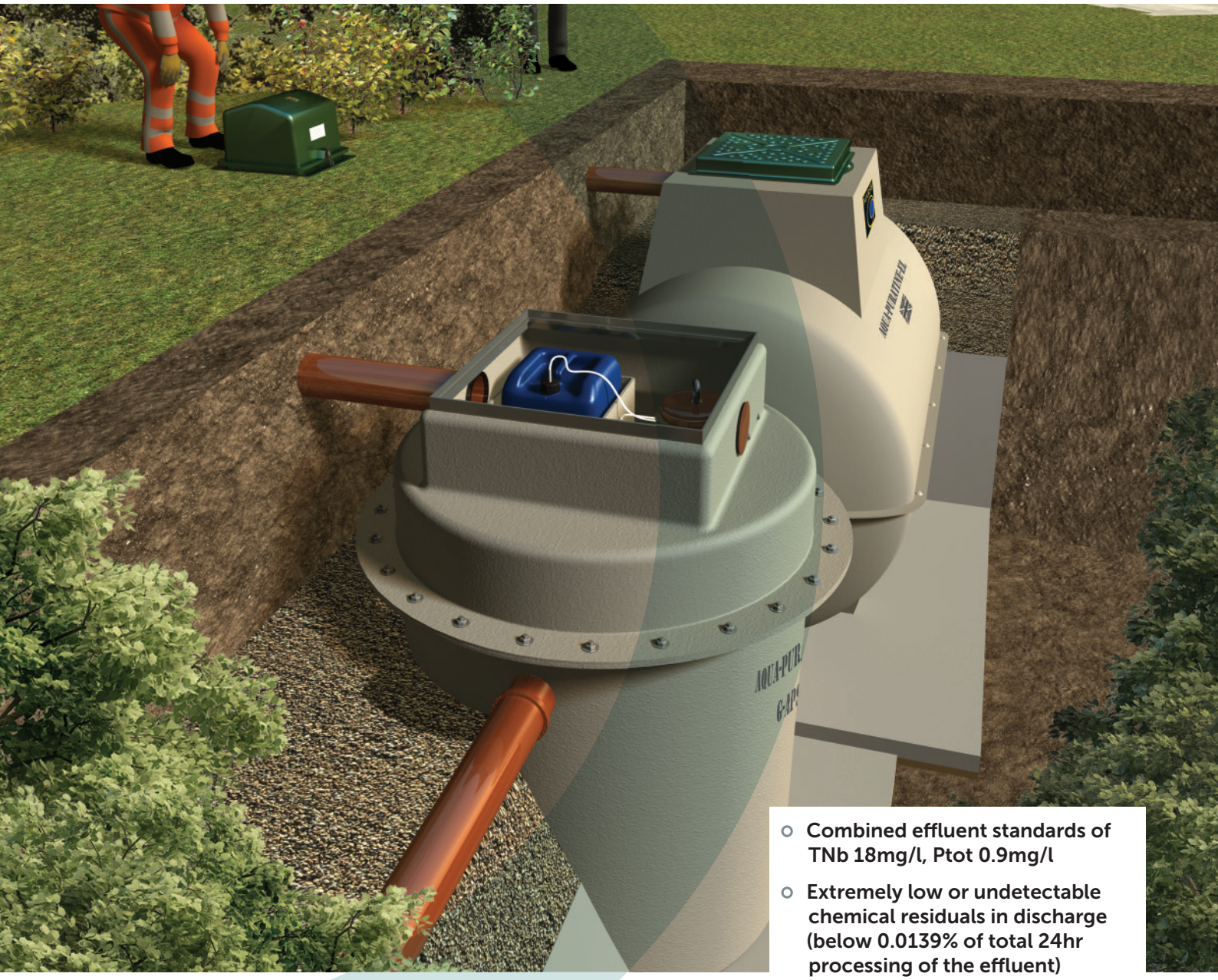
AQUA-PURATINE™

ECO-SENSITIVE PHOSPHATE, AMMONIA AND NITRATE REDUCTION FOR NUTRIENT NEUTRAL SITES



- Combined effluent standards of TNb 18mg/l, Ptot 0.9mg/l
- Extremely low or undetectable chemical residuals in discharge (below 0.0139% of total 24hr processing of the effluent)

MARSH

Achilles UVDB SILVER PLUS

NBS Source PARTNER

SpecifiedBy

MADE IN BRITAIN®

Enabling nutrient neutral development in environmentally sensitive areas

Designed to reduce Phosphate, Ammonia and Nitrates in environmentally sensitive areas, the Marsh Aqua-Puratine system surpasses standards required by Natural England and environmental regulators.

Supplied as a complete system, combining the EL and G-APS units, the Marsh Aqua-Puratine is available in capacities catering to sites for up to 50 people. The Aqua-Puratine-G-APS (Intelligent Controlled Dosing System) can be integrated with any sewage treatment plant to enhance effluent discharge quality.

How does it work?

Marsh's innovative nutrient removal technology combines the Aqua-Puratine:EL and Aqua-Puratine-G-APS systems, revolutionising wastewater treatment. This integrated approach effectively reduces pollutants and nutrients, ensuring compliance with stringent environmental standards.

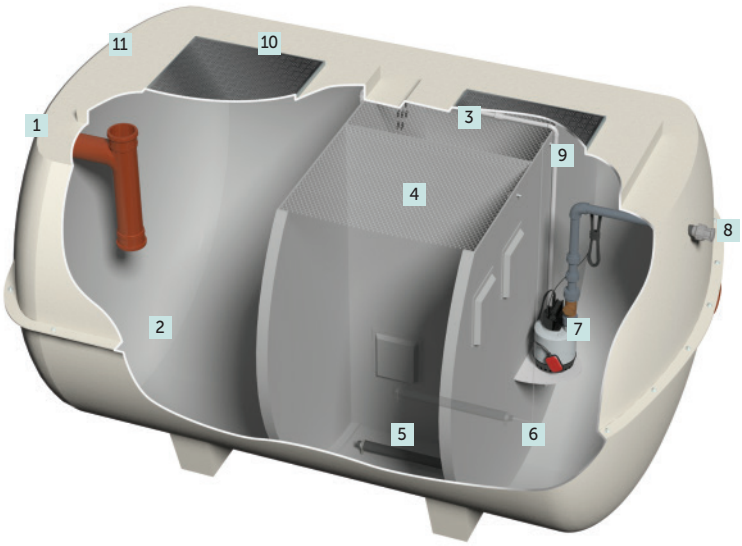
The Aqua-Puratine:EL sewage treatment plant employs a multi-stage process. It initiates with primary settlement, allowing solid particles to settle out. Subsequently, aerobic biological treatment occurs in two biozones filled with specialised biofilm support media. This unique media ensures highly efficient 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, demonstrating its reliability and effectiveness.

Complementing this, the Aqua-Puratine-G-APS introduces controlled chemical dosing for phosphate removal in off-mains sewage treatment plants. It's designed to match chemical infusion precisely with influent phosphate loads, preventing wasteful overdosing. The Aqua-Puratine-G-APS features two chambers for efficient phosphorus removal and biosolids settling.

The key to the system's performance lies in its control and automation. Marsh Controls and Marsh Alarms utilise high-quality aeration and dosing timers, ensuring accurate chemical dosing. Monitoring the pumped outlet from the preceding sewage treatment plant guarantees chemicals are dosed appropriately. In instances of gravity discharge, an intermediate pump chamber ensures precise dosing, even when homeowners are absent.

This innovative approach stands out from continuous dosing systems, which can lead to increased metal concentrations in effluent. The Aqua-Puratine-G-APS adapts dosing based on inflow, ensuring safety for children, wildlife, and the environment. Moreover, it's energy-efficient, consuming only 1 kWh per day.

In summary, Marsh's nutrient removal technology offers an environmentally friendly solution for wastewater treatment, reducing pollutants and nutrients effectively while adhering to strict regulatory standards.



Aqua-Puratine:EL key

1 Inlet
2 Primary chamber
3 Biozone 1
4 Biozone 2
5 Air diffusers
6 Final settlement chamber
7 Submersible pump
8 Pumped outlet
9 Internal recirculation
10 Access covers
11 Heavy duty GRP shell

Aqua-Puratine-G-APS key

12 Inlet
13 Advanced chemical dosing system
14 Primary chamber
15 Air diffuser
16 Final settlement chamber
17 Outlet

Combined effluent standards of TNb 18mg/l, Ptot 0.9mg/l

Extremely low or undetectable chemical residuals in discharge (below 0.0139% of total 24hr processing of the effluent)

Effluent standards

The table below provides effluent standards as tested and certified by PIA:

	Aqua-Puratine:EL		Aqua-Puratine-G-APS	
	Efficiency	Effluent	Efficiency	Effluent
COD	92.2%	63mg/l	57.6%	24mg/l
BOD	95.6%	14mg/l	75.8%	2mg/l
TNb	53.5%	28mg/l	11.5%	18mg/l
NH_4-N	97.8%	1.0mg/l	21.1%	0.4mg/l
Ptot	28.7%	5.4mg/l	83.7%	0.9mg/l
SS	94.5%	21mg/l	30.4%	14mg/l
Accreditation	EN12566-3 test Annex B		EN12566-7 test Annex A	

Features and benefits

Comprehensive nutrient removal
Marsh's nutrient removal technology combines Aqua-Puratine:EL and Aqua-Puratine-G-APS, providing a holistic solution for reducing pollutants and nutrients, including ammonia, nitrate, phosphate, BOD, and suspended solids.

Environmental compliance
This integrated system ensures compliance with strict environmental standards, making it ideal for areas with 'Nutrient Neutrality' designations and tight consent to discharge requirements.

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

Accredited performance
The Marsh Aqua-Puratine system is fully tested and certified by PIA (Prüfinstitut für Abwassertechnik) in Aachen, Germany. Aqua-Puratine:EL is accredited to EN12566-3 Annex B for systems up to 50 Population Equivalent (PE), attesting to its reliability and effectiveness.

Precise chemical dosing
The Aqua-Puratine-G-APS introduces controlled chemical dosing for phosphate removal, ensuring accurate chemical infusion that matches influent phosphate loads, preventing wasteful overdosing.

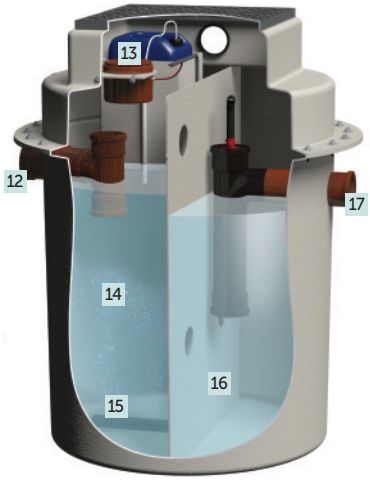
Optimised design
The Aqua-Puratine-G-APS's two equally sized chambers optimise phosphorus removal and biosolids settling.

Energy-efficient
The Aqua-Puratine-G-APS consumes only 1 kWh per day, contributing to energy savings.

Reduced environmental impact
By adjusting dosing based on inflow and avoiding continuous dosing, the system minimises metal concentrations in effluent, ensuring safety for the environment, wildlife, and children.

GSM/3G/4G monitoring
All Aqua-Puratine:EL and Aqua-Puratine Aqua-Puratine-G-APS combinations feature monitoring alarms to notify Marsh and homeowners in case of faults, ensuring timely maintenance and system integrity.

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.



Tank configurations and components are shown for illustration purposes only

Testing and certification

The Aqua-Puratine:EL has undergone rigorous testing and earned accreditation in line with EN12566-3 Annex B standards, while Aqua-Puratine-G-APS has achieved accreditation in accordance with EN12566-7 test Annex A. These comprehensive assessments were conducted by Prüfinstitut für Abwassertechnik (PIA) GmbH in Aachen, Germany, for wastewater treatment systems accommodating up to 50 PE. These certifications underscore the reliability and effectiveness of the Aqua-Puratine system in meeting the demands of wastewater treatment systems for environmentally sensitive sites. All Marsh systems comply with the UK Forward for BSEN12566-3.

Enhanced structural integrity

40% Stronger GRP Material

Marsh Industries places a significant emphasis on the durability and reliability of its products, as evidenced by the meticulous assessment of structural integrity. In line with the testing protocol outlined in ENISO 179-1/1eA: 2010-11, comprehensive evaluations were conducted to gauge the robustness of Marsh Industries' glass reinforced plastic (GRP) materials in comparison to similar materials used by competing manufacturers.

To establish a comprehensive benchmark, three distinct material samples were subjected to rigorous impact testing. These samples included Marsh GRP material in its original form (consisting of virgin unfilled resin), a variant incorporating calcium fillers, and another variant enriched with sand filler. The testing process involved analysing 12 samples of each material, all measuring 80x10x5mm. The pendulum energy utilised for impact assessment was set at 15J, with an accompanying impact velocity of 3.8m/s.

The findings were resoundingly in favour of Marsh Industries' GRP material, showcasing an impressive 40% increase in strength when compared to the other materials under scrutiny. This outcome underscores the superior quality and structural resilience inherent in Marsh's GRP material.

Material fire safety

Marsh Industries upholds the highest standards in product safety and adherence to regulations, as demonstrated by its material fire resistance testing. The focus of this evaluation was to ascertain the ignitability of products when exposed to direct flame impingement. Rigorous testing procedures were carried out to ensure compliance with EN ISO 11925-2:2010 standard.

The testing regimen encompassed practical scenarios designed to gauge the material's response to flame exposure. Marsh Industries' GRP material successfully passed all aspects of the fire resistance tests, achieving EN ISO 11925-2:2010 standard.

Reach out to our eco-friendly team on 01933 654582 or email sales@marshindustries.co.uk to discuss your project's unique requirements, and together, we can make a lasting difference for our environment.

+44 (0)1933 654582

sales@marshindustries.co.uk

www.marshindustries.co.uk

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