

MAKING THE MOST OF WHAT YOU HAVE - OPTIMISATION OF ASSETS IN WATER AND ENERGY

Stantec reviews how and says the winners will be those who best adapt to an environment based on outcomes and understand how to optimise what they already have



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There has been much talk and debate around what a TOTEX environment means for the water companies across the UK. But, there has not been the same level of discussion around TOTEX in the wider energy sector. As we move from an environment focused on outputs, to an environment based on outcomes - where the total cost of ownership is reflected - our focus needs to change and adapt.

While the TOTEX discussion within the water and energy sectors respectively may have been different, there is a common thread. This is especially the case in the water sector and the relatively new, renewables sector. In particular; optimising the performance of assets to maintain and outperform business plans and business cases. So, while TOTEX may have a higher profile in the water industry, the delivery aspects of TOTEX are equally and arguably more important to the power industry. Especially as we are now moving from the construction of large numbers of renewable energy assets to their long-term operation and maintenance, as they come out of their test and guarantee periods.

Optimisation of assets can broadly be broken down into two types: -

1. Optimisation of treatment systems to

minimise energy and chemical usage, to produce good quality recyclates and to produce feedstock for energy generation systems (maintenance of compliance being taken as a prerequisite);

2. Optimisation of energy generation systems to maximise power generation and minimise parasitic power and chemicals.

These points and principles are not new, they are known and well understood to energy managers in almost any large organisation. But as we all know - knowing about them is one thing, having the ability to make them happen while bombarded with day to day operational issues is another.

Historically, expert consultant organisations such as Stantec have been very successful at helping clients embrace TOTEX, designing the right solutions, and helping clients to understand how, sometimes complex processes, operate. As we move to an operational focus, the role of the expert consultants needs to evolve from giving advice and writing reports on what could be done, to working with the client to identify improvements, and then developing changes to the point of implementation. They must have the ability as a single end-to-end delivery entity to implement and deliver the changes, monitor and optimise changes, and ultimately be prepared to share in the success or otherwise of changes they have proposed. Gone will be the days where the consultant sits and advises at a distance from the actual delivery risk.

Does optimisation bring treatment plants closer to non-compliance?

Discussions around the optimisation of treatment systems (be they clean water or wastewater) are almost always accompanied by operator perceptions that this means 'sailing closer to the wind' and bringing plants closer to non-compliance. Compliance is king and always will be. With process modelling, big data combined with predictive analytics, and intuitive operator interfaces, we can now a model in the virtual world to understand what is happening and about to happen to a system. We can provide the operator with the intelligence to know

quantitatively as well as qualitatively what can be done to improve performance while maintaining compliance.

Suffering from the wrong waste?

One of the main challenges around the ability of processes, and particularly waste and biosolid treatment systems, to meet their target operational performance, centres around the difference between the anticipated waste/feed quality and that received at the operational plant. A designer will always tell you that the plant would perform perfectly if only the feed was as it should be!

Changes in wastewater treatment plant operations and in curbside collections means that many systems suffer from "the wrong waste". Ultimately, we cannot dictate what is supplied to the biosolid or thermal conversion plant. We can influence the feed to some degree, but we cannot prescribe. Given knowledge of the actual feed to sites which is gained over several years operation, the performance capabilities and limitation of sub-systems (equipment such as dewatering plant, trommels, ferrous separators etc.), and experience of operating the conversion systems (be they digestion or thermal treatment systems), we are, or should, be in a position to be able to optimise what we have, as opposed to what we would like to have.

We need to provide plant operators with fully calibrated virtual plant models of water, wastewater and waste treatment systems, such as Stantec's Mimic, MyPlant, OptimiSe and MaximiSe systems. Then by demonstrating over time how these models accurately predict both performance and compliance, we can gain the trust of naturally skeptical plant operations. This trust-based relationship is the key to being able to deliver plant optimisation over time. Only by gaining the trust of operations will modifications and improvements be successfully implemented.

Winning over skeptical plant operators is key

Having gained the trust of plant operators that changes can be made without jeopardising compliance, availability or revenue, a cost-



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effective means of delivering change needs to evolve. Using main/major contractors to make small incremental changes to plant is unlikely to work as their business models predominantly revolve around large complex capital projects and programmes. Where Consultants are good at advising, small works contractors are good at 'doing'. However, without alignment and accountability between the advice and implementation, good ideas will fail through lack of ownership of the overall outcome. What is needed is an aligned delivery model for the delivery of optimisation services to clients. A model that maintains continuity between the ideas generator, the implementer and the owner. One that ensures good ideas are identified, delivered with focus on the outcome, and with post implementation monitoring and tracking which realises and maintains savings.

Many clients want to be master of their own destiny and aim to provide an end-to-end optimisation capability in house. The weakness of this approach is the difficulty for individual organisations to be continuously aware of the latest opportunities in the market place or to justify dedicated off line or semi offline teams to provide a continual focus on continuous optimisation and the delivery of change that is essential for success.

Making the most of what you have

We are moving into the world of making the most of what you have (without breaking it), whether water or renewables. This is why focused, delivery capable consultant organisations operating across multiple sectors and who can operate in a big data environment to model and identify efficiency opportunities can make a huge impact. They can implement and monitor change and provide the intelligent client with real opportunities to optimise their assets by cost effectively applying cutting edge techniques to improve efficiency, while at the same time being quantitatively aware of risks.

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