

NUTREM® technology for Phosphorus & Nitrogen Removal – ground-breaking technology from Plantwork Systems

With Net Zero pressures intensifying and discharge targets coming under further scrutiny, we are all looking for ways to clean up. Biological Nutrient Removal (BNR) is clearly the answer but many of the water companies have found implementation to be overly expensive and intrusive on space, with unacceptable downtime periods detrimental to the running of the plant.

NUTREM® – brings the whole process into the 21st Century at a very competitive cost.

With NUTREM®, water companies, commerce and developers get industry-leading nutrient removal in an environmentally sustainable way, at the same time as offering a number of cost benefits. NUTREM® has an innovative modular construction, requires a smaller footprint than other options, consumes less energy than traditional BNR systems, with lower capital expenditure and lower operating costs.

All this makes NUTREM® ideal for new waste and sewerage developments, expansion of existing plants, new housing schemes, garden villages and a range of larger developments.

The key advantages of the NUTREM® process over alternative solutions are:

- Industry-leading level of Total Phosphorus (TP) removal (below 0.25 mg/l)
- Industry-leading level of Total Nitrogen (TN) removal (below 5 mg/l)
- Ability to meet 0.1mg/l TP with the addition of tertiary filters
- No dosing requirements
- Effective in all seasons (i.e. including weak sewage strengths)
- Lower capital expenditure
- Lower operating costs
- Smaller footprint, with resulting cost saving
- Modular and scalable, allowing costs to be spread
- High quality effluent capable of re-use without tertiary treatment
- Virtually odour-free operation
- No corrosive by-products

Research & Development sponsored by Severn Trent Connect – Petersfield – Southern Water Plant

Plantwork Systems has spent 10 years on R&D in this field and offer NUTREM® – an adapted BNR process which retains and improves the environmental benefits, whilst reducing the cost and footprint.

Also, Microbiologist Matthew Irwin is being sponsored by Plantwork Systems currently undertaking an interdisciplinary PhD at the University of Southampton, focusing



NUTREM Plant – Petersfield, UK and (inset) Matthew Irwin – PhD student at Southampton University



predominantly on Microbiology, and to a lesser extent Civil Engineering. This PhD is co-funded by Plantwork Systems and the South Coast Biosciences Doctoral Training Partnership (SoCoBio DTP). Within the University, he is completing the PhD under the supervision of Professor Jeremy Webb and Dr Yongqiang Liu.

Matt has already completed an MRes at the University of Southampton, investigating the effects of water hardness on the microbial composition and characteristics of biofilms within Aerobic Granular Sludge (AGS). Throughout his masters, Matt gained many skills in microbial analysis and a much greater understanding of sustainable wastewater treatment technologies.

For this PhD he is particularly interested in the possibility of tailoring the microbial community within wastewater treatment reactors to enhance nutrient removal and reduce environmental impact.

All this combined research and development has led to some outstanding INDUSTRY LEADING results of less than 0.1 mg/l total phosphorus. When there is total confidence in consistent figures, Plantwork Systems will make a formal announcement to the water companies – which will change the expectations for phosphorus and nitrate levels for the entire industry.

Plantwork Systems also offers BNR Conversion of Activated Sludge Plants (CONVOX)

Where existing infrastructure needs updating rather than the whole new NUTREM® process

being installed. This is a very attractive alternative to chemical dosing – eliminating associated risks and ongoing costs.

BNR Conversion of Activated Sludge Plants provides enhanced nutrient removal in existing infrastructure, with:

- No chemical handling, deliveries, or supply chain risk
- Reduced whole life cost and carbon footprint
- Lower sludge production
- Alkalinity improved through BNR stages
- Opportunity for phosphorus recovery

Plantwork Systems - Water Industry Awards Finalist

Plantwork Systems was recently nominated as a finalist in the Water Industry Awards for its work with South West Water in the rural villages around southwest England many of which have small populations and operationally challenging wastewater treatment systems.

Due to the high cost of replacing these systems, and the fact that many of them are also situated in conservation areas, the water companies need fast, low cost, environmentally friendly solutions which can be trusted to address suspended solids compliance issues and provide a reliable and financially viable solution. Plantwork Systems is installing our Filtration+ product to tackle these problems.

WHY USE ELECTRICITY WHEN YOU CAN USE GRAVITY?

WHY USE CHEMICALS WHEN YOU CAN USE BIOLOGY?

We can help you rise to the challenge of Climate Change

Plantwork Systems offers a unique combination of environmental passion, technological innovation and unrivalled experience, enabling us to develop and deliver ground-breaking sustainable wastewater treatment solutions for the wastewater and commercial sectors.



PLANTWORK SYSTEMS
INNOVATION BY NATURE

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