

POWER & WATER

HEAD-ON APPROACH TO TACKLING POLLUTION

Meeting new phosphorus and metal consent limits is a priority for the water industry – but what method works best for the many wastewater sites that are inaccessible, where space is limited and where environmental concern and regulatory measures are paramount?

Phosphorus removal has often been achieved using 'adsorption' techniques in which metal salts in the form of liquid chemicals are added to wastewater – but as with any process that involves chemical application there are associated risks involving the transportation, handling, storage and mis-dosing of the chemicals, as well as the steady increase in the cost of liquid chemicals.

The size and inaccessibility of some wastewater sites, especially as some are unmanned makes the application of chemicals even more of a challenge. However, promising results yielded by the UKWIR Chemical Investigations Programme trials indicate that a new approach is possible.

Soneco®, a patented technology combining 'Electrolysis', together with 'Ultrasound', has been successfully utilised by water treatment specialist Gareth Morgan, CEO of 'Power & Water', to provide a safe, innovative and method of treating water by electro-generating reactive reagents (metals) and metering them precisely and directly into the waste stream.

Making the best use of the earth's finite resources is a priority and recycling nutrients, like phosphorus, is crucial so it is important to recognise that the systems have the capacity to not only remove, but to capture nutrients for effective re-use.

Soneco® has been installed at an aquaculture plant in Norway, for example, which has allowed the introduction and development of 'circular economy' principles into operations at the waste management



Historically, the River Rheidol has failed to meet European Water Framework Directive standards as a result of metal discharges from Cwm Rheidol mine complex

plant, meaning fish sludge can be turned into usable fertiliser without the need for liquid chemicals, polymers and filters.

A robust example of nutrient capture can be found at the Gelli Aur campus of Coleg Sir Gâr, where Power & Water has installed an economically and environmentally-viable slurry management system aimed to address the agricultural industry's impact on the environment by tackling pollution with a 'head-on' approach.

The need is pressing; in Wales alone, as Natural Resources Wales has found, there have been between 85 and 120 pollution incidents in each of the last six years, caused by dairy and beef farms in the region.

Soneco® technology is the 'beating heart' of the innovative slurry-dewatering and purification process, which recovers nutrients while removing pathogens and organics from farmyard slurry.

The treated water can then be recycled or safely discharged into a local watercourse and with up to 80% dewatered slurry produced.

this can be stacked, stored and applied more easily, reducing associated costs and risk of pollution.

Challenges posed by the legacy of the abandoned metal mines which pepper our landscape is another example of how Soneco® treatment systems have been effectively applied.

The Cwm Rheidol mine complex, 15km east of Aberystwyth, is a good case in point, having been cited as one of the 10 most polluting mines in Wales: independent laboratory test confirmed that the Soneco® system achieved 99.5% removal of metals including lead, zinc, iron and cadmium.

Where once eight tons of iron were being discharged into the water, it was found that no metal deposits were released into the local watercourse after treatment. Not only does this help the environment, but it holds the potential for precious metals to be extracted and re-used, helping to make the best use of the earth's depleting natural resources and potentially providing another revenue stream.

The rugged design, small footprint and potential for remote, online-operation, make the Soneco® water treatment systems ideal for use on remote sites, whether wastewater treatment facilities, in agriculture, aquaculture or elsewhere. As the system is low voltage and can be powered by renewable energy, it is also a sustainable and low-carbon alternative. Moreover, it is a practical, viable system which delivers consistent results. ■



Agricultural slurry dewatering and water purification system using Soneco® technology

 Power & Water

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