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Supply chain set to play key role in helping water companies reach Net Zero by 2030

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Steve Morris, Managing Director of wastewater treatment specialist HUBER Technology UK, takes a look at some of the challenges the water sector faces in achieving Net Zero Carbon 2030 – and how the supply chain can help with Elaine Coles from Waterbriefing.

In 2019 the UK water companies set themselves a tough challenge as part of their Public Interest Commitment when the industry became the first sector in the UK to commit to net zero carbon emissions by 2030.

Since that time the water companies have been setting out their individual strategies to achieve their net zero targets – Northumbrian Water have set themselves the accelerated target of reaching net zero by 2027.

So what does this mean for the water sector supply chain in practice? Water UK rightly says that “net zero will be a huge team effort” and that the Routemap will also enable those involved in the sector – including the water companies, regulators and the wider supply chain to understand the key opportunities and challenges in preparing the sector to become net zero by 2030.

The water companies know that they can't do this alone – and collaboration with the supply chain has a key role to play. From a supplier point of view, we're already seeing a real drive and explicit requirements in terms of procurement processes that we need to provide clear evidence to demonstrate what we are doing - both in terms of our own carbon emissions and how our technologies and services can help the utilities achieve their net zero ambitions.

The focus is on two key areas in particular:

1. assurance that carbon reduction is a part of our own production processes and operational activities for the goods and services we provide
2. demonstrating that these goods and services can in turn deliver significant reductions in energy use and associated carbon emission reductions – both for the water companies' operational activities and capital investment schemes.

Like a growing number of suppliers, for some time now at HUBER Technology we have been systematically developing our own carbon strategy and taking active steps to ensure we can clearly demonstrate our green credentials to our customers. To take just a few examples:

- Our parent company HUBER SE, which is headquartered in Germany started buying green electricity in 2014 for its manufacturing processes sourcing 100% renewable energy from small and large hydropower plants in Austria.
- Significant investment by HUBER SE in state of the art production plant with the aim of reducing waste and improving its own operational efficiency.
- IE4 energy efficient motors are now fitted as standard on new machines.
- Using stainless steel, rather than galvanised steel, to manufacture equipment – providing significant benefits to customers in terms of longevity, whole life costs, reduced maintenance requirements and downtime – all of which translate directly into associated carbon reductions.

Here in the UK, we continuously monitor our carbon footprint to find ways to reduce its impact on the environment. Our carbon footprint is calculated and verified in accordance with ISO 14064, the International Standard for Greenhouse Gas Emissions, Inventories and Verification. We're also looking at our fleet and transport requirement and making ever-growing use of electric vehicles.

However, the area where we can make a real difference and make a meaningful contribution to helping the water companies achieve significant reductions is first and foremost helping them to minimise operational carbon emissions.

Technology is already available to deliver significant reduced carbon wastewater treatment processes



Managing Director Steve Morris takes a look at some of the challenges the water sector faces in achieving Net Zero Carbon 2030



Installation photos of HUBER Screw Press Q-PRESS® at Plymouth Central



Installation photos of HUBER Screw Press Q-PRESS® at Plymouth Central

HUBER Technology has the potential to make a major contribution to reducing energy use and cutting associated carbon emissions in their operational activities – thereby also delivering significant cost savings in the process.

The WATER UK Routemap clearly states that activities the UK water companies will need to undertake include:

“identifying feasible options to reduce process emissions, initially through operational adjustments to existing processes and then through gradual deployment of alternative treatment technologies.”

It also flags up “low regrets actions” that the sector can take to start implementing immediately.

These include:

- Maximising energy efficiency potential in water and wastewater to include accelerating deployment of interventions already adopted by individual water companies but scaling them up at sector level.
- Increasing monitoring and modelling of process emissions to inform operational adjustments to reduce these where possible, including optimisation of existing process operations to minimise emissions from secondary wastewater treatment processes.
- the technologies themselves
- how they are installed and used
- the aftercare, support and maintenance services which underpin them

The Routemap also points out that the sector will need significant support from its supply chain in understanding suitable operational adjustments while maintaining process performance and resilience to meet this challenge.

From a supplier point of view, I’m keen to emphasise that existing technologies and services are already available which offer proven solutions which can be immediately implemented and start to deliver demonstrable results within months – both in terms of payback time, reduced energy use and cuts in carbon emissions.

There will of course be trials of other solutions and as yet unproven technologies – but the outcomes may take longer to come to fruition before they can be implemented and rolled out at scale.

In the meantime however, there are immediate steps water companies can take which will make a real difference. To take one specific example from our own company, our Q-PRESS® sludge dewatering technology is already in use in a number of wastewater treatment and industrial sites in the UK – and is undoubtedly a low regret option.

A successful trial of the Q-PRESS® to replace existing energy-intensive centrifuges at South West Water’s Plymouth wastewater treatment works demonstrated significant cost and energy savings - the Q-PRESS® can typically deliver:

- 40% lower chemical consumption
- 90% power savings
- 50% saving on annual operating costs

Following the trial, we were selected to supply permanent HUBER Q-PRESS® sludge dewaterers for both the site at Plymouth Central and the water company’s Maer Lane WWTW. The figures, which show Q-PRESS® power consumption of around 11 kw when compared with centrifuge technology of 140kw speak for themselves – an order of magnitude in terms of cost, energy use & carbon reductions.

In my view, the fact that South West Water were prepared to move away from conventional thinking and select a different technology represents an important lesson for the net zero journey.

At a broader level, the Routemap also flags up the potential of utilising waste heat from the sewerage network to help the heating and cooling demand of residential and commercial buildings.

Again, HUBER already has proven technology which is in widespread use at sites in Europe and the US. The HUBER RoWin Heat Exchangers are a ready to go technology for recovering low grade heat which can then be put through a heat pump for either heating or cooling purposes. In the context of climate change, cooling is as big a requirement as heating.

However, while the effective use of the technology can be demonstrated, its uptake in the UK is still low.

In my view, one reason for the slow adoption of the technology for low grade heat recovery may be due to the specific constraints of dealing with the multiple stakeholders involved in these schemes.

Quite apart from the water companies’ own activities, it might be worth considering the potential regulatory and structural barriers which may be presenting obstacles to meeting these challenges.

Other services which can play their part in reducing carbon emissions include preventative maintenance and what we call Smart Servicing of existing assets –i.e. the use of data for asset condition monitoring, increased operational efficiency, reduced power

	HUBER Q-PRESS®	New centrifuge	Other press technology
Average Polymer consumption	4.8 kg/tDS	7 kg/tDS	6.3 kg/tDS
Power consumption (kW)	11	140	12
Cake quality (DS content)	30%	23%	25%
Transport cost reduction (vs. existing)	23%	4%	8%
M&E Capital Cost – HUBER Baseline 100	100%	64%	116%
Total Scheme Capital Cost – HUBER Baseline 100	100%	106%	111%
Annual Operating Cost Relative to current	-£298,208	-£150,666	-£223,539
NPV 20 yrs HUBER based 100%	100%	130%	117%

A successful trial of the Q-PRESS® to replace existing energy-intensive centrifuges at South West Water’s Plymouth wastewater treatment works



HUBER Disc Thickener S-DISC skid mounted installation at Great Dunmow

We also have the HUBER CarbonWin process, which uses the HUBER Drum Screen Liquid and the HUBER S-DISC sludge thickener, as an alternative to conventional Primary Settlement, to improve process efficiency, energy balance and reduce opex.

While these may be indirect methods, they can still nevertheless contribute to carbon emission reductions, and are easy to implement potential quick wins.

Other areas where regulatory hurdles could be removed include co-digestion of sewage with other organic wastes – while these are referred to in the Routemap, to date this has still not been rolled-out.

Again, we have existing technology solutions, already operating on commercial waste sites, which stand ready to optimise the process and performance of AD plants, including digestate screening and grit removal.

Measuring carbon emissions is a source of ongoing concern for the sector

Among a number of key issues related to achieving net zero by 2030, must surely be the question of how the companies will measure their carbon emissions and reductions.

According to the Water UK Routemap, there is still uncertainty around the scale of process emissions from the sector and two issues that the sector is looking to resolve. Firstly, an update to the Carbon Accounting Workbook methodology used by all the water companies. The impact of this potential change is estimated to increase baseline process emissions by 31% and the residual level of process emissions in 2029-30 by ~25%.

In addition, there is ongoing uncertainty around the true level of emissions arising from wastewater treatment processes in the UK.

The concern must be that the water companies will face an ongoing challenge in making this work unless there is some real uniformity of measurement and an agreed consensus in taking this forward.

The water companies have faced a similar challenge with the advent of Totex. While in theory measuring Totex should be a straightforward process, in practice that has never really been the case – to date there is still no real consistency in terms of how the water companies measure their Totex costs.

In my view, establishing how carbon emissions are measured to ensure a level playing field will be of considerable benefit to both the water companies and the supply chain who stand ready to help with practical measures and solutions which will make a real difference.

It is a truism to say that if you don't measure it you can't measure it – but accurately measuring carbon emissions and reductions requires a generally agreed mechanism and approach to establish a real level playing field. Without this there will be a range of varying parameters which will inevitably not produce a clear and accurate assessment of the water sector's carbon landscape.

And this will not just be a challenge for the water companies – it also has implications for how comparisons can be made at a regulatory level to ensure the sector is operating on a level footing.

Without this the sector risks generating huge amounts of information and data – but with a question mark hanging over how meaningful will it be.

With investment and operational decisions increasingly set to be viewed through the lens of net zero carbon, ensuring accurate data is available which can then be translated into actionable intelligence will be key to achieving Net Zero by 2030.

Given that there is no single and rapid silver bullet fix, the ability to assess the carbon impact of a range of measures all contributes to working steadily and consistently towards that goal. While they may of themselves be relatively small wins, taken together the whole is likely to be significantly greater than the sum of its parts.

Finally, I'd like to make the point that the water sector cannot simply build its way towards achieving Net Zero – exemplified by a scheme we worked on at Great Dunmow with Anglian Water which focused on an off-site manufactured DfMA solution installed above ground.

This meant less concrete was poured, while having the assets above ground rather than in channels made maintenance and servicing a far more straightforward activity compared to conventional civils solutions.

For any project, Net Zero is set to be the prism through which the components should be viewed .i.e.

- **the technologies themselves**
- **how they are installed and used**
- **the aftercare, support and maintenance services which underpin them**

The water companies should rightly be applauded for setting themselves such an ambitious goal. Hopefully, sector-wide collaboration will see best practice cascading across all points of the wider supply chain and across into other sectors.

And meeting the challenge means the water companies can say to their stakeholders, including the communities they serve and their investors, we are making sure our suppliers are fully engaged in achieving Net Zero.



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