

BESPOKE WASTEWATER TREATMENT WITH INTEGRATED PED SYSTEM

THE FLEXIBLE SOLUTION FOR EFFICIENT
WASTEWATER TREATMENT AND DISPERSAL

In partnership with:

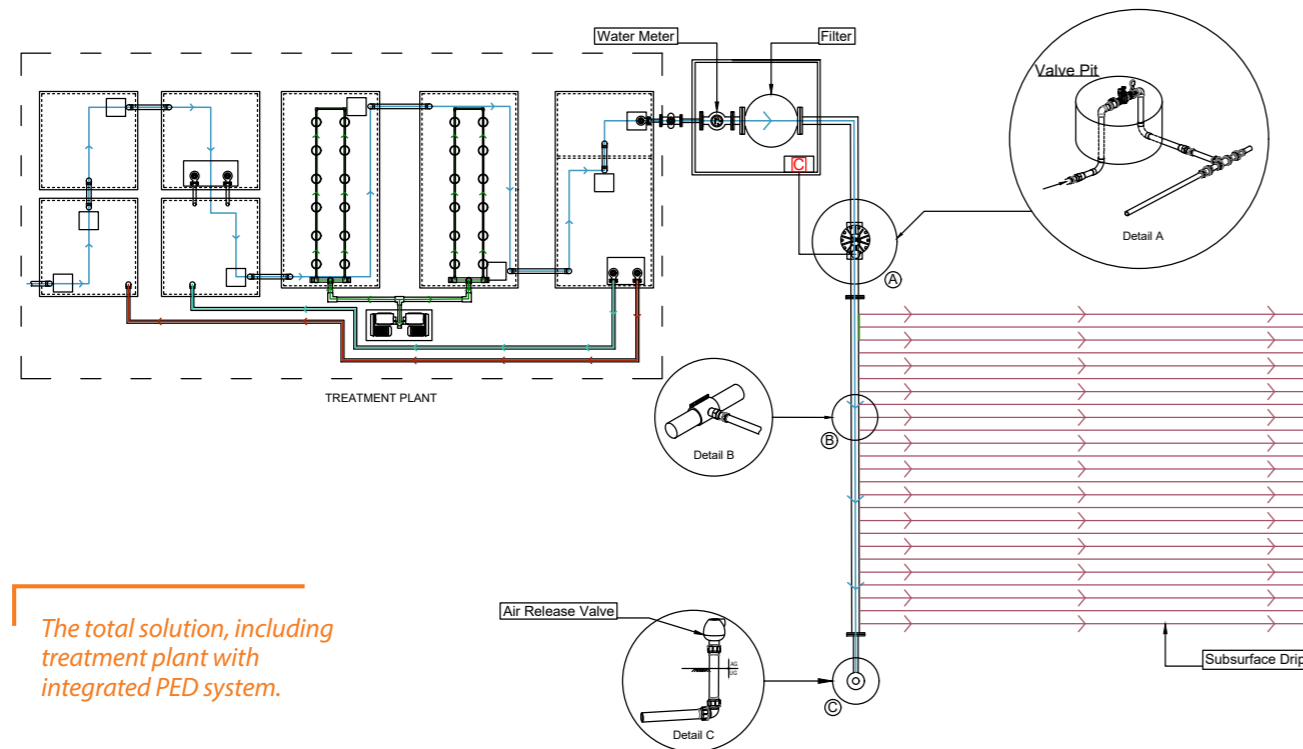


BESPOKE WASTEWATER TREATMENT WITH INTEGRATED PED SYSTEM

THE FLEXIBLE SOLUTION FOR EFFICIENT WASTEWATER TREATMENT AND DISPERSAL

FILTER AND REUSE CONTAMINATED WASTEWATER EFFICIENTLY, SAFELY AND ACCORDING TO REGULATIONS FOR IRRIGATION PURPOSES. OUR TOTAL WASTEWATER TREATMENT WITH INTEGRATED PED (PRECISION EFFLUENT DISPERSAL) SYSTEM OFFERS THIS SUSTAINABLE SOLUTION.

Conceived in response to a legislation change, Bosta UK, in partnership with MEHS, O'Reilly Oakstown, Seko and Warden Biomedia, developed, piloted, tested, and has since rolled-out the complete solution for our customers. The innovative solution moves away from river and stream dispersal and ensures legislative compliance as the PED system is fully licensed and approved by the EPA.



The total solution, including treatment plant with integrated PED system.

Each project is bespoke and results in a dedicated turnkey solution solving effluent control and dispersal challenges.

BENEFITS OF WASTEWATER TREATMENT WITH INTEGRATED PED SYSTEM:

- Precision control of reuse of water for irrigation/dispersal
- Sulphate and nitrate reduction/management with no damage to the land
- 0% air pollution
- Scalable and easily expandable system
- PED system remote access/control and data via PC, mobile or tablet
- Fully automated effluent dispersal
- Technical aftersales support and onsite trouble shooting visits
- One contractor for all 3 elements (treatment/filtration – storage/control – dispersal)

For each project we design, supply, install, test and commission the treatment plant (MBBR) and the PED system. We also provide staff training.

COMPLETE WASTEWATER TREATMENT AND DISPERSAL SYSTEM OVERVIEW

The complete Wastewater Treatment Plant (WwTP), designed by MEHS, assembles pre-cast concrete tanks from O'Reilly Oakstown, bio media from Warden Biomedia, aeration blowers from Seko and the Precision Effluent Dispersal (PED) system from Bosta UK.

WASTEWATER TREATMENT WITH MBBR

The chosen wastewater treatment design, the Moving Bed Biological Reactor (MBBR), is gaining significance around the world. It is a leading technology in wastewater treatment as this system can operate at lower vestiges and give advanced junking effectiveness. It is a compact, efficient, and effective option for wastewater treatment, where the whole reactor volume is active, with no dead space or short circuiting due to the good mixing.





MBBR is an aerobic attached natural growth process. It doesn't bear primary purifier and sludge recirculation. Raw effluent, after webbing and degrading, is fed to the natural reactor. In the reactor, floating plastic media is added which remains in suspense. Biological mass is generated on the face of the media. Attached natural mass consumes organic matter for their metabolism. Redundant natural mass leaves the face of the media. Unlike most traditional water wastage treatment systems, MBBR is a highly effective biological water treatment process that is based on a combination of biofilm media and conventional activated sludge processes.

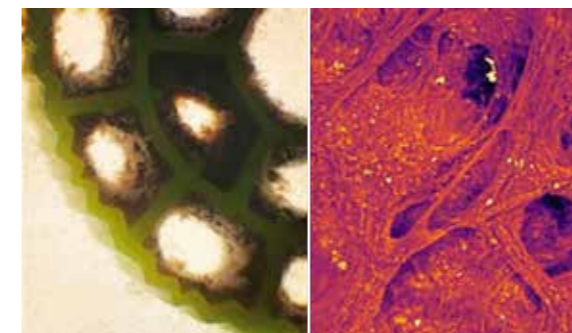
The media employed has a protected surface area of $800 \text{ m}^2/\text{m}^3$ and total surface area of $1036 \text{ m}^2/\text{m}^3$. The media is designed to remove 6 grams of BOD per m^2 per day.

The media are known as bio-carriers which supports the bacteria that treats the organic

material in the effluent. The system is designed to have 40% media which can be increased to 60%, allowing the loading rate to increase by 50% by just adding bio media.

MBBR TREATMENT PROCESS DESCRIPTION

MBBR are biological filters, designed to efficiently enable the organic load degradation, either as a part of a Life Support System or more generally, as an apparatus to treat any Wastewater Treatment Process. The non-treated water stream is continuously mixed with air in the MBBR, while the organic load is degraded biologically by microorganisms. This biofilm layer is formed on and in suspended bio media.



The Moving Bed Biological Reactor (MBBR media biofilm carrier) process is a new wastewater treatment process combining the advantages of the traditional Fluid Bed process and Biological Touch-Oxidation process. It has good effects on denitrification and dephosphorisation and is widely used in the industrial wastewater treatment and municipal wastewater treatment.

MBBR TREATMENT PROCESS PRINCIPAL

The wastewater goes through the suspending media of the MBBR (biofilm carrier) reactor, forming the biological membrane on the surface of the media gradually. With the action of the microbial on the biological membrane, the wastewater is purified. The media can move freely in the reactor with the mixing of the water; the aeration system is designed to keep the bio media in suspension and treat the effluent.

The effluent produced is discharged into the environment via the Precision Effluent Dispersal (PED) system, where the effluent is dispersed into the soil at low volumes at regular frequencies.

WASTEWATER DISPERSAL WITH THE PED SYSTEM

The PED (Precision Effluent Disposal) system is a low-pressure, high efficiency irrigation system that uses buried drip tubes to disperse treated effluent. Sub-surface drip irrigation technologies have been a part of irrigated agriculture since the 1960s; with the technology advancing rapidly in the last three decades. Using the latest technologies, the PEDS is a highly efficient and flexible wastewater disposal system that can provide frequent light irrigations.



The PED system is suitable for multiple applications including single houses, housing estates, small business parks, and multiple commercial applications, where wastewater can be dispersed and reused safely, efficiently, sustainably, and according to environmental regulations. We have installed the largest system of its kind in Europe.

The PED system complies with the EPA Code of Practice Domestic Wastewater Systems section 10.1 – Drip Dispersal.



THE PED SYSTEM - HOW IT WORKS

The wastewater treatment plant (MBBR) is connected to the PED system, allowing the secondary/aerated treated effluent to be dispersed via multiple drip lines, covering a targeted area. Sub-surface irrigation evenly disperses the treated effluent underground straight to the biologically active layer of the soil. The soil consumes residual bacteria or organic matter, and vegetation such as grass will absorb the nutrients, minimising the amount of nutrients entering surface water.

The sub-surface poly driplines are buried in a grid between 100mm – 600 mm below the ground, where inserted emitters disperse the wastewater evenly through the irrigation network.

FIG. 1 PED SYSTEM SUB-SURFACE IRRIGATION LAYOUT

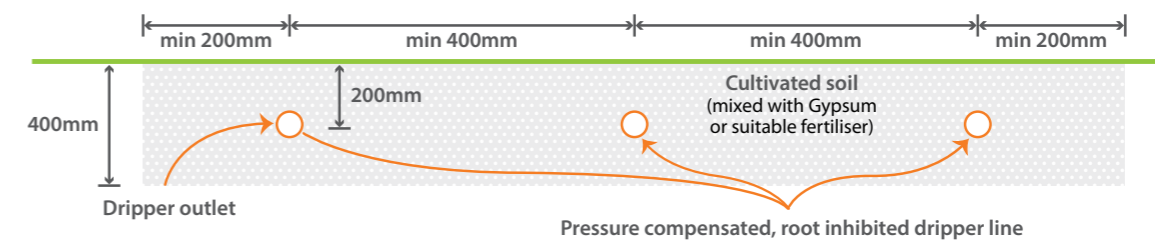
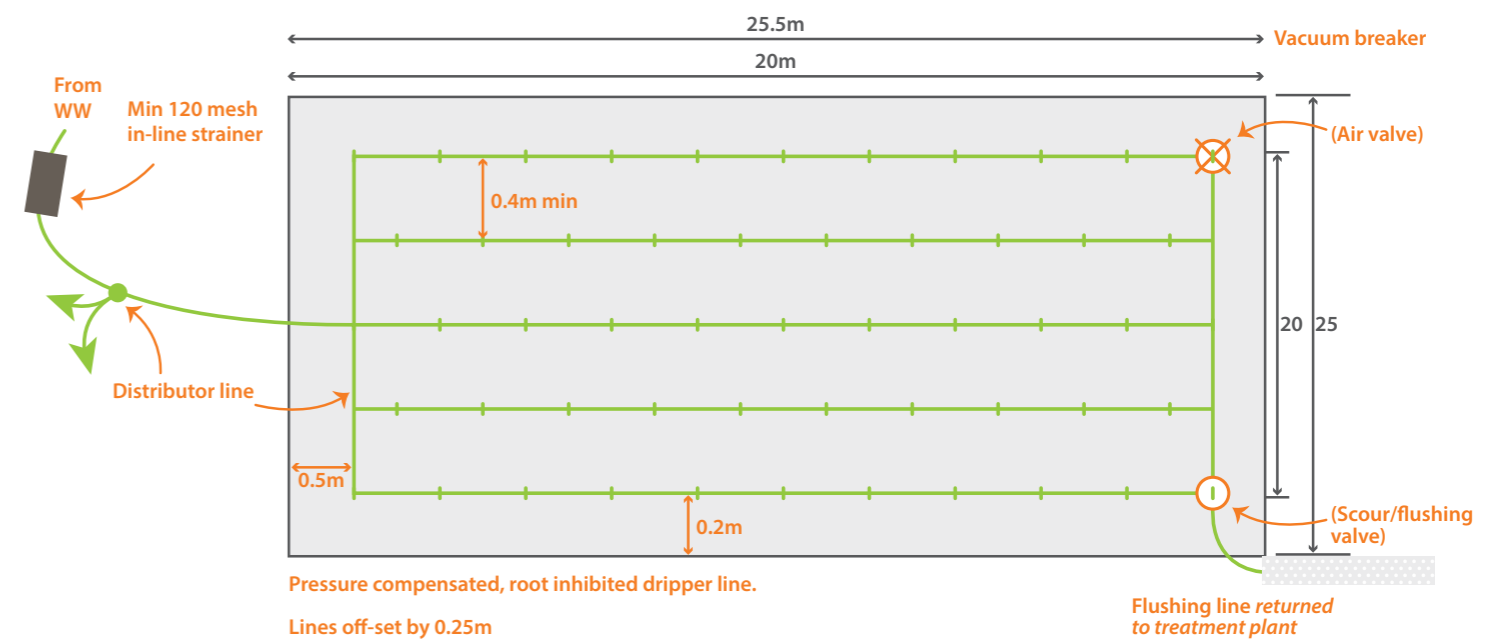


FIG. 2 PED SYSTEM LAYOUT



The constant dispersal of the water means there is no run-off or pooling on the top of the leach field, reducing human contact and contamination of waterways.

FURTHER ADVANTAGES OF THE SYSTEM INCLUDE:

- A high degree of control over water application with the potential for high uniformity of application
- Reduced evaporation
- The amount of water can be fine-tuned, avoiding water loss caused by run off or evaporation
- Frequent irrigation allows for optimum soil moisture content in the root zone
- Impressive performance in windy and arid locations
- If pre-treated wastewater is used for irrigation, the risk of direct contact with crops and labourers is reduced

When considering sub-surface irrigation as part of a wastewater solution, we will examine the soil type, site conditions, size of the land available and the intended application of the area. The PEDS will reduce nutrients entering fresh water as part of a nutrient management plan.

To find out more about bespoke wastewater treatment with the PED system and understand how it could be the right solution for you, contact Scott Parry, Market Development Manager, Bosta UK:

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T: +44 (0) 1284 716580
W: www.bosta.com



Visit our website to find out more.



INTRODUCING OUR PARTNERS

WE COLLABORATE WITH EXPERT PARTNERS IN TANKING, PUMPS AND BIO MEDIA, TO DEVISE AND DESIGN THE IDEAL BESPOKE SOLUTION FOR EVERY PROJECT.



O'REILLY OAKSTOWN - PRECAST TANKS



O'Reilly Oakstown manufactures a range of commercial wastewater treatment systems, ranging in size from 12PE to 1500PE, ideal for many industry sectors. All systems are manufactured using reinforced precast concrete.

The commercial wastewater treatment systems are designed to comply with all current and relevant guidelines, including EN 12566-3 and EPA Guidelines.

ADVANTAGES OF O'REILLY OAKSTOWN REINFORCED PRECAST CONCRETE TANKS:

- Reliable and durable – reinforced concrete
- Efficient and economical – low energy use
- Discreet and unobstructed post installation
- Large capacity
- EN 12566-3 & SR66 certified



WARDEN BIOMEDIA – BIOLOGICAL FILTER MEDIA

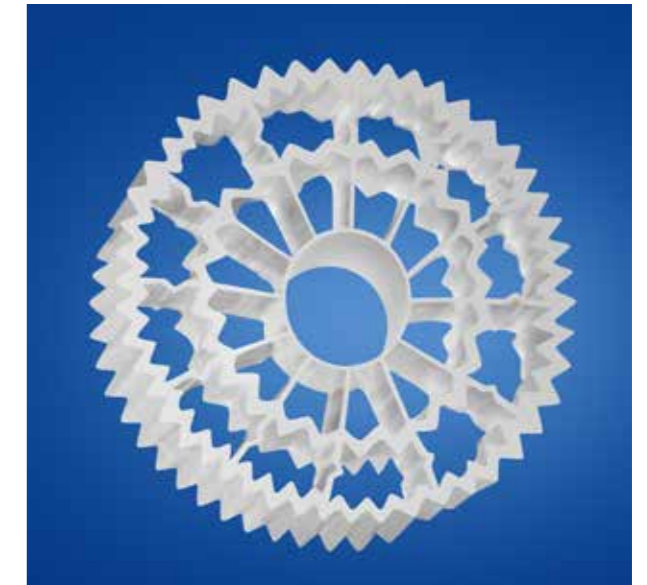


The treatment plant technology utilises free-floating plastic biomass carriers with a high specific surface area of attached biomass (biofilm), supplied by Warden Biomedica. The technology is selected because it can robustly cope with fluctuations in flow and organic load.

Warden Biomedica's biological filter media is feasible for both industrial and domestic wastewater and are used for organic removal, nitrification and denitrification.

FEATURES INCLUDE:

- Low weight
- Large active surface area
- Compact
- Easy upgrade of existing plants
- Durable, long-life
- Minimal clogging
- Random filter media
- High BOD5 reduction (up to 90%) and nitrification
- Low capital, low installation, operating and maintenance costs
- Corrosion resistant components



SEKO – AERATION BLOWERS



Supplied by Seko, the treatment systems utilise Side Channel Blowers which provide consistency and reliability in air displacement.

These silent-running systems deliver high volumes of clean, dry air at low pressures and vacuums in a package that has no wearing parts, does not need lubrication and therefore requires virtually no maintenance.

With die-cast aluminium casing and impeller, the lightweight Side Channel Blower performs both as a compression and vacuum pump and may be installed horizontally or vertically for ease of installation and minimal footprint.

SIDE CHANNEL BLOWER SPECIFICATIONS:

- Connections: 1" – 5"
- Flow rate: 40 – 1,370 m3/h
- Pressure: 70 – 480 mbar
- Vacuum: -60 to -340 mbar
- Motor: Single or 3-phase
- Noise: 46 – 71 dBA

WE SAVE | WE CARE | WE GROW



Visit our CSR page.



As a technical wholesaler, we are strongly aware of our social responsibility. With our Corporate Social Responsibility (CSR) program we want to maximise our impact on the environment positively by doing business in a sustainable way.

SOME OF OUR SUSTAINABLE INITIATIVES:



SUSTAINABLE DISTRIBUTION CENTERS

We have 2 sustainable DC's (in Veghel NL and Poznan PL) where we use geothermal heating, LED lights, we recycle waste and have solar panels.



PACKAGING & PRINT MEDIA

All our packaging and printed media are now made from sustainable and recycled materials. Our boxes, plastic bags, wrapping, pallets, brochures and even our catalogues.



RECYCLE PIPES

We stimulate the recycling of used pipes and minimise the use of virgin materials. We offer our customers special bags to recycle pipes.



GREENER CHOICE PRODUCTS

For many products we offer a 'greener' alternative. You can recognise those by the Greener Choice leaf icon in the webshop.



WATERSTARTERS

We believe that every human being should have access to safe and affordable water. Our aim is to renovate or build 600 boreholes in Kenya. www.waterstarters.org



"We can't do something about the number of people on earth, but we can do something about how we handle resources like water."

Marijke Ernest
Sustainability Coordinator

 ALL OUR PRINT MEDIA IS MADE FROM SUSTAINABLE AND RECYCLED MATERIALS TO REDUCE OUR IMPACT ON THE ENVIRONMENT.

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