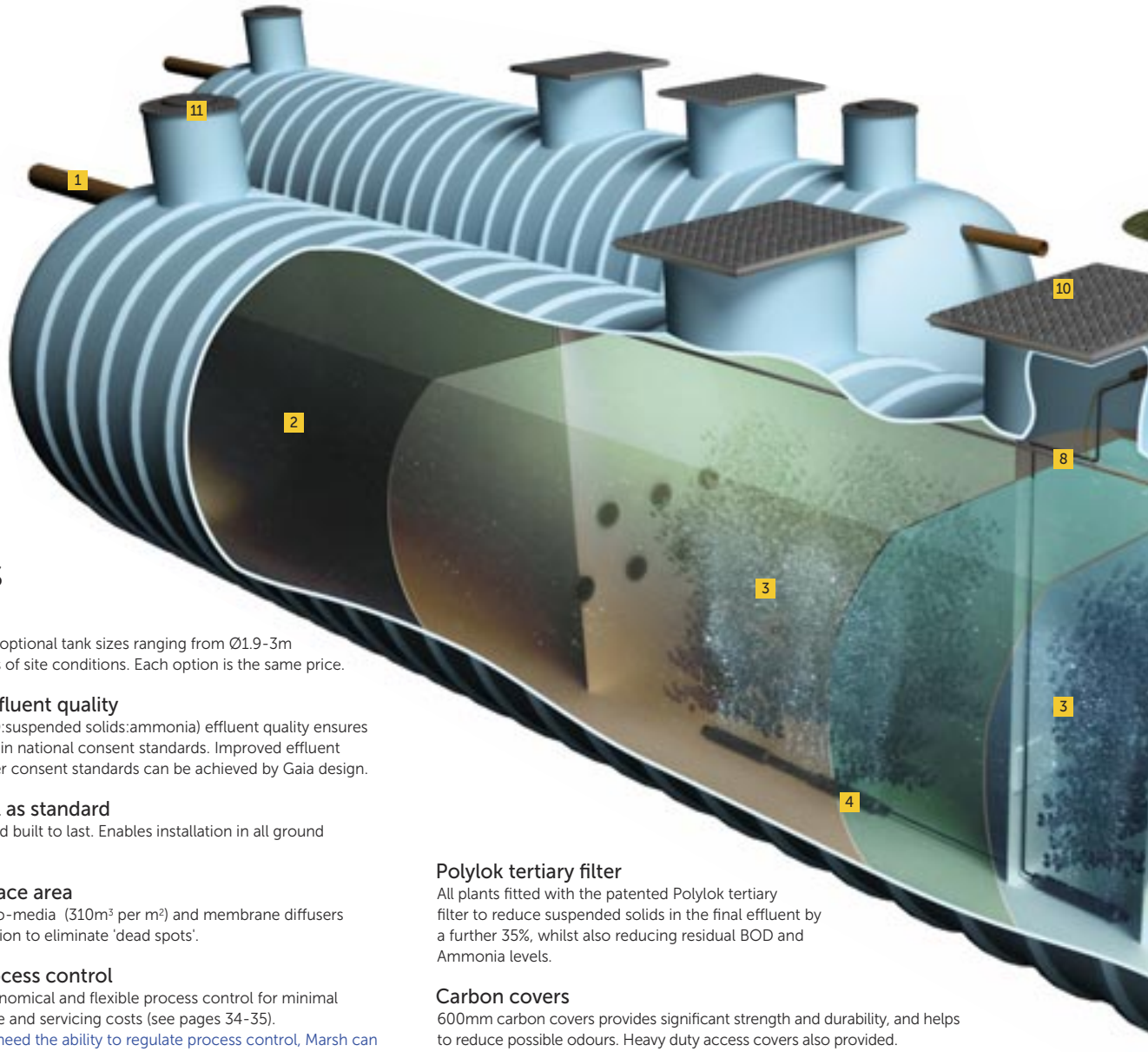
Ultra:Polylok™
Sewage treatment plants
Advanced biological processing for off-mains wastewater

Overview

Marsh Ultra Polylok sewage treatment systems provide advanced biological treatment to off-mains wastewater on sites ranging from 50-500PE.

The units are ideally suited for large residential, commercial, industrial and leisure sites - particularly where onerous consent standards preclude the use of standard 'off the shelf' units.

Proven reliability of the simple but effective Submerged Aeration Filtration (SAF-MBBR) system offers both operating and financial benefits when compared to more complex alternatives that require frequent servicing and maintenance to sustain performance.



Benefits

Plant sizing
Bespoke design with optional tank sizes ranging from Ø1.9-3m satisfies the demands of site conditions. Each option is the same price.

Class-leading effluent quality
20:30:20mg/ltr (BOD:suspended solids:ammonia) effluent quality ensures discharge is well within national consent standards. Improved effluent quality to meet tighter consent standards can be achieved by Gaia design.

Heavy duty shell as standard
Structurally sound and built to last. Enables installation in all ground conditions.

High media surface area
High specification bio-media (310m^3 per m^2) and membrane diffusers provide even circulation to eliminate 'dead spots'.

Eco-friendly process control
Energy-efficient, economical and flexible process control for minimal running, maintenance and servicing costs (see pages 34-35).
For sites that do not need the ability to regulate process control, Marsh can offer diaphragm compressors for sewage treatment plants up to 150PE

Internal recirculation
Continues the treatment process to provide higher effluent quality whilst balancing flow over 24 hour period or periods of intermittent use.

Polylok tertiary filter
All plants fitted with the patented Polylok tertiary filter to reduce suspended solids in the final effluent by a further 35%, whilst also reducing residual BOD and Ammonia levels.

Carbon covers
600mm carbon covers provides significant strength and durability, and helps to reduce possible odours. Heavy duty access covers also provided.

Optional extras
Optional extras include extensions for deep installations, pumped outlets for sites with adverse levels, sample chambers, Degrilleur trash barriers, phosphate reduction and UV treatment chambers.

Key

1 Inlet
2 Primary chamber
3 Aeration chambers
4 Air diffusers
5 Final (or 'humus') chamber
6 Polylok filter
7 Outlet
8 Recirculation to primary chamber
9 Turret guard
10 Heavy duty access covers
11 Carbon covers
12 High level alarm
13 Eco-friendly process contol
14 Control kiosk

This is not a typical tank installation. Configuration and components are shown for illustration purposes only

Tank sizing

Developed by Marsh Industries, the unique Gaia Sege process design software uses core information to accurately calculate and tailor key variables ensuring total system optimisation for individual applications.

These precise calculations provide assurance to consultants, engineers, specifiers and contractors that the system is specifically designed to meet the appropriate standards of regulatory bodies.

For Ultra:Polylok sewage treatment plants, the software uses established core process equations to accurately calculate and tailor key variables ensuring total processing optimisation for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS) and Ammonia (NH_4) reduction and removal.

Gaia Sege software also uses 'British Water Flows & Loads' data to calculate initial flows and loadings whilst also calculating peak flows and levels.

The programme can also calculate accurate sludge generation and storage on a daily basis, dependent upon final effluent standards required, ensuring the optimisation of primary chambers, individual clarifiers, diffused oxygen feed and final settlement chamber.

GRP kiosks

Marsh GRP kiosks provide safe and secure storage of electrical control panels and other tank monitoring equipment.

The kiosks are typically fitted with one or two doors, depending on kiosk size, with stainless steel vents and yale locks.

Energy-efficient, **economical** and **flexible** process control for Ultra:Polylok™ sewage treatment plants

Efficiency

Air blower speed/output is controlled using a variable speed 'drive' which supplies the precise amount of air required to enable the sewage treatment plant to function efficiently.

Optimisation of the air blower output results in improved running costs, meaning the end-user can be assured they have the most economical solution for their wastewater system.

This is a unique feature when it comes to overall energy-efficiency as most process control kiosks currently available within the industry have a one size fits all approach.

Flexibility

These next-generation process control kiosks are built with flexibility in mind. Additional control options can be programmed into the 'drive' to regulate the volume of air delivered to the sewage treatment plant for different periods. This can be particularly beneficial for seasonal applications such as campsites, caravan parks, lodges or hotels where they may operate at peak capacity for short periods of the year. This functionality permits the volume of air to be increased or reduced, depending on the amount of people to be accommodated, thereby offering the end-user the ability to further reduce energy and running costs.

In addition, the process control kiosk allows for system expansion in the case of business/site growth (subject to design), thus eliminating the need to install extra tanks, pipework, air blowers, etc.

Noise reduction

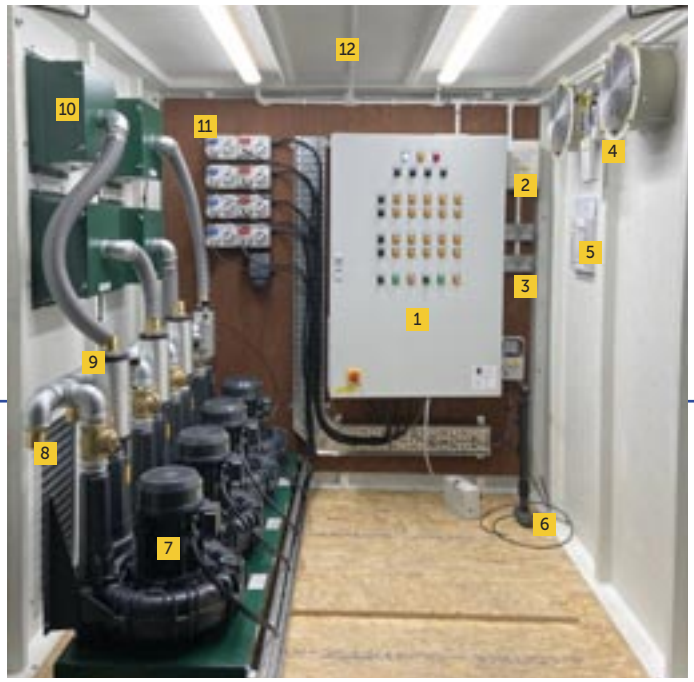
We believe these kiosks to be the quietest on the market today. They are fitted with a number of noise reduction measures as standard, making them ideal for caravan parks, campsites, etc, subject to kiosk placement/location. This can reduce the need for creating barriers or planting to restrict noise.

Further noise reduction measures can be added through the use of acoustic PUNF foam linings and various acoustic noise absorbing baffles. This not only reduces noise but enables the kiosk to be placed in a more convenient location on sites where space is at a premium (the recommended distance from the sewage treatment plant should be 10m).

Specification/costs of noise reduction options, including measured decibel levels at a given distance from the kiosk, can be supplied on request.

Features

- **Powder coated, mild steel or GRP kiosk (Green - RAL6005)**
  The kiosk protects the motor and controls from the elements
- **Forced ventilation, including ambient temperature control**
  A ventilation fan/thermostat maintains the optimal ambient temperature in accordance with the air blower manufacturer's specifications
- **Thermal protection on motors**
  Protects the motor windings from overheating, increasing the reliability and lifespan of the motor
- **Electrical overload and short circuit protection**
  As required by electrical regulations
- **Air intake filter maintenance alarm**
  Alerts the end-user when the intake filter needs cleaning/replacing
- **High pressure alarm**
  Alerts the end user if the system design pressure has been exceeded, typically suggesting a blockage or restriction in the pipework
- **Low pressure alarm**
  Alerts the end user if the system design pressure is low, typically suggesting a leakage in the pipework
- **Standard acoustic attenuation including air intake silencer and external acoustic hood**
  Reduces noise from the blower motor and air intake



Maintenance required components shown for illustration purposes only

Key

1 Electrical control panel
2 Kiosk lighting and power DB
3 230v RCD sockets
4 Kiosk ventilation fans/thermostat control box
5 Electrical panel drawings and documents
6 Test equipment (for use when commissioning)
7 Aeration blowers
8 Pipe manifold including 50mm outlets and return valves
9 Air intake silencer
10 Aeration blower intake filter
11 Blower power and control outlets
12 Kiosk lighting

Specifications

Ultra:Polylok		Kiosk					
Model	**People served**	**Height**	**Width**	**Depth**	**Power rating** Kw	**Recommended electrical supply 230v**	**Recommended electrical supply 400v**
UP55	55	1350	850	500	0.8	230v SP&N 16A type C/D MCB	400v TP&N 10A type C/D MCB
UP75	75	1350	850	500	0.8	230v SP&N 16A type C/D MCB	400v TP&N 10A type C/D MCB
UP100	100	1350	850	500	1.1	230v SP&N 20A type C/D MCB	400v TP&N 16A type C/D MCB
UP125	125	1350	850	500	1.1	230v SP&N 20A type C/D MCB	400v TP&N 16A type C/D MCB
UP150	150	1350	850	500	1.1	230v SP&N 20A type C/D MCB	400v TP&N 16A type C/D MCB
UP175	175	1350	850	500	1.1	230v SP&N 16A type C/D MCB	400v TP&N 16A type C/D MCB
UP200	200	1350	850	500	1.5	230v SP&N 25A type C/D MCB	400v TP&N 20A type C/D MCB
UP225	225	1350	850	500	1.5	230v SP&N 25A type C/D MCB	400v TP&N 20A type C/D MCB
UP250	250	1350	850	500	2.2	230v SP&N 40A type C/D MCB	400v TP&N 32A type C/D MCB
UP275	275	1350	850	500	2.2	230v SP&N 40A type C/D MCB	400v TP&N 32A type C/D MCB
UP300	300	1350	850	500	3.0	230v SP&N 50A type C/D MCB	400v TP&N 40A type C/D MCB
UP325	325	1450	950	500	3.0	230v SP&N 50A type C/D MCB	400v TP&N 40A type C/D MCB
UP350	350	1450	950	500	3.0	230v SP&N 50A type C/D MCB	400v TP&N 40A type C/D MCB
UP375	375	1450	950	500	3.0	230v SP&N 50A type C/D MCB	400v TP&N 40A type C/D MCB

Notes:
> *The dimensions given on this page are for guidance only*
> *For precise kiosk and Ultra:Polylok sewage treatment plant sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Maintenance

Our engineers will advise of the appropriate maintenance plan once the site installation has been completed, however the process controls installed within the kiosk are designed to alert you to any imminent maintenance required on the system.

Installation

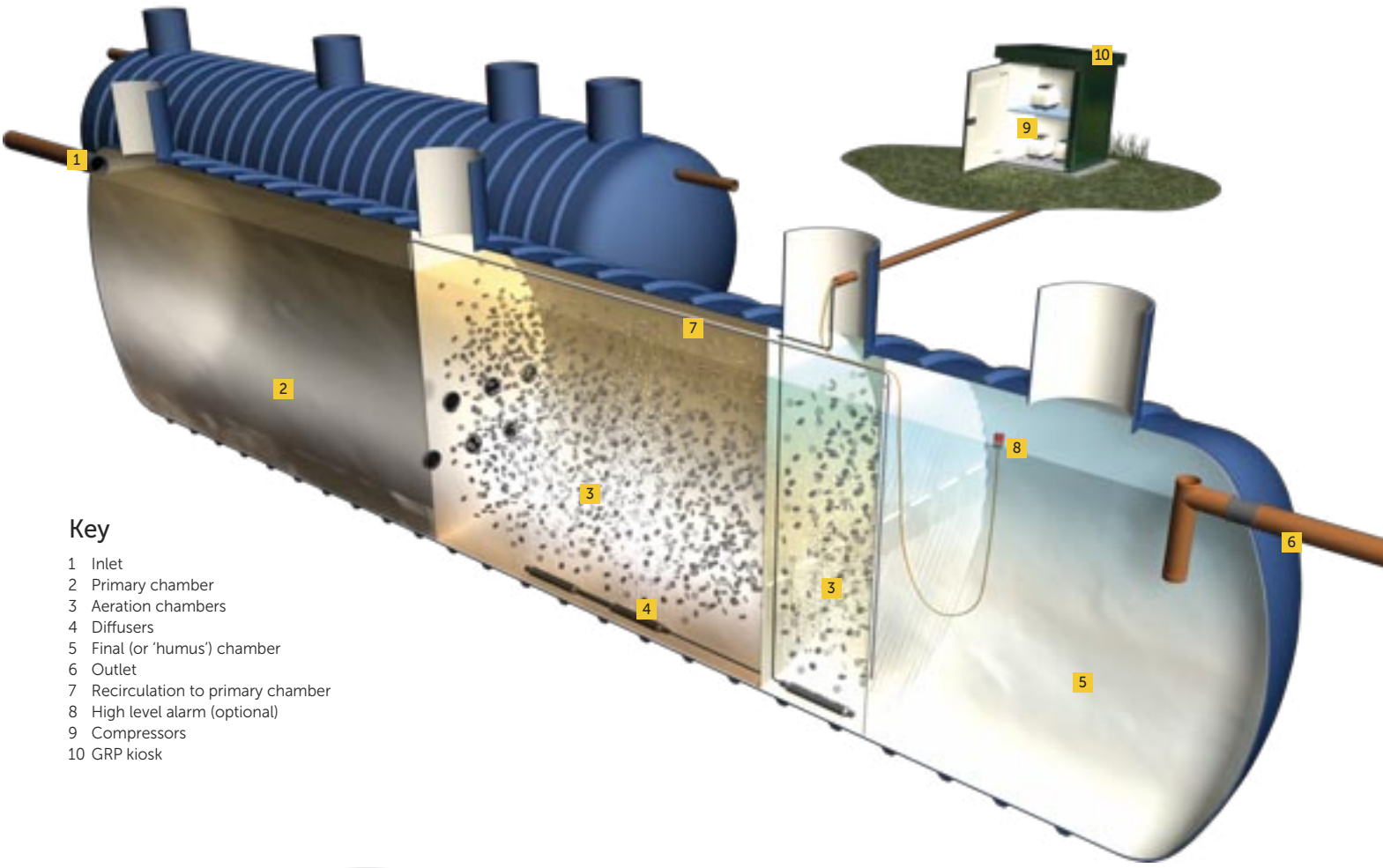
All kiosks are supplied fully assembled, tested and ready for installation. An electrical supply/connection to the kiosk should be all that is required on site (electrical supply requirements will be supplied upon kiosk specification).

Marsh:Standard
Cost-effective sewage treatment
Biological processing for off-mains wastewater

Overview

Marsh:Standard cost-effective sewage treatment systems provide biological treatment to off-mains wastewater on large residential, commercial, industrial and leisure sites ranging from 50-300+PE.

Proven reliability of the simple but effective Submerged Aeration Filtration (SAF-MBBR) system offers both operating and financial benefits when compared to more complex and expensive alternatives that require frequent servicing and maintenance to sustain performance.



Key

1 Inlet
2 Primary chamber
3 Aeration chambers
4 Diffusers
5 Final (or 'humus') chamber
6 Outlet
7 Recirculation to primary chamber
8 High level alarm (optional)
9 Compressors
10 GRP kiosk

This is not a typical tank installation. Configuration and components are shown for illustration purposes only

Benefits

Plant sizing
Designed to BS12255, systems are available from 50-300+ PE in sizes ranging from Ø2.5-3m satisfying the demands of virtually all site conditions.

Class-leading effluent quality
Designed to British Water loadings (150litres per person, 60mg BOD litre and 8mg/litre Ammonia) ensures effluent discharge is well within national consent standards.

Cost-effective operation and maintenance
Systems have no internal moving parts and require minimal ongoing maintenance.

Heavy duty shell as standard
Structurally sound and built to last. Enables easy installation in all ground conditions.

High media surface area
High specification bio-media (310m^3 per m^2) and membrane diffusers provide even circulation to eliminate 'dead spots'.

Low energy compressor(s)
Easily accessible low energy compressor for minimal running, maintenance and servicing costs. Integral alarm detects low pressure in air line.

Internal recirculation
Continues the treatment process to provide higher effluent quality whilst balancing flow over 24 hour period or periods of intermittent use.

Lockable manhole covers (optional)
600mm lockable manhole covers provide significant strength and durability, and helps to reduce possible odours.

Health and Safety considerations
The Marsh:Standard is fitted with many safety features including turret guards, failure alarms for compressor components and high level alarms.

Optional extras
Optional extras include carbon covers for odour control, turret guards for additional safety, polylok filters to further reduce suspended solids, high level alarms and telemetry for monitoring, and risers/pumped outlets for deeper installations.

Manufactured in the UK
All units are manufactured in our twin manufacturing plants at Kettering and Bridgwater. The tanks are constructed using GRP (virgin unfilled resin – no 'fillers' such as chalk) providing consistent wall thickness ensuring superior structural strength and durability.

Specifications

Model	Population served	Width +/-50mm	Length +/-50mm	Height +/-50mm	Inlet		Outlet		Turrets x 4	Desludge
					Invert	Ø	Invert	Ø	Ø	Days
MS55	50-55	2500	4160	2950	600	160	800	160	600	90
MS60	60	2500	4470	2950	600	160	800	160	600	90
MS70	70	2500	5350	2950	600	160	800	160	600	90
MS85	85	2500	6000	2950	600	160	800	160	600	90
MS100	100	2500	6950	2950	600	160	800	160	600	90
MS125	125	2500	8550	2950	600	160	800	160	600	90
MS150	150	2500	10200	2950	600	160	800	160	600	90
MS200	200	2500	13400	2950	600	160	800	160	600	90
MS250	250	3000	9650	3450	600	160	800	160	600	60
MS300	300	3000	9650	3450	600	160	800	160	600	45

> *Pumped outlets are available*
> *The dimensions given on this page are for guidance only*
> *For precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Degrilleur™

Trash barrier for sewage treatment plants and pump stations

Overview

When non dissolvable objects are flushed into the sewer and then into a sewage treatment plant or pump station downstream, it can lead to blockages or worse - possible plant failure.

To combat this Marsh Industries has developed the 'Degrilleur' – a bar screen which prevents any unsuitable materials from entering the system.

The unit has no moving parts and requires no electrics and is suitable for domestic, commercial and industrial installations.

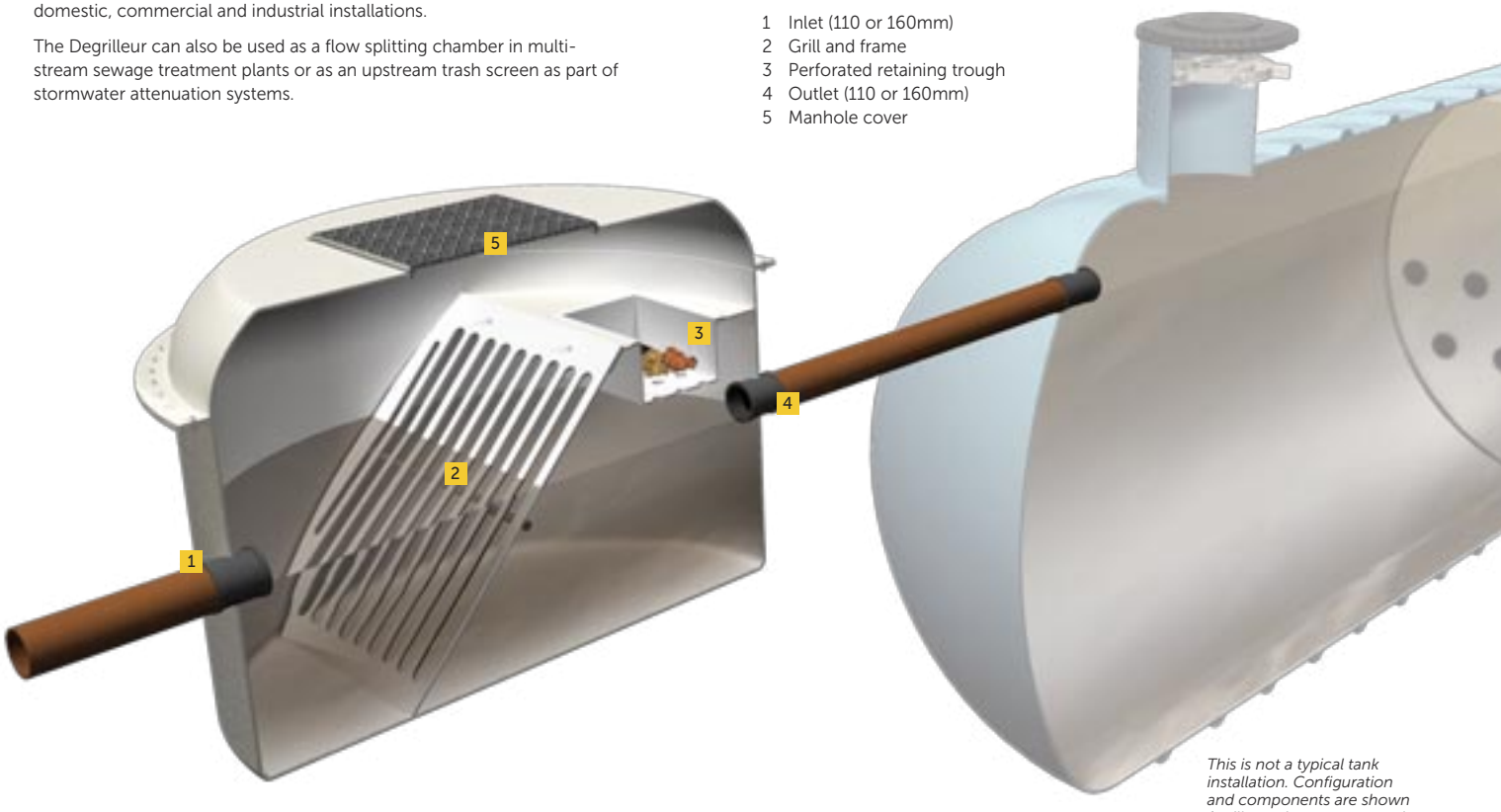
The Degrilleur can also be used as a flow splitting chamber in multi-stream sewage treatment plants or as an upstream trash screen as part of stormwater attenuation systems.

Operating principle

The Marsh Degrilleur, positioned ahead of the system inlet, blocks the debris and forces it to rise to the top of the chamber where it is collected in a retaining trough for disposal.

Key

1 Inlet (110 or 160mm)
2 Grill and frame
3 Perforated retaining trough
4 Outlet (110 or 160mm)
5 Manhole cover



This is not a typical tank installation. Configuration and components are shown for illustration purposes only

Specifications

Cylindrical Degrilleur

Model	Diameter over flanges +/-50mm	Height +/-50mm
MID-1	1950	1283

Horizontal Degrilleur

Model	Diameter over flanges +/-50mm	Height +/-50mm	Length over flanges +/-50mm
MID-2	1950	2284	2860
MID-3	1950	2284	5200

Notes:
> *The dimensions given on this page are for guidance only*
> *For precise tank sizes and turret configurations, please contact Marsh Industries*
> *All dimensions in mm*

Marsh:UV

Effluent disinfection for off-mains drainage

Overview

Marsh Industries has developed an innovative UV disinfection system which removes 99% faecal coliform bacteria levels from sewage treatment plant effluent.

The Marsh:UV Disinfection Unit can be supplied as an integral part within the Marsh Ultra:Polylok range of sewage treatment plants (50-500+PE) or as a stand-alone unit which can be installed at the outlet end of any existing sewage treatment plant.

The UV light(s) are mounted in a sub-assembly which can be easily removed for periodic servicing and bulb replacement. In stand-alone units, the light assembly is mounted in a primary chamber by an anodized aluminium frame. The frame seals against the inner surface of the primary chamber to prevent flow bypass.

When the disinfection unit is filled with waste water, the ultraviolet light source operates continuously with a lamp surface temperature range of 105-120ºF providing optimum UV light output and long lamp lifetime (Power supply is via 230v Single Phase with consumption of a single UV lamp being 45 watts).

In addition to the UV disinfection assembly, a Polylok filter is attached at the inlet pipe to reduce any remaining suspended solids, residual BOD and ammonia levels.

UV treatment performance

A single UV maximum flow through the unit is rated at 16m^3 per day or a peak flow rate .056 litres per second under the following conditions:

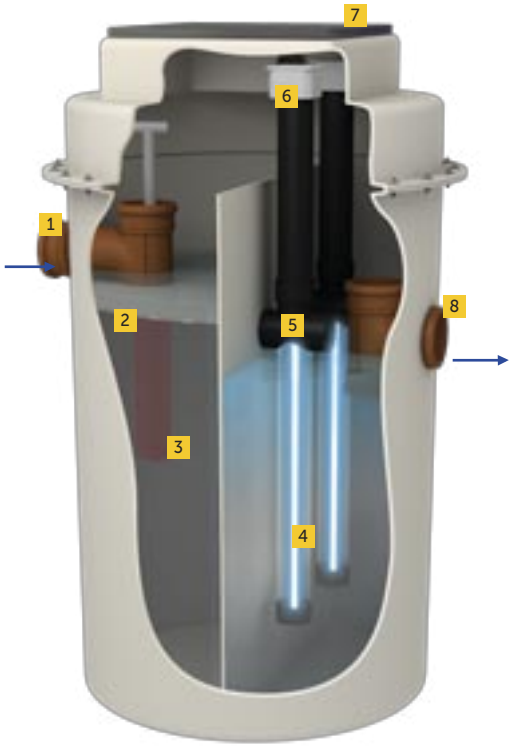
- UV dosage is greater than 5mJ/cm^2
- Suspended Solids – less than 30 mg/litre
- BOD (5 days) – less than 30 mg/litre
- If the effluent is cleaner than the above figures the level of treatment is greater

From the above conditions, the faecal coliform reduction by the Marsh:UV Disinfection Unit exceeds 99.9% or 3-logs, at the end of UV lamp life, which is two years of continuous operation.

Figure 2 below provides an indication of the UV dosage requirements in order to provide a 90-99% reduction in different strains of coronavirus.

Benefits

- Removes 99% faecal coliform bacteria levels from sewage treatment plant effluent
- Optimum UV light distribution assembly for maximum disinfection (UV dosage requirements to provide a 90-99% reduction in different strains of coronavirus)
- Can be supplied as an integral part within the Marsh Ultra:Polylok range of sewage treatment plants (50-500+PE) or as a stand-alone unit
- Unique microfibre tertiary filters further reduce remaining suspended solids, residual biological oxygen demands and ammonia levels
- Optimised for minimal running costs
- Heavy duty shell as standard to enable installation in all ground conditions
- Integral eye bolts for improved on-site handling
- 'Keying-in flange' assists anchoring into granular or concrete surround
- Pedestrian cover included as standard



Key

1 Inlet
2 Filter shelf
3 Polylok filter
4 UV lamps
5 Disinfection chamber
6 Control box
7 Maintenance access cover
8 Outlet

In principle - The effects of UV light on bacteria

Bacteria, which causes some of our most common illnesses, are single cell organisms.

When looking inside a bacterium, the simplicity of the cell is evident; the cell contains DNA, ribosome and other basic proteins – this simplicity increases its susceptibility to UV light.

UV-induced DNA damage can affect how proteins and enzymes are produced. UV can also increase reactive oxygen species production, which can react with the cell wall. The cell wall and other components of the cell can become severely damaged, thus halting cell growth.

Cesspools and holding tanks

For firewater, Elsan waste, silage, aviation fuel and back wash

Overview

Designed and manufactured in accordance with BS4994/ BSEN976, the Marsh range of cesspools provides environmentally safe storage of firewater, Elsan waste, silage and aviation fuel.

Available in capacities up to 100,000 litres in Ø2.5m and Ø3m diameters, the tanks are manufactured using GRP (virgin unfilled resin - no 'fillers' such as chalk) providing consistent wall thickness ensuring superior structural strength and durability. This also enables the tank to be significantly lighter for on-site handling/positioning and better suited to withstand greater hydrostatic pressures when in use.

The tanks are supplied with a chemically resistant gel-coat that protects the fibres in the laminates and provides excellent water and chemical resistance. This inherent integrity allows Marsh to offer an unrivalled 50 year design life, backed by a 25 year structural guarantee.

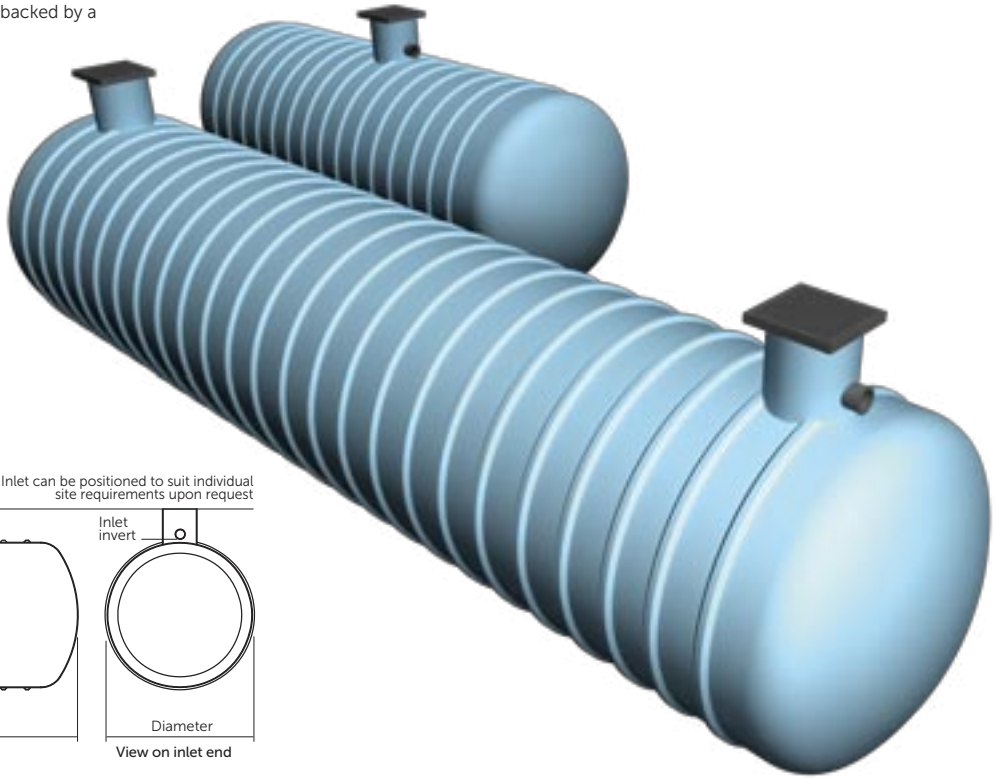
Benefits

- Available in capacities from 20,000 to 100,000 litres in Ø2.5 and Ø3m diameters
- Designed to meet latest UK and European standards
- Heavy duty shells enable installation in all ground conditions
- Variable invert depths and orientations to suit individual site conditions
- Optional high-level alarm available
- Guaranteed for 25 years with a design life of 50 years

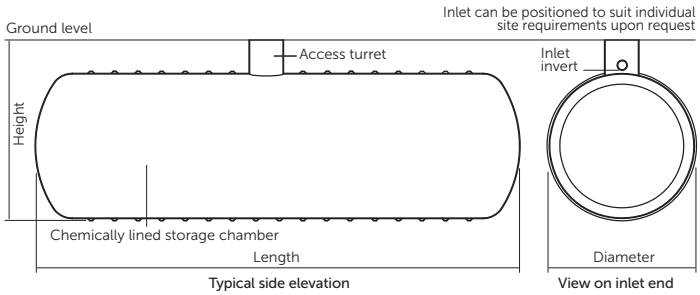
Guidance notes

- *Reference should be made to DEFRA guidance notes 'The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations - UK' and gov.uk guidance 'Storing silage, slurry and agricultural fuel oil'*

Optional Bauer fittings are available



Specifications



Ø2.5m tanks

Capacity Litres	Dia Ø	Length	Height	Inlet Invert	Turret size	No. of Turrets
20,000	2500	4500	3100	500	Ø600x600	1
25,000	2500	5550	3100	500	Ø600x600	1
30,000	2500	6500	3100	500	Ø600x600	1
35,000	2500	7550	3100	500	Ø600x600	1
40,000	2500	8600	3100	500	Ø600x600	2
45,000	2500	9600	3100	500	Ø600x600	2
50,000	2500	10600	3100	500	Ø600x600	2
55,000	2500	11600	3100	500	Ø600x600	2
60,000	2500	12600	3100	500	Ø600x600	2
65,000	2500	13600	3100	500	Ø600x600	2
70,000	2500	14700	3100	500	Ø600x600	2

Ø3m tanks

Capacity Litres	Dia Ø	Length	Height	Inlet Invert	Turret size	No. of Turrets
40,000	3000	6200	3600	500	Ø600x600	1
45,000	3000	6900	3600	500	Ø600x600	1
50,000	3000	7600	3600	500	Ø600x600	1
55,000	3000	8300	3600	500	Ø600x600	1
60,000	3000	9000	3600	500	Ø600x600	2
65,000	3000	9800	3600	500	Ø600x600	2
70,000	3000	10500	3600	500	Ø600x600	2
75,000	3000	11200	3600	500	Ø600x600	2
80,000	3000	11900	3600	500	Ø600x600	2
85,000	3000	12600	3600	500	Ø600x600	2
90,000	3000	13300	3600	500	Ø600x600	2
95,000	3000	14000	3600	500	Ø600x600	2
100,000	3000	14700	3600	500	Ø600x600	2

Notes:
> *The dimensions given on this page are for guidance only*
> *For precise tank sizes and turret configurations, please contact Marsh Industries*
> *All dimensions in mm*

Agri-silage tanks

Silage effluent tanks and chemically lined cesspools

Overview

Designed and manufactured in accordance with BS4994/BSEN976, the Marsh range of silage tanks provides environmentally safe underground storage of silage effluent, capturing runoff from silage clamps. The contents are then emptied at appropriate intervals by tankers.

For specialist applications, Marsh silage tanks can be chemically lined to provide secure storage of chicken manure and other chemically tainted wastewater. This ensures long-term durability of the tank structure while maintaining full environmental protection in demanding agricultural and industrial settings.

Guidance notes:

> Reference should be made to DEFRA guidance notes 'The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations – UK' and gov.uk guidance 'Storing silage, slurry and agricultural fuel oil'
> Correct allowance for effluent tank capacity in line with the Silo/Clamp capacity must be made
> Optional Bauer fittings are available
> Configuration and components are shown for illustration purposes only

Benefits

- Capacities range from 2,800 to 100,000 litres
- Available in diameters of Ø2.5m and Ø3m
- Supplied with high level alarm for Environment Agency compliance
- Manufactured using GRP (no 'fillers' such as chalk)
- Consistent wall thickness ensures superior strength and durability
- Lightweight for easy handling and positioning
- Able to withstand greater hydrostatic pressures
- Supplied with a chemically resistant gel-coat
- Provides excellent water and chemical resistance
- Offers a 50-year design life with a 25-year structural guarantee

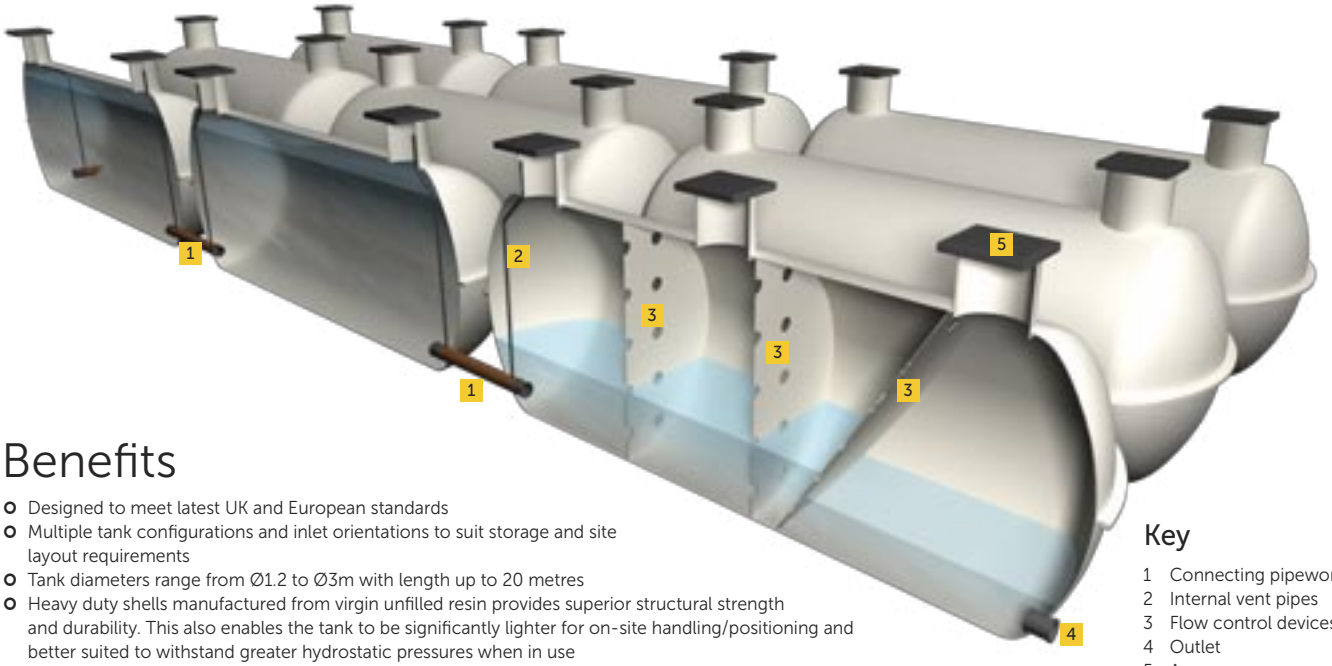
Storm Dammer®

Stormwater flow attenuation

Overview

Available in capacities from 2800-110000 litres in multiple configurations with tank sizes ranging from Ø1.2m to Ø3m diameters, the Storm Dammer alleviates the risk of flooding and reduces pressure on drains/sewers by storing the excess flow of stormwater before controlled discharge downstream.

Greater capacity and ease of inspection and maintenance makes Storm Dammer the industry choice for developers, municipal planners and civil engineers.



Benefits

- Designed to meet latest UK and European standards
- Multiple tank configurations and inlet orientations to suit storage and site layout requirements
- Tank diameters range from Ø1.2 to Ø3m with length up to 20 metres
- Heavy duty shells manufactured from virgin unfilled resin provides superior structural strength and durability. This also enables the tank to be significantly lighter for on-site handling/positioning and better suited to withstand greater hydrostatic pressures when in use
- Tank design offers easy access for inspection, maintenance and cleaning when compared to inaccessible crate systems
- Systems can be fitted with flow control devices and orifice plates to regulate storage and discharge
- Easily accessible, low energy submersible pumps ensure minimal running, maintenance and servicing costs
- Guaranteed for 25 years with a design life of 50 years

Key

1 Connecting pipework
2 Internal vent pipes
3 Flow control devices
4 Outlet
5 Access manways

This is not a typical tank installation. Configuration and components are shown for illustration purposes only

Fittings and accessories

Orifice baffles

Utilising Marsh Industries' unique Gaia Storm Dammer program, in conjunction with the Micro Drainage Design program, the standard range of Storm Dammer tanks are designed using orifice baffles as the primary flow attenuation system.

Precise calculations from the Gaia Storm Dammer program ensures that the correct type of orifice baffles are distributed throughout the system to deliver the optimum outflow required.

Flood and storm control valves

Storm Dammer systems can be designed to include Vortex Storm Control units which can reduce out-flow on varying scales.

Pumps can also be fitted to upline chambers allowing stored water to be distributed to other chambers that may not be in the immediate area.

Pumps

Marsh Industries works in partnership with major UK pump manufacturers to develop attenuation tanks and pump chambers that are designed to distribute water to the mains drainage network or to other off-site storage tanks. Pumps can be supplied as single, twin or multi-line installations in both single and three phase.

AUTOadapt™ sump pump

Designed for a range of water and wastewater applications, the AUTOadapt pump removes the complexity of standard submersible pumps by combining all external sensors switches and cables from the pit within the pump itself. This simplifies installation and operation, and vastly increases reliability.

Guidance for civils/commercial sewage treatment solutions

Project management and system design

Project management

With extensive experience of managing the design, manufacture and despatch of pump stations, sewage treatment plants, attenuation tanks, rainwater harvesting systems and associated products, Marsh Industries' Civils Team works closely with clients to ensure projects are delivered on time and on budget.

The company trains its team to recognised competency standards to address the growing management requirements from order placement through to delivery and installation.

All products are backed by Marsh Industries commercial and technical support.

Post installation and commissioning visits are available, together with service and maintenance contracts if required.

Specifier resources

To support consultants, engineers and specifiers, Marsh Industries provides access to a wide range of resources, including SpecifiedBy, NBS+ specifications, BIM images, and detailed technical drawings. These tools make it easier to integrate Marsh products into project designs with accuracy and confidence. In addition, direct links to the technical library on the Marsh Industries website ensure quick access to up-to-date product data, compliance information and supporting documentation.

SpecifiedBy NBS Source PARTNER Achilles UVDB SILVER PLUS

Gaia Sege® process design

Developed by Marsh Industries, the unique Gaia Sege process design software uses core information to accurately calculate and tailor key variables ensuring total optimisation for individual applications.

These precise calculations provide assurance to consultants, engineers, specifiers and contractors that the system is specifically designed to meet the appropriate standards of regulatory bodies.

Sewage treatment plants

For sewage treatment plants, the software uses established core process equations to accurately calculate and tailor key variables ensuring total processing optimisation for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS) and Ammonia (NH_4) reduction and removal.

Gaia Sege software also uses 'British Water Flows & Loads' data to calculate initial flows and loadings whilst also calculating peak flows and levels.

The programme can also calculate accurate sludge generation and storage on a daily basis, dependent upon final effluent standards required, ensuring the optimisation of primary chambers, individual clarifiers, diffused oxygen feed and final settlement chamber.

Pump chambers

Gaia Sege utilises current building regulations to calculate precise storage chamber sizes. Pump systems are determined by using friction head loss calculations based on minimum self-cleansing velocities in order to specify the best possible pump(s) for the application.

Grease traps

Appropriate grease trap sizes are generated by accounting for the amount of grease and flow generated from the grease producing facility whilst providing adequate retention time befitting of these variables.

Storm Dammer water attenuation tanks

Marsh Industries' rainfall storage sizing programme, Gaia Storm Dammer, can simulate the calculated flood storage required for any prolonged period within a set geographic area (ie, 1 in 5 year or 1 in 100 year rainfall).

Structural integrity testing

Structural integrity tests, performed in accordance with EN ISO 179-1/1eA: 2010-11, were undertaken to evaluate the strength of Marsh Industries' GRP materials against similar GRP materials used by other manufacturers.

Three separate material samples were submitted for impact testing; Marsh GRP material (virgin unfilled resin), a GRP material containing calcium fillers and a GRP material containing sand filler.

The tests involved 12 samples of each material at a size of 80x10x5mm. The nominal pendulum energy was 15J at an impact velocity of 3.8m/s.

Results proved Marsh GRP material to be 40% stronger than the other materials tested.

Fire resistance testing

Fire resistance testing was performed to assess ignitability of products subjected to direct impingement of flame. Marsh Industries' GRP material passed all practical testing to achieve EN ISO 11925-2:2010 standard.

Note:

> *Marsh Techincal Library - https://marshindustries.co.uk/product-technical-library/*
> *Downloads for Architects, Engineers, Consultants and Specifiers - https://marshindustries.co.uk/bim-cad-library/*

Guidance for domestic sewage treatment solutions

General guidance as provided by environmental regulators

As stated in this brochure, for development proposals in sewered areas it is usually a legal requirement to connect to the public sewer, either by gravity or pumping, as the sewage is conveyed to a municipal sewage treatment works.

However, if it can be demonstrated that the proposed sewage disposal system offers a more sustainable solution to the overall water management of the site, then the regulators will consider the installation of a 'private' system.

For any such proposal you should:

- Check with your regulating body to confirm current status with regard to Registration/Consent, quality and volume limits, etc
- Take account of the requirements of Building Regulations and discuss with the local planning authority at an early stage - well before any planning application is made

Drainage fields

If you have access to a suitable area of land, discharge from your septic tank or treatment plant to a properly designed and sized drainage field is the best environmental option as the treated effluent recharges groundwater, nutrients are retained in the soil, and nutrient loads on surface waters are reduced.

The most common form of drainage field is a subsurface percolation area comprising perforated infiltration pipes laid in shingle-filled trenches – normally within 1m of ground level to allow the micro-organisms in the soil to break down the organic matter, and at least 1.2m above the winter water table.

The drainage field has two principal purposes:

1. To allow percolation of partially treated/treated effluent to ground at a controlled rate
2. To allow further treatment of partially treated effluent before it reaches the groundwater level

Before you can dispose of effluent via a drainage field you first need to assess whether such a route is appropriate, ie, you have a good depth of well-drained, well-aerated soil away from watercourses, wells/boreholes, dwellings, and avoiding sloping sites and areas prone to waterlogging.

Trial hole and percolation test method (See figure 1)

To calculate the exact area of land required for effective disposal an 'assessment' is required, usually by performing a percolation/water table test as outlined in BS6297 (Code of Practice for the Design and Installation of Drainage Fields for use in Wastewater Treatment) and the latest version of Building Regulations: H2.

A **trial hole** should be dug to determine the position of the standing groundwater table a minimum of 1m² in area and 2m deep, or a minimum of 1.5m below the invert of the proposed drainage field pipework. The groundwater table should not rise to within 1m of the invert level of the proposed effluent distribution pipes. If the test is carried out in summer, the likely winter groundwater levels should be considered.

A **percolation test** should then be carried out to assess the further suitability of the proposed area. A hole 300mm square should be excavated to a depth 300mm below the proposed invert level of the effluent distribution pipe. Where deep drains are necessary the hole should conform to this shape at the bottom, but may be enlarged above the 300mm level to enable safe excavation to be carried out.

Fill the 300mm square section of the hole to a depth of at least 300mm with water and allow it to seep away overnight.

Next day, refill the test section with water to a depth of at least 300mm and observe the time, in seconds, for the water to seep away from 75% full to 25% full level (ie, a depth of 150mm). Divide this time by 150. The answer gives the average time in seconds (Vp) required for the water to drop 1mm.

The test should be carried out at least three times with at least two trial holes and the average figure from the tests should be taken. The test should not be carried out during abnormal weather conditions such as heavy rain, severe frost or drought.

Drainage field disposal should only be used when percolation tests indicate average values of **Vp of between 12 and 100.** This minimum value ensures that untreated effluent cannot percolate too rapidly into groundwater. Where Vp is outside these limits effective treatment is unlikely to take place in a drainage field.

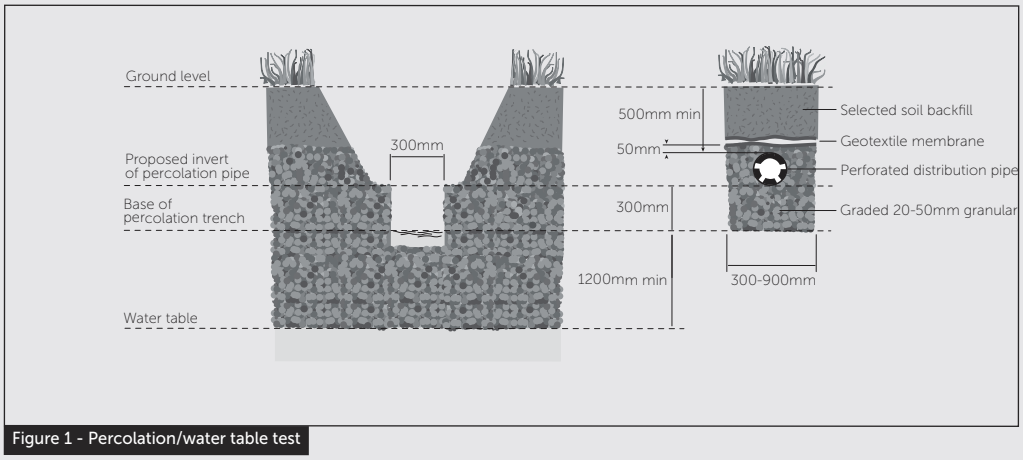


Figure 1 - Percolation/water table test

Note:

> *The phrase 'soakaway' is often used in relation to septic/treatment plant discharges. However, the purpose of a 'soakaway' is to distribute* ***surface water*** *to ground as quickly as possible and does not provide the required features of a drainage field.*

Drainage field construction (See figures 1 and 2)

Drainage fields should be designed and constructed to ensure aerobic contact between the liquid effluent and the subsoil using perforated pipe laid in trenches:

- Pipes should be laid on a 300mm layer of clean shingle or broken stone (graded between 20mm and 50mm) at a minimum depth of 500mm and a uniform gradient not steeper than 1:200
- Trenches should be filled to a level 50mm above the pipe and covered with a layer of geotextile to prevent the entry of silt. The remainder of the trench can be filled with soil
- Trenches should be from 300mm to 900mm wide with areas of undisturbed ground 2m wide being maintained between parallel trenches.
- An inspection chamber should be installed between the septic tank and the drainage field
- Drainage fields should be set out as a continuous loop fed from the inspection chamber

To calculate the floor area of the drainage field (A_t in m^2), the following formulas should be used:

For septic tanks: $A_t = p \times V_p \times 0.25$
For treatment plants: $A_t = p \times V_p \times 0.20$

Where p is the number of persons served by the tank and V_p is the percolation value (secs/mm) obtained.

If it is not possible to discharge to a drainage field but you can discharge to a watercourse, coastal water or surface water sewer you should consider installing a package sewage treatment plant to treat sewage to a sufficient standard as to allow direct discharge to the receiving waters.

Tank sizing

The size of sewage treatment system you will require depends on the number of people that occupy the site and their activities, and it is at this stage you should re-contact Marsh.

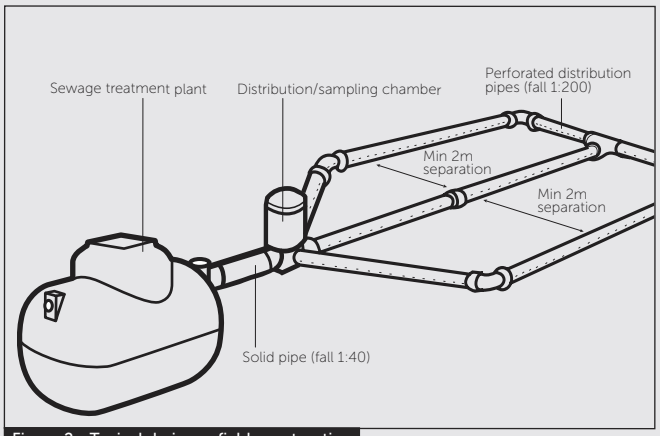


Figure 2 - Typical drainage field construction

You will need to provide detailed information about the sewage to be treated and its disposal method to enable calculation of the size of plant you will need. It is essential that you give accurate information as incorrect specification may result in the system you are provided with being inadequate and not treating the sewage effectively, leading to foul smells and possible pollution.

Distance from properties

Guidance collated from several sources recommends the following:

Distance from	Dwelling	Watercourse	Borehole/well
Pump chamber:			
1-5 dwellings	5m	-	-
6-20 dwellings	10m	-	-
20+ dwellings	15m	-	-
Septic tank	7m	10m	50m
Treatment plant	7m	10m	50m
Cesspool	7m	10m	50m
Drainage field	15m	10m	50m

Desludging

Sewage treatment is an ongoing process and the micro-organisms must stay healthy for the system to work. You should desludge the system regularly (usually annually or in line with manufacturer instructions) to prevent the build-up of sludge and solids to ensure sewage flows freely through the unit. It is recommended that not all sludge is removed as it can act as an anaerobic seed.

Tanks should be inspected monthly to check they are working correctly – the inlet chamber should be free-flowing and the effluent from the outlet should be free-flowing and clear.

Where emptying is by tanker, siting within 30m of suitable vehicle access point is recommended.

Notes:

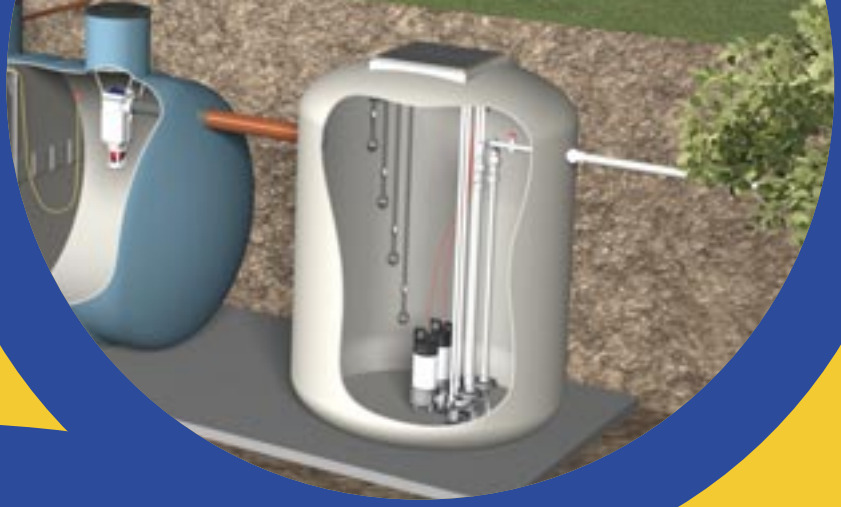
> *Septic tanks can only discharge to ground via a drainage field – discharge to a watercourse (stream, ditch, pond) is not allowed.*

> *Drainage fields are not permitted in Zone 1 groundwater protection zones.*

> *No underground services or access roads/driveways/paved areas should be located in the disposal area.*

> *Discharge from a sewage treatment plant requires a smaller (20% less) drainage field than a septic tank for effective treatment.*

> *Elevated drainage mounds can provide an alternative to drainage fields in certain circumstances as they provide an aerated layer of soil where a conventional drainage field is inappropriate due to occasional waterlogging.*



SUMP2DRAIN & WELLWATER™ PUMP STATIONS

The most comprehensive range of pump stations available in the UK

Pump stations available in capacities up to 100,000 litres

When discharge to mains is required, but to do so by gravity is impractical, a Marsh SUMP2DRAIN or WellWater pump station will be needed.

There are several factors that play a role in identifying precisely the right tank size/type that is required for your project. Marsh's system designers can work closely with you to identify all key requirements in accompaniment with Marsh Industries' unique process design software, Gaia Sege.

Pump station systems are available as vertical or horizontal units in various sizes.

Why specify a Marsh pump station?

- Designed to British Standard European Norm's:
  - *BSEN12050 for structural strength and water-tightness*
  - *BSEN752 to comply with hydrostatic and electrical requirements*
  - *BSEN752-6 for drain and sewer systems in outside buildings*
- Smooth internal walls and integral pump well improves pump efficiency and eliminates 'dead spots' which can lead to odours and septicity
- Variable invert depths and orientations to suit individual site conditions
- Pre-assembled pipework for fully automatic operation
- Unique 'keying-in' lip on WellWater:Seine range assists anchoring into concrete surround

Applications

Marsh pump stations are suitable for sewage, foul water, grinders and surface water (twin/single) applications in all domestic, commercial and industrial sites:

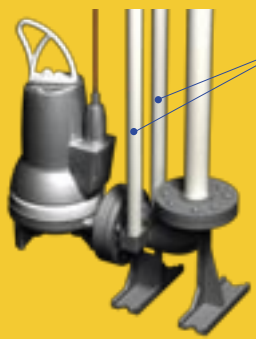
- Agricultural water and wastewater
- Biofuel systems
- Commercial buildings
- Domestic buildings
- Food processing
- Industrial boilers
- Industrial wastewater
- Industrial water treatment
- Marine
- Mining
- Pharmaceuticals
- Wastewater transport
- Wastewater treatment
- Water distribution
- Water intake
- Water treatment

Pump options

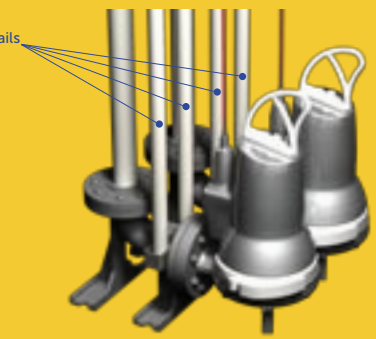
Marsh uses market-leading submersible pumps throughout its range of pump stations to ensure maximum reliability and efficiency with minimal clogging or wear. Pump stations can be specified with a single free-standing pump or single and twin pumps with guide rails as illustrated below.

Note: Floats can be fitted directly to specific pump systems. Please contact Marsh Industries to discuss your project requirements.

Single free-standing pump



Single pump with guide rails



Twin pumps with guide rails

Pump station maintenance packages

Pump station maintenance packages provide peace of mind that your pump and associated equipment will continue to work reliably and effectively, whilst at the same time considerably extending their working-life expectancy.

Pump stations covered by Marsh maintenance packages suffer far fewer intermediate breakdowns, making scheduled maintenance an extremely cost-effective safeguard against potential failure.

For details on Marsh pump station maintenance packages contact 01933 654582 or email sales@marshindustries.co.uk.

Guidance notes

- *Where foul water drainage from a domestic property is to be pumped to mains the effluent receiving chamber should be sized to contain 24-hour inflow to allow for disruption in service, the minimum daily discharge being taken as 150 litres per person per day*
- *For other building types the capacity of the receiving chamber should be based on the calculated daily demand of the water intake for the building, or when only a proportion of the foul sewage is to be pumped then the capacity should be based pro-rata*
- *If the sewer is to be 'adopted' by a local water authority, please contact Marsh Industries as Sewers for Adoption (SFA) specification and additional local authority related criteria may apply*

SUMP2DRAIN

Surface and foul water pump stations

Compact, efficient and reliable

Overview

Marsh SUMP2DRAIN pump stations provide a convenient solution when gravity drainage is not feasible on-site. In these situations, waste from the property flows into an underground storage chamber, which is then pumped to the main sewer. These packaged pump stations are versatile, handling both foul water (sewage) and surface water applications.

Each pump station arrives on-site as a complete package, including all internal pipe work and a drainage pump. For added safety, we recommend installing a high-level alarm (available as an optional extra). All systems adhere to BSEN752-6 standards.

Applications

The Marsh 'S' (Surface water) models are capable of handling effluent, surface and ground water. The Marsh190S model can also manage grey water from showers and wash-hand basins, but it is not suitable for foul water from a W.C.

The Marsh 'F' (Foul water) models handle sewage from extensions, garden rooms, small conversions and for pumping sewage to septic tanks, sewage treatment plants or to the mains sewer.

System sizing and specification

For precise sizing and product specification, please contact the Marsh technical team on 01933 654582 or email sales@marshindustries.co.uk

Features

- **Easy installation**
  The Marsh Sump2Drain range is manufactured from high-grade MDPE and is small and compact for easy installation. Unique 'keying-in' lip assists anchoring in concrete.
- **Versatile applications**
  Removes grey water from final effluent in sewage treatment plants, drains, cellars and basements, and handles sinks, showers, kitchens and dishwashers. Handles sewage from extensions, garden rooms, small conversions and for pumping sewage to septic tanks, sewage treatment plants or to the mains sewer.
- **Reliable storage**
  Provides 24-hour pumping capability and adheres to BSEN752-6 standards.
- **Readily available**
  The units are in stock and all necessary components are included. Surface water systems feature a submersible
  pump with 10mm solid handling pump. Foul water systems offer a submersible pump with 50mm solid handling pump.

Pump options

Marsh uses market-leading submersible pumps throughout its SUMP2DRAIN range to ensure maximum reliability and efficiency with minimal clogging or wear.

High level alarm

A high level alarm monitors the level of water in the pump station. An alarm signal is generated when there is an excessive level of water.

Typical tank configuration

1 Heavy duty MDPE or GRP shell
2 450 or 600mm access cover
3 Single or twin pump arrangements
4 32mm or 63mm pumped outlet
5 Delivery pipework

SUMP2DRAIN

Ø600 & 1000 models

Specifications

EXAMPLE MODEL:
Marsh190S-6 | Ø600x600mm

Ø600mm MDPE surface water pump stations

With depths ranging from 600-2000mm

Surface water Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Storage Litres	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH190S-6	6m	600	600	190	32/50	tbc	0.25
MARSH190S-10	10m	600	600	190	32/50	tbc	0.55
MARSH300S-6	6m	600	1000	300	32/50	tbc	0.25
MARSH300S-10	10m	600	1000	300	32/50	tbc	0.55
MARSH440S-6	6m	600	1500	440	32/50	tbc	0.25
MARSH440S-10	10m	600	1500	440	32/50	tbc	0.55
MARSH590S-6	6m	600	2000	590	32/50	tbc	0.25
MARSH590S-10	10m	600	2000	590	32/50	tbc	0.55

EXAMPLE MODEL:
Marsh300F-10 | Ø600x1000mm

Ø600mm MDPE foul water pump stations

With depths ranging from 600-2000mm

Foul water Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Storage Litres	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH190F-6	6m	600	600	190	63	tbc	0.37
MARSH190F-10	10m	600	600	190	63	tbc	0.37
MARSH300F-6	6m	600	1000	300	63	tbc	0.75
MARSH300F-10	10m	600	1000	300	63	tbc	0.75
MARSH440F-6	6m	600	1500	440	63	tbc	0.37
MARSH440F-10	10m	600	1500	440	63	tbc	0.75
MARSH590F-6	6m	600	2000	590	63	tbc	0.37
MARSH590F-10	10m	600	2000	590	63	tbc	0.75

EXAMPLE MODEL:
Marsh1015-10 | Ø1000x1500mm

Ø1000mm MDPE foul water / grinder pump stations

With depths ranging from 1000-2500mm

Foul water Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH1010-6	6m	1000	1000	63	tbc	0.25
MARSH1010-10	10m	1000	1000	63	tbc	0.55
MARSH1015-6	6m	1000	1500	63	tbc	0.25
MARSH1015-10	10m	1000	1500	63	tbc	0.55
MARSH1020-6	6m	1000	2000	63	tbc	0.25
MARSH1020-10	10m	1000	2000	63	tbc	0.55
MARSH1025-6	6m	1000	2500	63	tbc	0.25
MARSH1025-10	10m	1000	2500	63	tbc	0.55

Grinder Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH1010-10-GRINDER	10m	1000	1000	63	tbc	1.18
MARSH1015-10-GRINDER	10m	1000	1500	63	tbc	1.18
MARSH1020-10-GRINDER	10m	1000	2000	63	tbc	1.18
MARSH1025-10-GRINDER	10m	1000	2500	63	tbc	1.18

SUMP2DRAIN

Ø1100 & 1200 models

Specifications

EXAMPLE MODEL:
Marsh1115-10 | Ø1100x1500mm

Ø1100mm GRP foul water / grinder pump stations

With depths ranging from 1100-2600mm

Foul water Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH1111-6	6m	1100	1100	63	tbc	0.25
MARSH1111-10	10m	1100	1100	63	tbc	0.55
MARSH1115-6	6m	1100	1500	63	tbc	0.25
MARSH1115-10	10m	1100	1500	63	tbc	0.55
MARSH1122-6	6m	1100	2200	63	tbc	0.25
MARSH1122-10	10m	1100	2200	63	tbc	0.55
MARSH1126-6	6m	1100	2600	63	tbc	0.25
MARSH1126-10	10m	1100	2600	63	tbc	0.55

Grinder Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH1111-10-GRINDER	10m	1100	1100	63	tbc	1.18
MARSH1115-10-GRINDER	10m	1100	1500	63	tbc	1.18
MARSH1122-10 GRINDER	10m	1100	2200	63	tbc	1.18
MARSH1126-10-GRINDER	10m	1100	2600	63	tbc	1.18

EXAMPLE MODEL:
Marsh1220-10 | Ø1200x2000mm

Ø1200mm GRP foul water / grinder pump stations

With depths ranging from 2000-3000mm

Foul water Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH1220-6	6m	1200	2000	63	tbc	0.25
MARSH1220-10	10m	1200	2000	63	tbc	0.55
MARSH1225-6	6m	1200	2500	63	tbc	0.25
MARSH1225-10	10m	1200	2500	63	tbc	0.55
MARSH1230-6	6m	1200	3000	63	tbc	0.25
MARSH1230-10	10m	1200	3000	63	tbc	0.55

Grinder Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH1220-10-GRINDER	10m	1200	2000	63	tbc	1.18
MARSH1225-10-GRINDER	10m	1200	2500	63	tbc	1.18
MARSH1230-10-GRINDER	10m	1200	3000	63	tbc	1.18

“

Marsh’s experienced and knowledgeable team promptly and accurately interpret our requirements. We put full confidence in Marsh from pricing to completion for all of our project requirements.

– Client testimonial

SUMP2DRAIN

Ø1500 & 1800 models

Specifications

EXAMPLE MODEL:
Marsh1520-10 | Ø1500x2000mm

Ø1500mm GRP foul water / grinder pump stations

With depths ranging from 1500-2750mm

Foul water Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH1515-6	6m	1500	1500	63	tbc	0.25
MARSH1515-10	10m	1500	1500	63	tbc	0.55
MARSH1520-6	6m	1500	2000	63	tbc	0.25
MARSH1520-10	10m	1500	2000	63	tbc	0.55
MARSH15225-6	6m	1500	2250	63	tbc	0.25
MARSH15225-10	10m	1500	2250	63	tbc	0.55
MARSH1525-6	6m	1500	2500	63	tbc	0.25
MARSH1525-10	10m	1500	2500	63	tbc	0.55
MARSH15275-6	10m	1500	2750	63	tbc	0.25
MARSH15275-10	10m	1500	2750	63	tbc	0.55
MARSH1515-7-80	7m	1500	1500	80	tbc	1.1
MARSH1520-7-80	7m	1500	2000	80	tbc	1.1
MARSH15225-7-80	7m	1500	2250	80	tbc	1.1
MARSH1525-7-80	7m	1500	2500	80	tbc	1.1
MARSH15275-7-80	7m	1500	2750	80	tbc	1.1

Grinder Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH1515-10-GRINDER	10m	1500	1500	63	tbc	1.18
MARSH1520-10-GRINDER	10m	1500	2000	63	tbc	1.18
MARSH15225-10-GRINDER	10m	1500	2250	63	tbc	1.18
MARSH1525-10-GRINDER	10m	1500	2500	63	tbc	1.18
MARSH15275-10-GRINDER	10m	1500	2750	63	tbc	1.18
MARSH1821-10-GRINDER	10m	1800	2100	63	tbc	1.18

EXAMPLE MODEL:
Marsh1821-10 | Ø1800x2100mm

Ø1800mm GRP foul water pump stations

With 2100mm depth

Foul water Model	Pump Head	Diameter +/-50mm	Depth +/-50mm	Outlet MDPE Ø mm	Outlet invert	Power kw
MARSH1821-6	6m	1800	2100	63	tbc	0.25
MARSH1821-10	10m	1800	2100	63	tbc	0.55
MARSH1821-7-80	6m	1800	2100	80	tbc	1.1

> Our 'in-house' engineer has always stated that the Marsh pump chambers are the best to install, commission and service, which means happy customers that return time after time for reliable products.
>
> *– Client testimonial*

WellWater:Nile

Ø1.8m pump stations

Marsh WellWater:Nile pump stations are Ø1.8m vertical units, available in 3000mm and 4000mm heights with storage capacities of 7250 litres and 9800 litres respectively.

Each system is supplied as a complete unit with either single or twin submersible pumps with guide rails and high quality internal pipework/fittings as standard.

These pump stations are typically used in large domestic or commercial applications for pumping foul water or sewage to mains sewer.

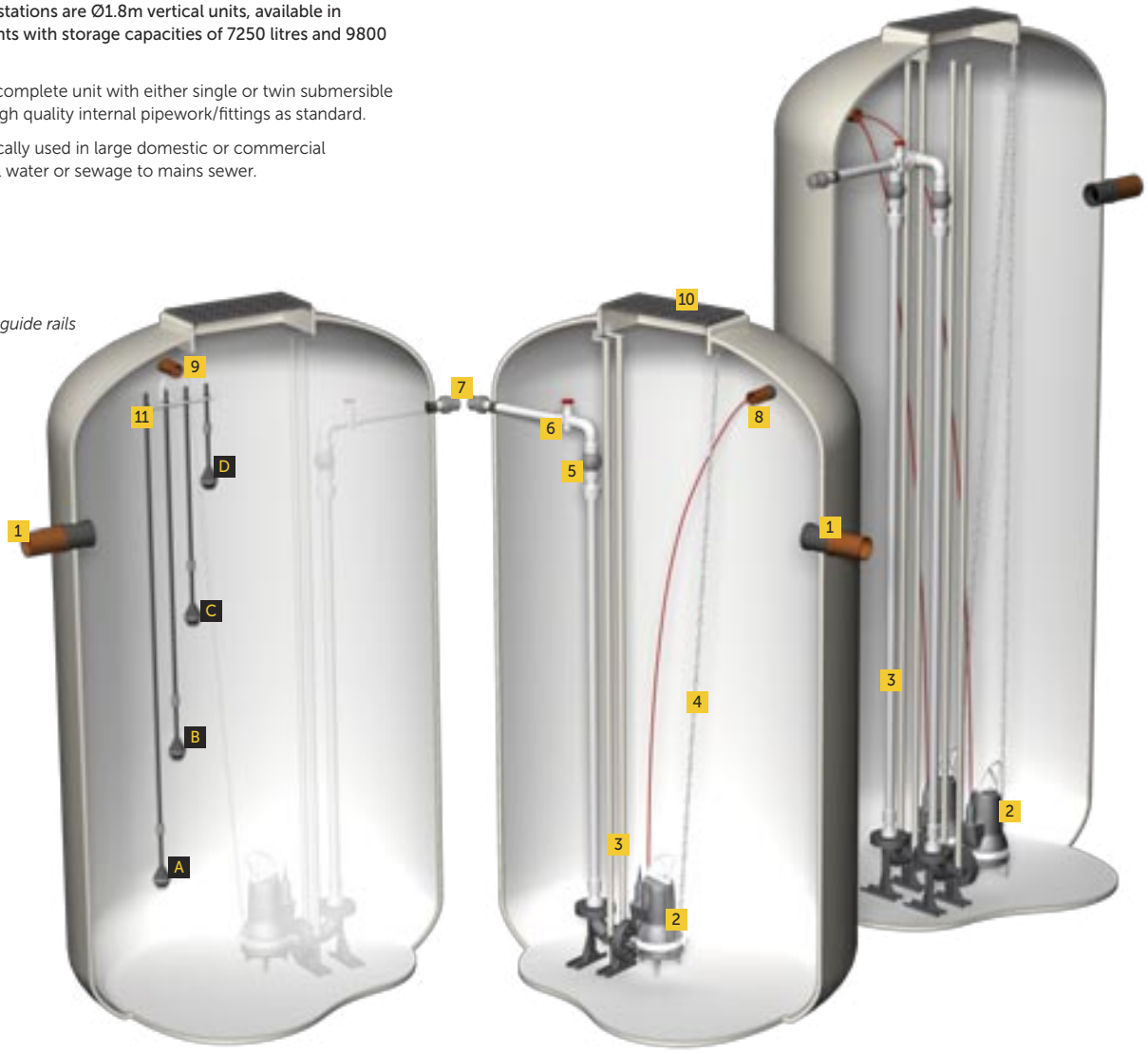
Key

1 Inlet
2 Submersible pump(s)
Single or twin pumps with guide rails
3 Guide rails
4 Pump retrieval chain
5 Non-return valve(s)
6 Gate valve
7 Outlet connection
8 Ducting and cable entry points
9 Vent
10 Manway access
11 Float bracket

Float configuration options

A Pump 'OFF' float switch
B Pump 1 'ON' float switch
C Pump 2 'ON' float switch
On twin pump config's
D High water float switch

Note: Floats can be fitted directly to specific pump systems. Please contact Marsh Industries to discuss your project requirements.



WellWater:Nile range

Model	Single/Twin pump	Application	Diameter mm	Depth mm	Total storage Litres	Invert mm	Pipework dia mm
SS1830	Single	Sewage	1800	3000	7250	minimum 500	110 or 160
TS1830	Twin	Sewage	1800	3000	7250	minimum 500	110 or 160
SS1840	Single	Sewage	1800	4000	9800	minimum 500	110 or 160
TS1840	Twin	Sewage	1800	4000	9800	minimum 500	110 or 160
SG1830	Single	Grinders	1800	3000	7250	minimum 500	110 or 160
TG1830	Twin	Grinders	1800	3000	7250	minimum 500	110 or 160
SG1840	Single	Grinders	1800	4000	9800	minimum 500	110 or 160
TG1840	Twin	Grinders	1800	4000	9800	minimum 500	110 or 160

Notes:
> *All pump stations are available for dirty water (DW) or sewage (SW), in single pump (SP) and twin pump (TP) configurations*
> *The dimensions given on this page are for guidance only*
> *For precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Tank configurations and components are shown for illustration purposes only

WellWater:Amazon

Ø2.5m pump stations

Marsh WellWaterAmazon pump stations are Ø2.5m horizontal units, available in storage capacities ranging from 7710 litres to 100,000 litres.

Each system is supplied as a complete unit with either twin submersible pumps with guide rails and high quality internal pipework/fittings as standard.

These pump stations are typically used in extra large domestic or commercial applications for pumping foul water or sewage to mains sewer.

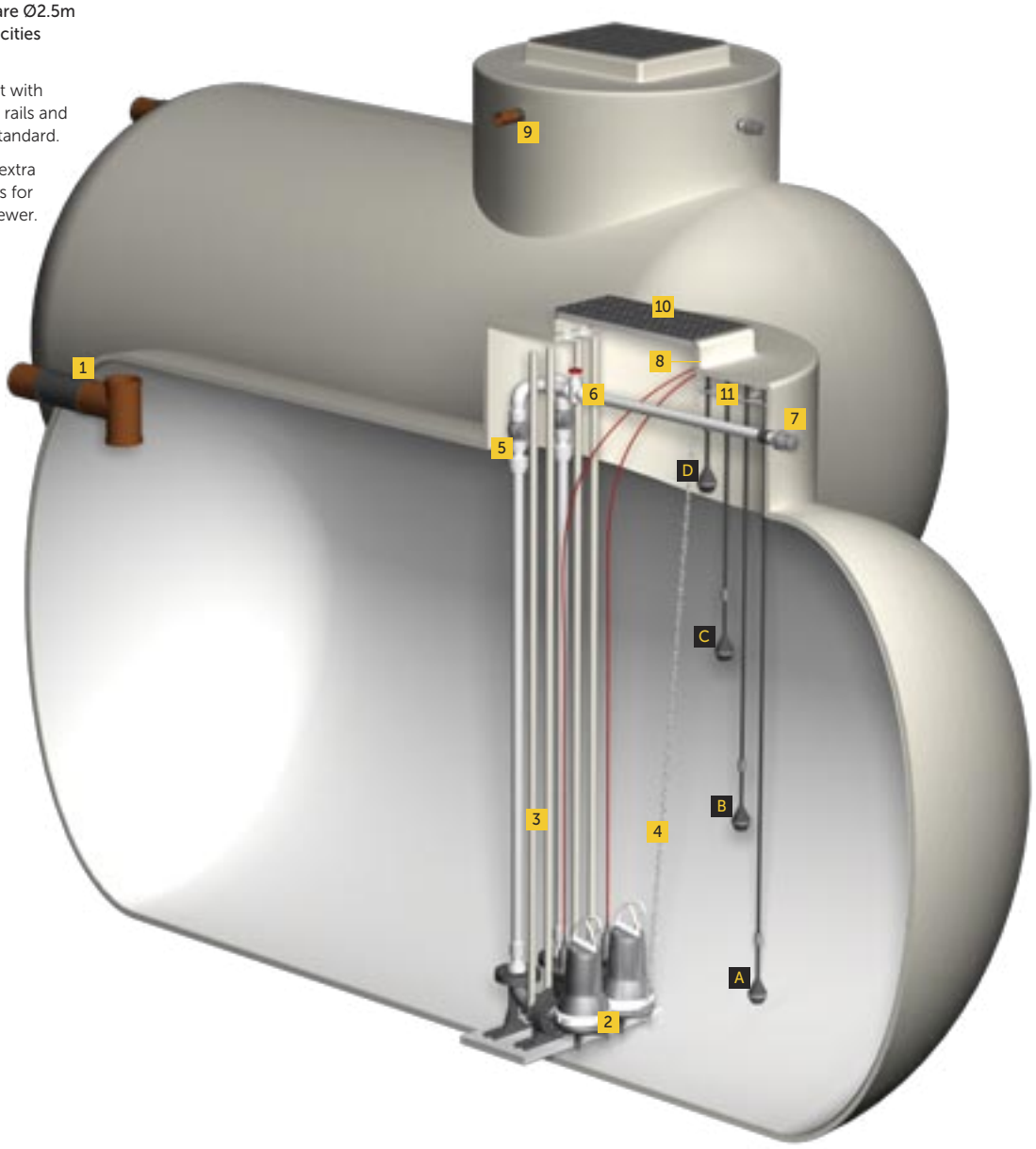
Key

1 Inlet
2 Twin pumps with guide rails
3 Guide rails
4 Pump retrieval chain
5 Non-return valve(s)
6 Gate valve
7 Outlet connection
8 Ducting and cable entry points
9 Vent
10 Manway access
11 Float bracket

Float configuration options

A Pump 'OFF' float switch
B Pump 1 'ON' float switch
C Pump 2 'ON' float switch
On twin pump configurations
D High water float switch

Note: Floats can be fitted directly to specific pump systems. Please contact Marsh Industries to discuss your project requirements.

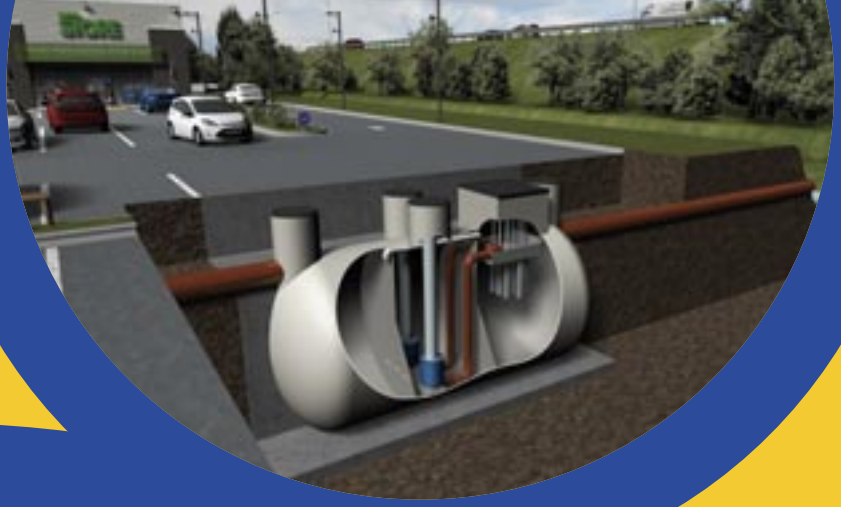


WellWater:Amazon range examples (Tanks with capacities up to 100,000 litres are available on request)

Model	Pump	Application	Diameter mm	Length mm	Total storage Litres	Invert mm	Pipework dia mm
TS2520	Twin	Sewage	2500	2000	7710	minimum 500	110 or 160
TS2535	Twin	Sewage	2500	3500	15050	minimum 500	110 or 160
TS2540	Twin	Sewage	2500	4000	17500	minimum 500	110 or 160

Notes:
> *All pump stations are available for dirty water (DW) or sewage (SW), in single pump (SP) and twin pump (TP) configurations*
> *The dimensions given on this page are for guidance only*
> *For precise tank sizes and configurations, please contact Marsh Industries*
> *All dimensions in mm*

Tank configurations and components are shown for illustration purposes only



OIL SEPARATORS

Separation by flotation and settlement

Download our full technical guidance document featuring the latest regulations, specifications and product certification: www.marshindustries.co.uk/technical-library (Oil separators tab)

Oil separators are designed to prevent oil and other hydrocarbons from entering the drainage system. They separate oil from water, and safely retain the oil until it is removed.

Oil cannot be treated easily and will therefore cause severe pollution if allowed to enter mains sewers or drainage fields. Statutory controls enforce strict regulations on the discharge of such pollutants.

Separators should be used in such applications as petrol stations, industrial yards and garages; or virtually anywhere that a risk of oil contamination exists.

Discharge requirements for oil separators may vary in different areas of the country and it is therefore essential to consult the appropriate environmental controlling authority prior to specifying an oil separator. If the discharge is to a public sewer then local Building Control, the Water Authorities and water companies should also be contacted.

Note: For larger sites, more than one type of oil separator may be required.

Separator types and principles of operation

Classes

Separators are classed in two categories based on performance under standard test conditions.

Class 1 separators are designed to achieve a discharge concentration of less than 5mg/litre of oil. These separators are required for discharges to surface water drains and the water environment.

Class 2 separators are designed to achieve a discharge concentration of less than 100mg/litre of oil under standard test conditions. They are suitable for dealing with discharges where there is a lower quality requirement, such as discharges to the foul sewer.

Both classes can be produced as 'full retention', 'bypass' or 'forecourt' separators as explained below.

Bypass separators

Bypass separators treat all flows from rainfall events of up to 6.5mm/hr. This covers over 99% of all rainfall events. Flows higher than 6.5mm/hr are designed to bypass the separator.

These separators are used in a 'low risk' environment where there is no requirement to provide full treatment for the flow; for example a car park where the risk of a significant spillage is small.

Full retention separators

Full retention separators treat the full flow that is delivered by the drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 65mm/hr.

These separators are used where there may be a 'high risk' of a significant fuel spillage, such as vehicle workshops

Forecourt separators

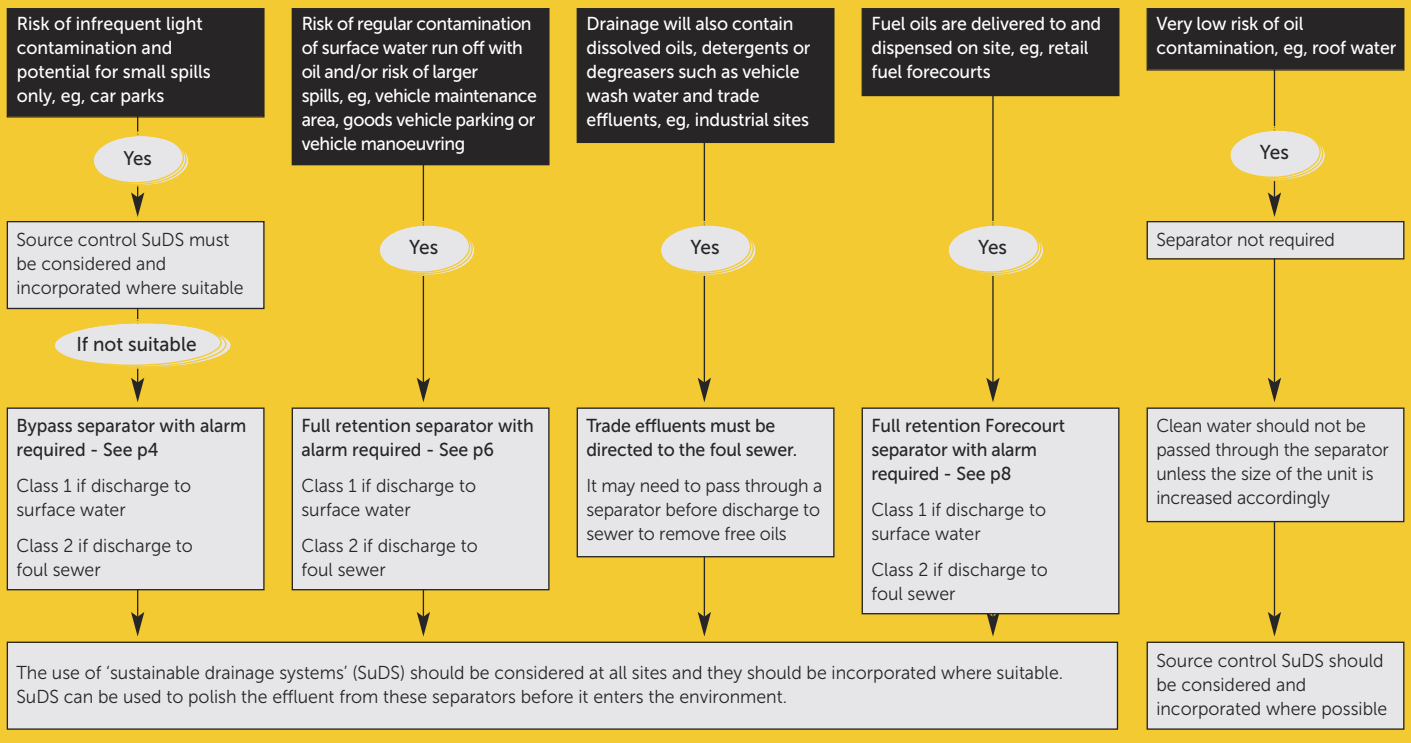
Forecourt separators are a type of full retention separator, however they are specifically designed to store the maximum spillage likely to occur on a petrol station forecourt.

These separators are manufactured to a specific size in order to retain the potential spillage from a single compartment of a road tanker – currently up to 7,600 litres in the UK.

Wash-down separators and silt traps

It is a legal requirement to install a silt trap or wash-down separator on commercial sites, such as vehicle wash bays, where there is an environmental risk of contamination from dirt, brake dust, traffic film residue, cleaning agents, oil, etc.

Choosing the right separator



Marsh:Marator™

High performance full retention oil separators for sites where the “industry standard” is just not good enough

Overview

Marsh Industries has developed an innovative separator system that breaks the constraints of the current standards; the ‘Marsh:Marator’.

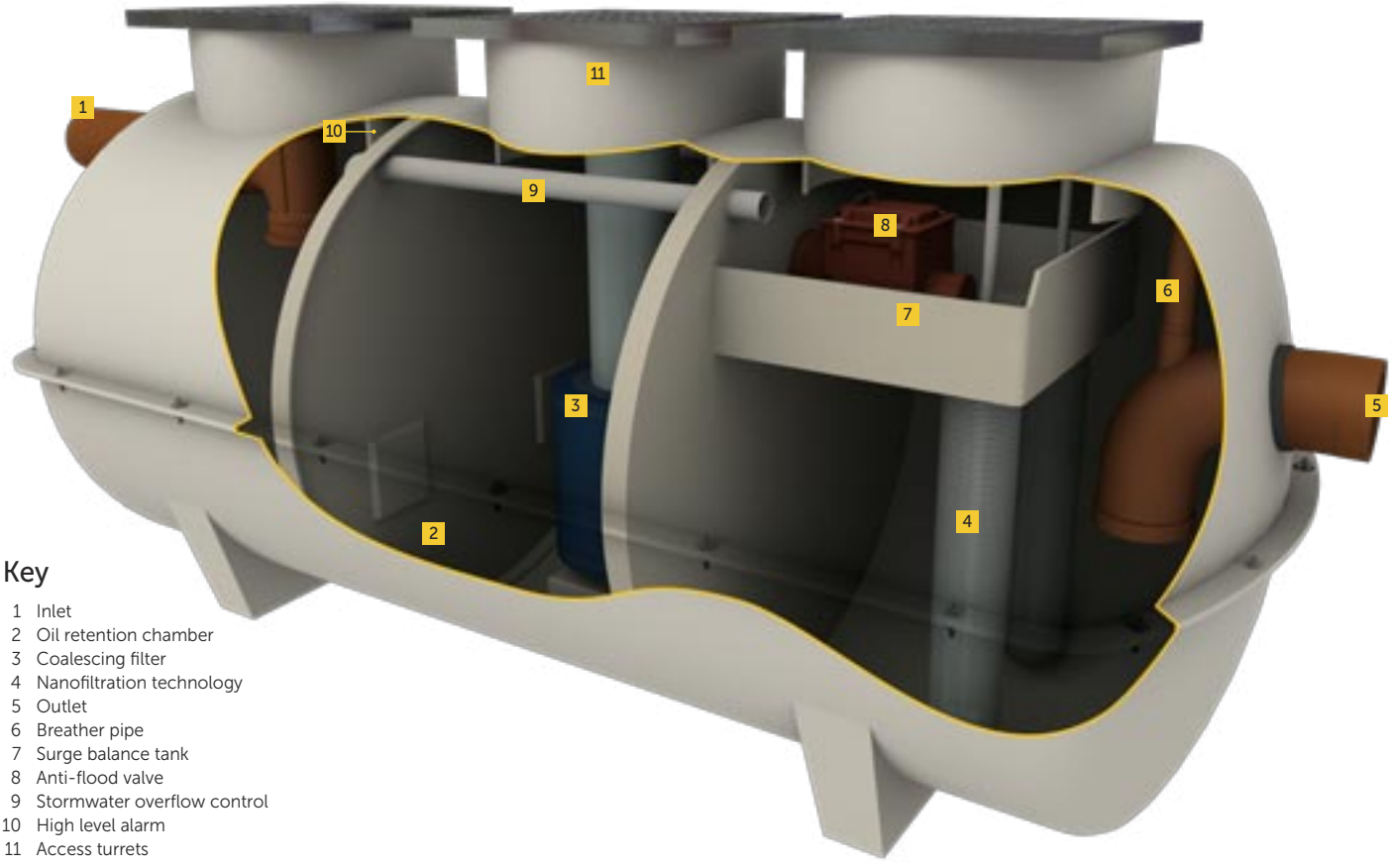
The Marator takes advantage of nanofiltration technology to produce discharge that is 50 times better than any current separator available on the market today; that is less than 0.1mg/ltr – the standard only requires less than 5mg/ltr for a ‘class 1 discharge’.

Testing was analysed for hydrocarbon content using infrared spectroscopy at GEOTAIX UMWELTTECHNOLOGIE GmbHA.

During the sampling period, five samples of 500ml were taken via the sampling point. The quality of discharge from the Marator exceeded the measureable level of the test equipment not to mention the current EN standard:

Test results (NS6 model)

Sample	Result GC in mg/litre (Industry standard <5mg/litre)
NS 6-1	< 0.1
NS 6-2	< 0.1
NS 6-3	< 0.1
NS 6-4	< 0.1
NS 6-5	< 0.1
NS 6-6	< 0.1
NS 6-7	< 0.1
Average	< 0.1



Key

1 Inlet
2 Oil retention chamber
3 Coalescing filter
4 Nanofiltration technology
5 Outlet
6 Breather pipe
7 Surge balance tank
8 Anti-flood valve
9 Stormwater overflow control
10 High level alarm
11 Access turrets

Benefits

- Designed and tested to meet latest UK and European standards
- Corrosion resistant
- Tank shells guaranteed for 25 years with a design life of 50 years
- Heavy duty shells enable installation in all ground conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Various alarm types available (Required by EN858-1)
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Vented turrets can dissipate excessive fumes and vapours

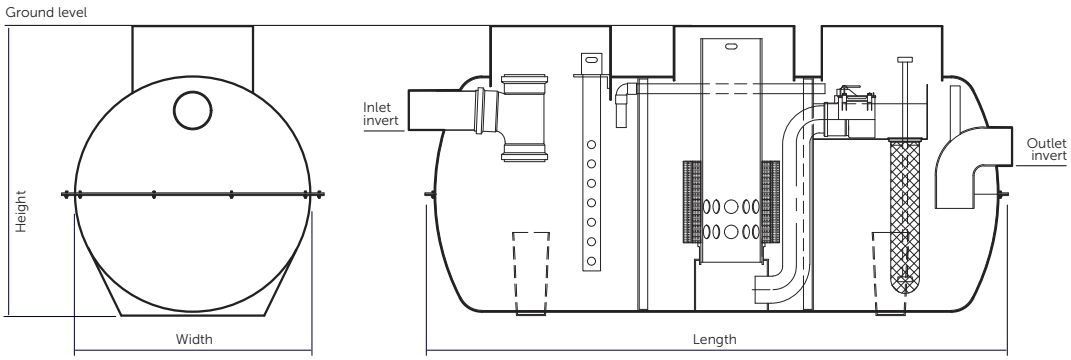
Typical applications

- *Car parks*
- *Roadways*
- *Industrial estates*
- *Vehicle workshops*
- *Refuel facilities*
- *Fuel storage sites*

Illustration shown for visual reference only

SuDS SAFE SEPARATORS

Specifications



View on inlet end

Section through tank centre

Model	Max flow litre/sec	Drainage area m²	Silt storage litres	Oil storage litres	Diameter +/-50mm	Length +/-50mm	Height +/-50mm	Connection size	Inlet invert	Outlet invert
Marator 6	6	340	600	60	1250	3040	1862	200	900	1100
Marator 10	10	566	1000	100	1250	4040	1862	200	900	1100
Marator 15	15	851	1500	150	1812	4240	2360	315	900	1100
Marator 20	20	1137	2000	200	1812	4240	2360	315	900	1100

Notes:
> *Larger systems are available, please contact Marsh Industries*
> *The dimensions given on this page are for guidance only*
> *For precise tank sizes and configurations, please contact Marsh Industries*
> *Number of access shafts will be built to suit site specifications and to maintain safe access for emptying*
> *All dimensions in mm*

Are outmoded EN standards an environmental concern?

Current EN standard
The European Standard, BS EN 858 parts 1&2, was introduced in 2002 to normalise design and regulate testing of products across Europe. This standard settled on a two-tier quality level – class 1 and class 2.

Class 1 – designed to achieve a discharge concentration of less than 5mg/ltr of oil in the discharge
Class 2 – designed to achieve a discharge concentration of less than 100mg/ltr of oil in the discharge

Once testing is complete and approval achieved, manufacturers are free to bring their products to market.

The effects of current standards
A good starting point for any product is to set out relevant standards and levels of quality, both in product build and product performance. However, since the introduction of BS EN 858 in 2002, product development in gravity oil/liquid separation has remained static.

Manufacturers are only required to meet the testing standards to sell product. There has been no natural drive to improve product performance.

The current class 1 standard of less than 5mg/ltr of light liquid is only determined by test conditions. Our experience in this field tells us that this standard is rarely met once a product is installed.

The reality of current standards
With the current level of 5mg/ltr for a Class 1 discharge – we ask "Are Class 1 separators the very best that manufacturers can offer?"

Studies have shown that the majority of hydrocarbon pollutants entering the water system stems from urban developments. Figure 2 shows the toxic effects of particular contaminants on humans and aquatic life.

Leaving aside the toxic effects of contaminants on human and aquatic life, when a hydrocarbon molecule spreads to one molecule thick and given enough surface area to spread, five litres of oil would be more than enough to contaminate five football pitches.

In addition, most hydrocarbon molecules are attached to silt particles; where Stokes law proves that these particles will sink rather than float as conventional separators require.

When mixed with other elements in real life scenarios, such as glycol, standard gravity separators become less efficient at contaminate removal.

In our view, the current testing standards covering products within the gravity separator market are outmoded and failing to protect the environment as they should. They do not reflect or address any 'real-life' scenario where hydrocarbon pollution is prevalent.

The solution = the Marsh:Marator

Marsh:Hydroil™ Bypass separators

For areas at 'low risk' of oil contamination

Overview

Bypass separators are used in a 'low risk' environment where there is no requirement to provide full treatment for the flow; for example a car park where the risk of a significant spillage is small.

Designed and tested to BS EN858 parts 1&2, Marsh Hydroil bypass separators are manufactured from virgin unfilled resin offering exceptional durability, impact resistance and are guaranteed to be watertight and of uniform thickness. These combined properties ensure that the full range of separators stand up to the most rigorous conditions during their service life.

Internal working components, such as coalescing filters, weirs, oil skimmer plates, and their configurations offer the most modern and efficient oil/water separation capability available to the market today.

A wide choice of inlet and outlet positions are available on the units - detailed requirements should be provided at time of order (standard inlet and outlet positions will otherwise be fitted).

Operating principle

Marsh Hydroil bypass separators are designed to treat 10% of peak flow.

The drainage areas served by each separator are determined in accordance with both BS EN858 parts 1&2, but also with reference to a formula provided by the Environment Agency, where NSB=0.0018xA (catchment area in m^2). Flows from higher rainfall rates are allowed to bypass the main separation chamber.

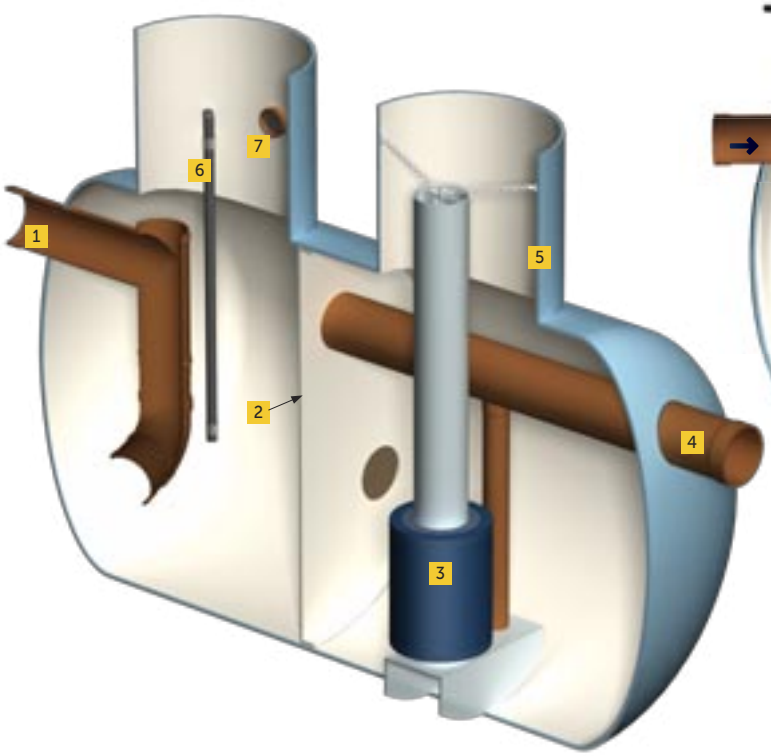
Key

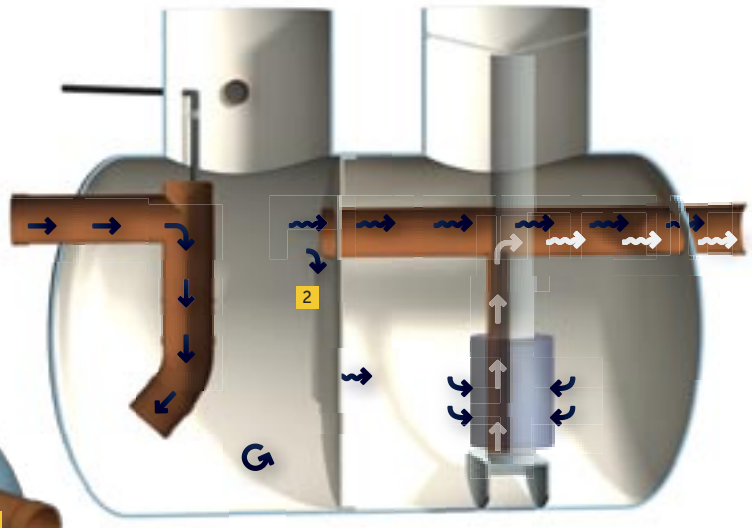
1 Inlet
2 Oil skimmer plate
3 Coalescer
4 Outlet
5 Access turret
6 Level alarm dip pipe
7 Air vent

Flowpath

Oil/water mixture

Water





Benefits

- Designed and tested to meet latest UK and European standards
- Corrosion resistant
- Tank shells guaranteed for 25 years with a design life of 50 years
- Heavy duty shells enable installation in all ground conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Various alarm types available (Required by EN858-1)
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Vented turrets dissipate excessive fumes and vapours

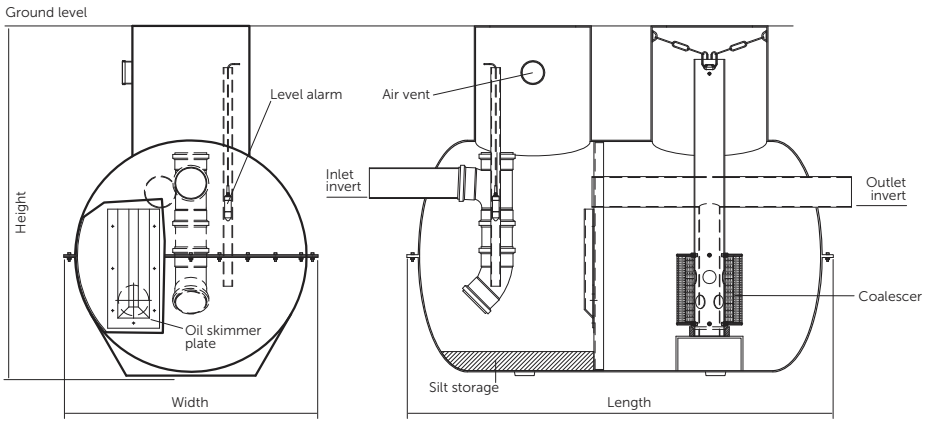
Typical applications

- *Car parks*
- *Roadways*
- *Industrial estates*
- *SuDS*

Illustrations shown for visual reference only

SuDS SAFE SEPARATORS

Specifications



View on inlet end

Section through tank centre

Notes:
*Pipework and inverts sized on application
> *The dimensions given on this page are for guidance only*
> *For precise tank sizes and configurations, please contact Marsh Industries*
> *Number of access shafts will be built to suit site specifications and to maintain safe access for emptying*
> *All dimensions in mm*

Bypass separator range

Model	Flow litre/sec	Drainage area m²	Silt storage litres	Oil storage litres	Width +/-50mm	Length +/-50mm	Height +/-50mm	Connection size Ø	Inlet invert	Outlet invert
NSBP 3	30	1700	300	45	1354	2254	1784	160 O/D	900	950
NSBP 4	45	2550	450	67.5	1354	2254	1784	160 O/D	900	950
NSBP 6	60	3400	600	90	1354	2254	1784	200 O/D	900	950
NSBP 8	80	4530	800	120	1354	2254	1784	200 O/D	900	950
NSBP 10	100	5660	1000	150	1354	2914	1784	315 O/D	900	950
NSBP 15	150	8510	1500	225	1354	4184	1784	315 O/D	900	1000
NSBP 18	180	10198	1800	270	1818	2398	2418	400 O/D	1050	1150
NSBP 20	200	11370	2000	300	1818	2398	2418	400 O/D	1050	1150
NSBP 25	250	14185	2500	375	1818	3198	2418	400 O/D	1050	1150
NSBP 30	300	17000	3000	450	1818	3758	2418	500 O/D	1185	1285
NSBP 40	400	22650	4000	600	1818	4878	2418	500 O/D	1185	1285
NSBP 45	450	25325	4500	675	1818	5438	2418	500 O/D	1185	1285
NSBP 50	500	28330	5000	750	1818	5998	2418	500 O/D	1185	1285
NSBP 60	600	33996	6000	900	2622	4028	3172	600 I/D Twin wall	1350	1450
NSBP 65	650	36829	6500	975	2622	4303	3172	600 I/D Twin wall	1350	1450
NSBP 70	700	39620	7000	1050	2622	4578	3172	600 I/D Twin wall	1350	1450
NSBP 75	750	42495	7500	1125	2622	4908	3172	600 I/D Twin wall	1350	1450
NSBP 80	800	45330	8000	1200	2622	5415	3172	600 I/D Twin wall	1350	1450
NSBP 100	1000	56660	10000	1500	3128	4702	3678	750 I/D Twin wall	1525	1625
NSBP 125	1250	70820	12500	1875	3128	5741	3678	TBC*	TBC*	TBC*
NSBP 130	1300	73658	13000	1950	3128	6028	3678	TBC*	TBC*	TBC*
NSBP 150	1500	84990	15000	2255	3128	6780	3678	TBC*	TBC*	TBC*
NSBP 180	1800	100800	18000	2700	3128	8028	3678	750 O/D	1525	1625
NSBP 200	2000	111000	20000	3000	3128	9050	3678	750 O/D	1525	1625
NSBP 230	2300	131000	23000	3450	3128	10080	3678	750 O/D	1525	1625
NSBP 240	2400	135000	24000	3600	3128	10460	3678	750 O/D	1525	1625
NSBP 250	2500	139000	25000	3750	3128	10840	3678	TBC*	1525	1625
NSBP 260	2600	144500	26000	3900	3128	11200	3678	TBC*	1525	1625
NSBP 270	2700	150000	27000	4050	3128	11600	3678	TBC*	1525	1625
NSBP 300	3000	167000	30000	4500	3128	12740	3678	TBC*	1525	1625
NSBP 320	3200	177800	32000	4800	3128	13500	3678	TBC*	1525	1625
NSBP 350	3500	194000	35000	5250	3128	14640	3678	TBC*	1525	1625

Marsh:Hydroil
Full retention separators
For areas at 'high risk' of oil contamination

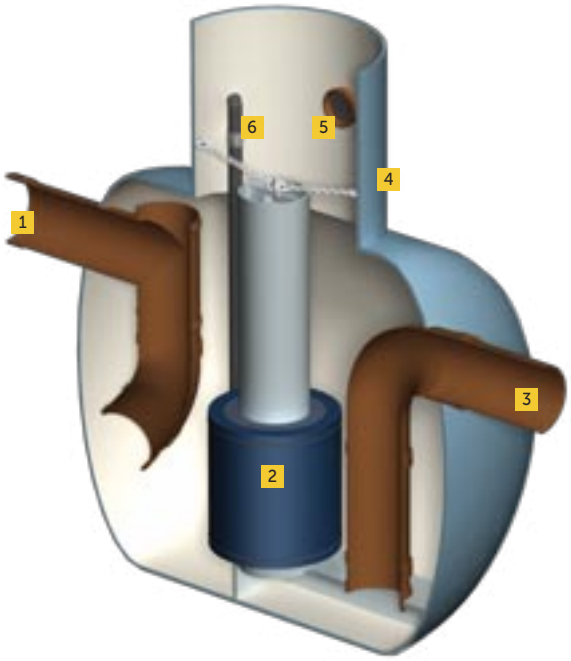
Overview

Full retention separators are used where there may be a 'high risk' of a significant fuel spillage, such as vehicle workshops

Designed and tested to BS EN858 parts 1&2, Marsh Hydroil full retention separators are manufactured from virgin unfilled resin offering exceptional durability, impact resistance and are guaranteed to be watertight and of uniform thickness. These combined properties ensure that the full range of separators stand up to the most rigorous conditions during their service life.

Internal working components, such as coalescing filters, automatic closure devices, weirs, oil skimmer plates, and their configurations offer the most modern and efficient oil/water separation capability available to the market today.

A wide choice of inlet and outlet positions are available on the units - detailed requirements should be provided at time of order (standard inlet and outlet positions will otherwise be fitted).



Operating principle

Marsh Hydroil full-retention separators treat the full flow that is delivered by the drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 65mm/hr.

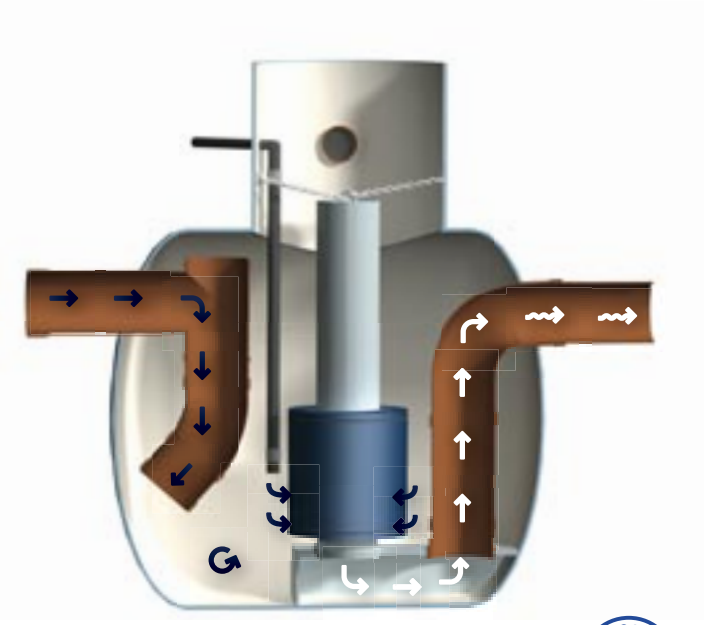
Key

1 Inlet
2 Coalescer
3 Outlet
4 Access turret
5 Air vent
6 Level alarm dip pipe

Flowpath

Oil/water mixture

Water



Benefits

- Designed and tested to meet latest UK and European standards
- Corrosion resistant
- Tank shells guaranteed for 25 years with a design life of 50 years
- Heavy duty shells enable installation in all ground conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Various alarm types available (Required by EN858-1)
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Vented turrets dissipate excessive fumes and vapours

Typical applications

- *Vehicle workshops*
- *Refuel facilities*
- *Fuel storage sites*

Mitigation indices

As the world focuses on more green and environmentally friendly solutions Marsh Industries has examined how effective their separators are when incorporating them into sustainable drainage schemes.

The company tested their full retention Hydroil separator range for total suspended solids and metal mitigation indices in line with industry-approved procedures at PIA, the notified test house in Aachen, Germany. This is in addition to an existing test procedure, whereby the Hydroil has already achieved EN858-1 certification for light liquid separators.

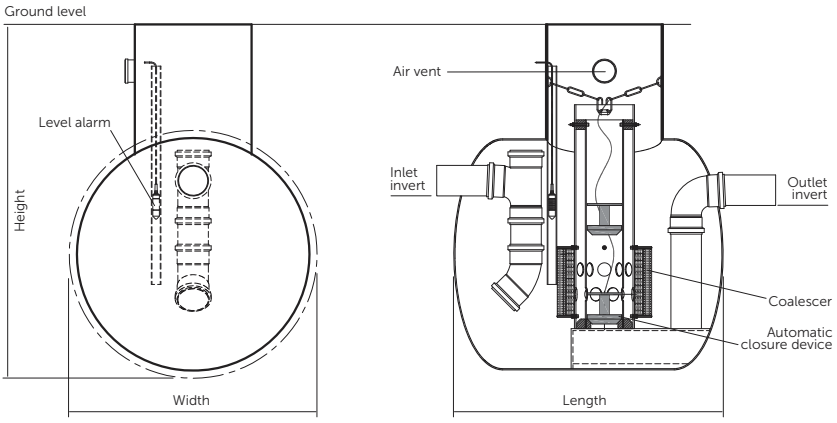
Combining these two test sets together and applying the simple index approach to proprietary/manufactured EN858 devices, the Hydroil separator range is able to achieve the following mitigation indices:

Hydrocarbons: 97.5%
Total Suspended Solids: 84.35%
Total Metal Reduction: 63.26%

The results will provide user confidence that the testing of this range is beyond reproach and cements these products as the complete surface water treatment solution for SuDS schemes.

SuDS SAFE SEPARATORS

Specifications



View on inlet end

Section through tank centre

Full retention separator range

Model	Flow litre/sec	Drainage area m²	Silt storage litres	Oil storage litres	Width +/-50mm	Length +/-50mm	Height +/-50mm	Connection size	Inlet invert	Outlet invert
NSFR 3	3	170	300	30	1200	1400	1840	160	900	950
NSFR 4	4.5	255	450	40	1200	1700	1840	160	900	950
NSFR 6	6	340	600	60	1200	2400	1840	160	900	950
NSFR 8	8	453	800	80	1200	3200	1840	160	900	950
NSFR 10	10	566	1000	100	1200	3500	1840	160	900	950
NSFR 15	15	851	1500	150	1800	3600	2440	200	900	1000
NSFR 20	20	1137	2000	200	1800	4000	2440	200	900	1000
NSFR 30	30	1700	3000	300	1800	4800	2440	250	900	1000
NSFR 40	40	2265	4000	400	1800	6200	2440	315	900	1000
NSFR 50	50	2800	5000	500	1800	7500	2440	315	900	1000
NSFR 60	60	3233	6000	600	2622	5200	3172	315	900	1000
NSFR 65	65	3670	6500	650	2622	5600	3172	315	900	1000
NSFR 70	70	4318	7000	700	2622	6000	3172	315	900	1000
NSFR 80	80	4533	8000	800	2622	6600	3172	315	900	1000
NSFR 100	100	5666	10000	1000	2622	8600	3172	315	900	1000
NSFR 125	125	7082	12500	1250	3128	7200	3678	400	900	1100
NSFR 150	150	8500	15000	1500	3128	8400	3678	400	900	1100
NSFR 165	165	9166	16500	1650	3128	9300	3678	400	900	1100
NSFR 175	175	9800	17500	1750	3128	10000	3678	400	900	1100
NSFR 200	200	11110	20000	2000	3128	11300	3678	400	900	1100
NSFR 210	210	11898	21000	2100	3128	11500	3678	400	900	1100
NSFR 250	250	13888	25000	2500	3128	13800	3678	400	900	1100
NSFR 275	275	15582	27500	2750	3128	14500	3678	400	900	1100
NSFR 300	300	16665	30000	3000	3128	15028	3678	TBC	900	1000

Notes:
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> *For precise tank sizes and configurations, please contact Marsh Industries*
> *Number of access shafts will be built to suit site specifications and to maintain safe access for emptying*
> *All dimensions in mm*

Mitigation indices

TSS	0.84
Metalps	0.63
Hydrocarbons	0.98

Illustrations shown for visual reference only

Marsh:Hydroil™ Forecourt separators

For areas at 'significant risk' of oil contamination

Overview

Designed and tested to BS EN858 parts 1&2, Marsh Hydroil forecourt separators are manufactured from virgin unfilled resin offering exceptional durability, impact resistance and are guaranteed to be watertight and of uniform thickness. These combined properties ensure that the full range of separators stand up to the most rigorous conditions during their service life.

Internal working components, such as coalescing filters, weirs, oil skimmer plates, and their configurations offer the most modern and efficient oil/water separation capability available to the market today.

A wide choice of inlet and outlet positions are available on the units - detailed requirements should be provided at time of order (standard inlet and outlet positions will otherwise be fitted.

Operating principle

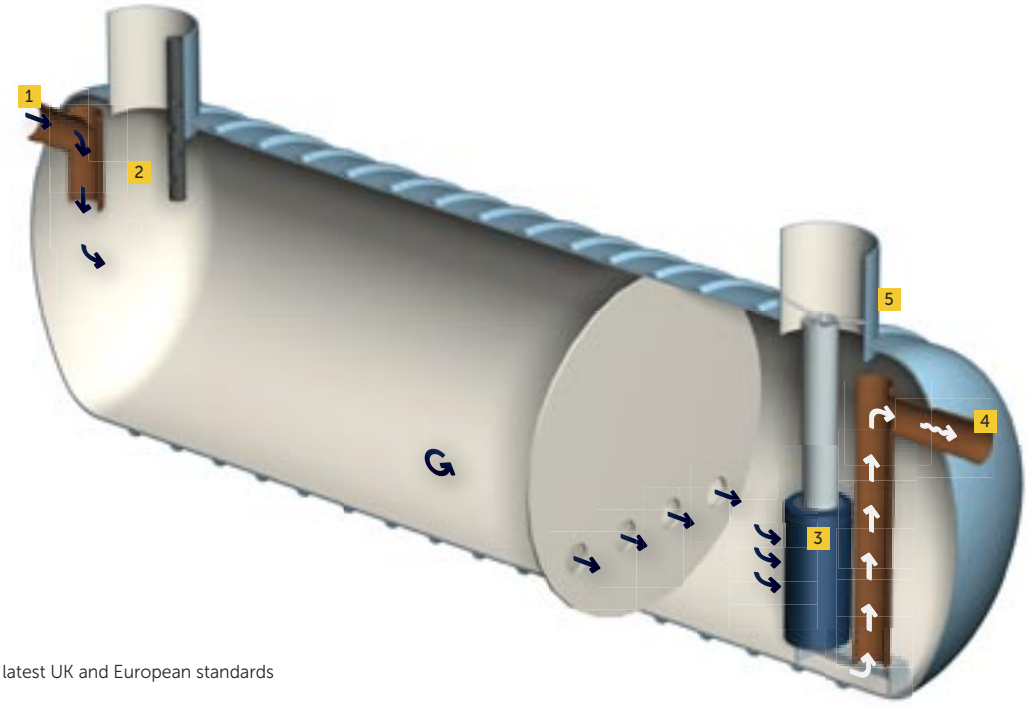
Marsh Hydroil forecourt separators are manufactured to a specific size in order to retain the potential spillage from a single compartment of a road tanker – currently up to 7,600 litres in the UK.

Key

1 Inlet
2 Oil level alarm (in 3" pipe)
3 Coalescer
4 Outlet
5 Access turrets

Flowpath

Oil/water mixture
Water



Benefits

- Designed and tested to meet latest UK and European standards
- Corrosion resistant
- Tank shells guaranteed for 25 years with a design life of 50 years
- Heavy duty shells enable installation in all ground conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Various alarm types available (Required by EN858-1)
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Vented turrets dissipate excessive fumes and vapours

Typical applications

- *Petrol stations*
- *Refuel facilities*
- *Fuel storage sites*

Forecourt separator range

Model	Capacity litres	Width +/-50mm	Length +/-50mm	Height +/-50mm	Connection size	Inlet invert	Outlet invert
Class 1	10000	1800	4200	2200	160	700	800
Class 2	10000	1800	4200	2200	160	700	800

Notes:
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> *Number of access shafts will be built to suit site specifications and to maintain safe access for emptying*
> *All dimensions in mm*

Illustrations shown for visual reference only

Marsh:Hydroil™

Wash-down separators / silt traps

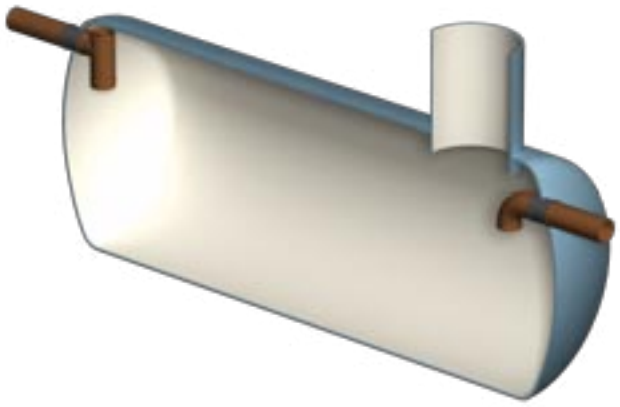
Pollution prevention

Wash-down separators

Available in capacities from 2800-20,000 litres, Marsh wash-down separators safely remove silt and debris from vehicle wash-down facilities.

These units are primarily used on car wash bays, pressure wash facilities or other cleaning facilities where the effluent must be discharged to the foul water drainage system.

It is a legal requirement to install a silt trap or wash-down separator on commercial sites, such as vehicle wash bays, where there is an environmental risk of contamination from dirt, brake dust, traffic film residue, cleaning agents, oil, etc. In all cases, you should contact your local building control or environmental agency for specific site requirements.



Benefits

- Heavy duty shells enable installation in all ground conditions
- Tank shells guaranteed for 25 years with a design life of 50 years
- Variable invert depths and inlet/outlet configurations to suit individual site conditions
- Easy access turrets for maintenance and servicing (Turret guards optional)
- Optional Polylok filter can further reduce pollutants from entering the drainage system
- Various alarm types available (Required by EN858-1)
- Corrosion resistant

Wash-down separator range

Model	Capacity litres	Width +/-50mm	Length +/-50mm	Height +/-50mm	Connection size	Inlet invert	Outlet invert
WD2800	2800	1200	3000	1715	110	700	750
WD3800	3800	1200	4000	1715	110	700	750
WD4500	4500	1500	2650	2015	110	700	750
WD6000	6000	1800	2950	2300	110	700	750
WD8000	8000	1800	3600	2300	160	700	750
WD10000	10000	1800	4200	2300	160	700	750
WD12000	12000	1800	5200	2300	160	700	750
WD15000	15000	2500	3100	3000	160	700	750
WD18000	18000	2500	4100	3000	160	700	750
WD20000	20000	2500	4500	3000	160	700	750

Notes:
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> *Number of access shafts will be built to suit site specifications and to maintain safe access for emptying*
> *All dimensions in mm*

Silt traps

With a capacity from 830-3400 litres, Marsh silt traps provide effective storage of silt and debris from vehicle wash-down facilities.

Positioned ahead of an oil separator, the silt trap gathers and stores silt and sediment, and prevents it from entering the oil separator system.

Benefits

- Heavy duty body enables installation in all ground conditions
- Hinged, galvanised steel grating provides structural integrity and easy emptying
- Tank body guaranteed for 25 years with a design life of 50 years

Silt trap

Model	Capacity litres	Length +/-50mm	Width +/-50mm	Height +/-50mm	Connection size	Outlet invert
CST1	830	1165	680	1060	110mm	240
CST2	1570	2180	680	1060	110mm	240
CST3	2300	3205	680	1060	110mm	240
CST4	3400	4230	680	1060	110mm	240

Marsh GMS★ Grease traps

Innovative and reliable grease management systems

Overview

Available in capacities from 2800 to 20,000 litres, Marsh Industries' Grease Management System (GMS★) range of grease traps effectively prevents Fats, Oils and Grease (FOG) from entering the drainage network or sewage treatment plants.

Testing and verification

Marsh Industries has reassessed the currently prescribed testing methods for grease traps and devised its own unique test rig and analysis at Loughborough University.

The rig, put to test for 12 months, addressed calls from the industry for clarity in testing procedures of grease trap technology. After completing trials, the new range of grease traps are the only products of its type that have been successfully tested using materials that match the FOG used in the food industry – as opposed to the traditional test method of using heating oils.

A white paper, published by Marsh, titled "A New way forward for Meaningful Testing of Grease Traps", reports on analysis from the tests carried out at Loughborough University and can be downloaded from www.marshindustries.co.uk

Operating principle

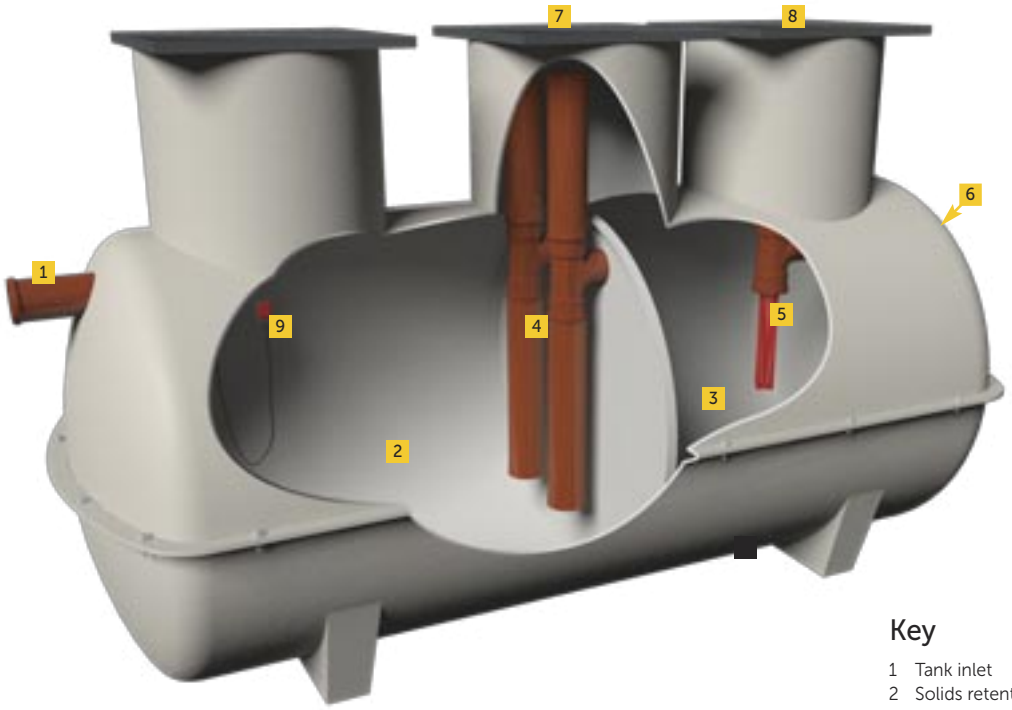
Marsh GMS★ grease traps provides sufficient storage in its primary chamber allowing for adequate solidification of FOG molecule structures before passing through an advanced coalescing filtration system.

The coalescing filtration system contains different grades of filter to prevent solids and waste passing into the final settlement chamber.

In larger units, an optional Ultra Polylok UV Filter is available which can provide further treatment to residual solids and can also destroy viruses, parasites and other pathogenic bacteria.

Benefits

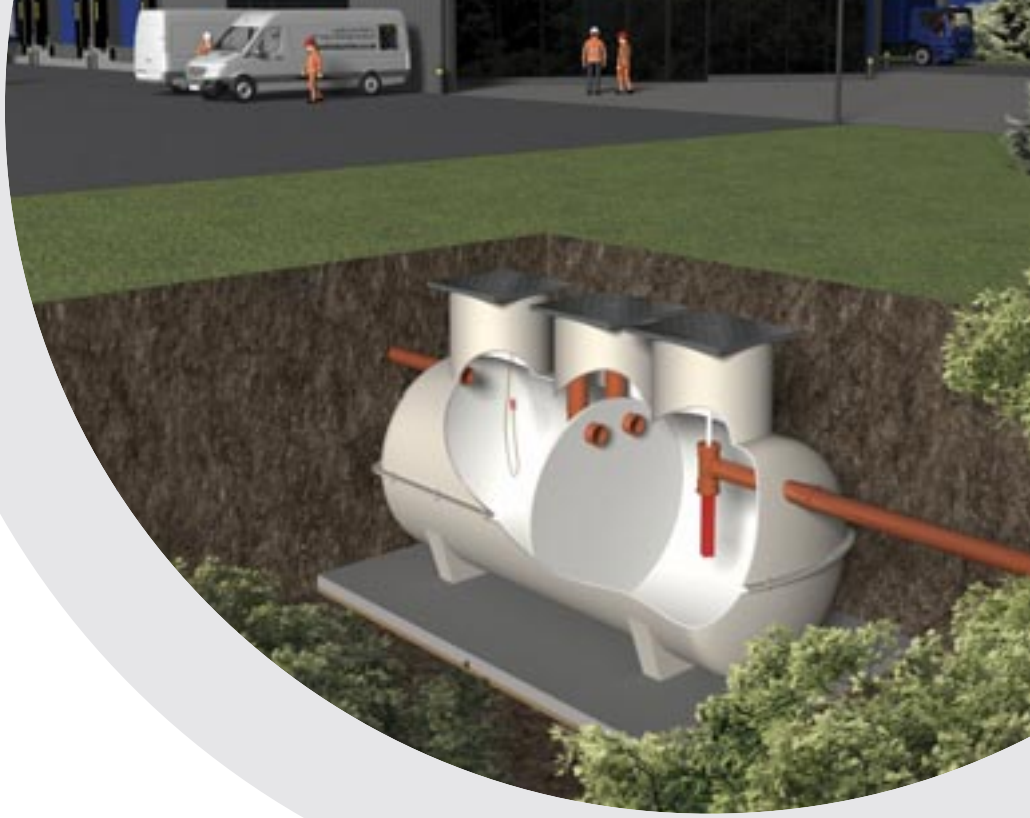
- Storage capacities ranging from 2800-20,000 litres
- Advanced coalescing pipe assembly system
- Bespoke design tailored to individual project specifications
- Adjustable turret and invert height
- Optional Polylok filter for further wastewater treatment
- Optional high level alarm



Key

1 Tank inlet
2 Solids retention
3 Fats, oils and grease (FOG) retention
4 Coalescing pipe assembly
5 Polylok filter (optional)
6 Tank outlet
7 Heavy duty manhole covers
8 Outlet access
9 High level alarm (optional)

Configuration and components are shown for illustration purposes only

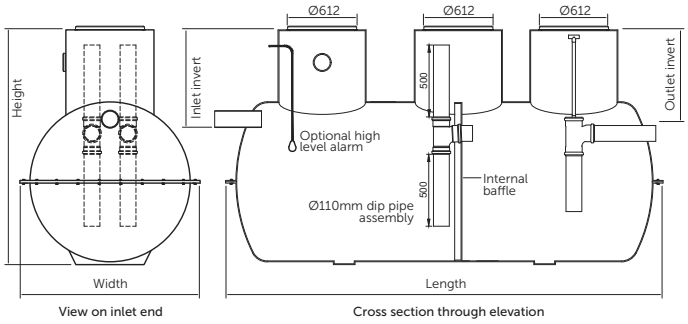


Applications

Typical applications where grease traps/separators may be required:

- Bakeries
- Canteens/kitchens
- Fast food restaurants
- Food processing factories
- Hotels
- Public houses
- Restaurants
- Social clubs

Specifications

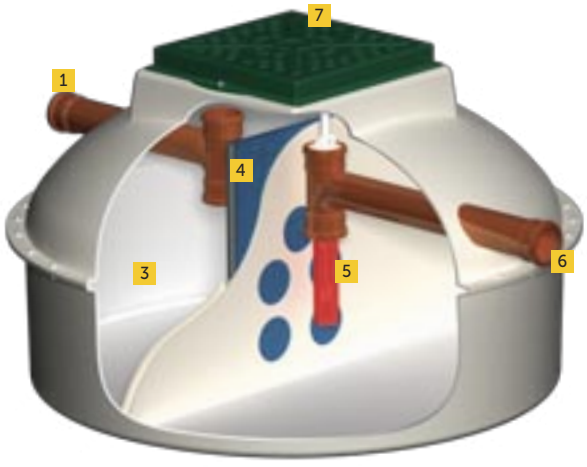


View on inlet end — Cross section through elevation

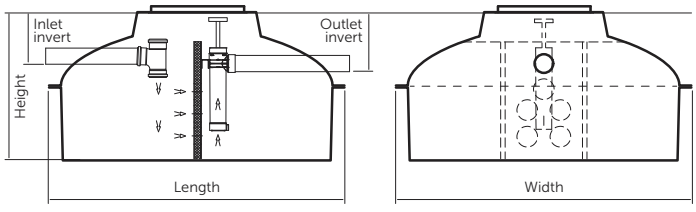
Model	Size	Width	Length	Height	Inlet		Outlet	
	Litres	+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
MG2800	2800	1352	3040	1732	685	110	800	110
MG3800	3800	1352	4040	1732	685	110	800	110
MG4500	4500	1572	2960	2092	685	110	800	110
MG6000	6000	1952	3090	2332	685	110	800	110
MG8000	8000	1952	3780	2332	685	160	800	160
MG10000	10000	1952	4340	2332	685	160	800	160
MG12000	12000	1952	5640	2332	685	160	800	160
MG14000	14000	1952	5980	2332	685	160	800	160
MG16000	16000	1952	6840	2332	685	160	800	160
MG18000	18000	1952	7640	2332	685	160	800	160
MG20000	20000	1952	8240	2332	685	160	800	160

Marsh GMS★ Roundel

Compact grease management system



Marsh Industries' GMS★ Roundel – Ø1812 x 1m high – is shallow, compact and provides easy installation, particularly in urban areas or sites with arduous ground conditions and reduces the risk of undermining existing structures, pipelines or cable ducts.



Cross section through elevation — View on outlet end

Model	Size	Width	Length	Height	Inlet		Outlet	
	Litres	+/-50mm	+/-50mm	+/-50mm	Invert	Ø	Invert	Ø
Roundel	2000	Ø1980	Ø1980	1000	350	110	400	110

Notes:

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> *All dimensions in mm*

Alarm systems

Alarms monitor the level of liquid inside sewage treatment plants, pump stations and oil separators units.
An alarm signal is generated when there is an excessive level of liquid, or if the unit requires emptying.

Marsh Industries can supply various types of alarm, as well as bespoke options as required.

- Beacon alarms
- SMS Alarms
- Micro SMS battery alarms
- Klaxon and beacon alarms
- Micro SMS solar panel alarms

GRP kiosks

Marsh GRP kiosks provide safe and secure storage of electrical control panels and other tank monitoring equipment. The kiosks are typically fitted with one or two doors, depending on kiosk size, with stainless steel vents and yale locks.

Mild steel kiosks

Mild steel kiosks provide safe and secure storage of electrical control panels and other tank monitoring equipment. The kiosks are typically fitted with one or two doors, depending on kiosk size, with vents and yale locks.

Commissioning and servicing

Marsh Industries offers a nationwide service to cover all aspects of commissioning and servicing on the Marsh WellWater pump station range.

Commissioning and servicing packages can be tailored to customer requirements from basic comissioning contracts to commisioning and full service contracts, including on-going support and advice.

Advice and guidance

For advice and guidance on choosing the right products for your site please contact Marsh Industries on +44 (0)1933 654582 or email contracts@marshindustries.co.uk

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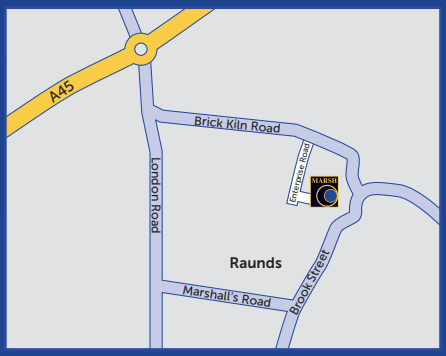

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