



PREPARING WATER AND WASTEWATER TREATMENT FOR THE FUTURE

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Water and wastewater treatment in Australia and New Zealand have seen significant change in the last two decades. Water utilities are under constant pressure from the community to protect the environment, treat water or wastewater to a higher quality, and meet the demands of digitally connected communities and customers. These industry pressures are combined with broader issues such as emerging technologies, population growth, rapid urbanisation, climate change, extremes of weather patterns, aging assets, supply chain transformation, and the need for more efficient performance.

As the industry continues to navigate the evolving utility landscape, it has become clear that water utilities wanting to prepare and future-proof their organisation need to reconsider their approach to investment. In order to operate more efficiently, reduce costs, engage customers, and provide a healthier and more environmentally friendly service, utilities need to embrace industry evolution in line with the following trends.

DOING MORE WITH LESS

The water sector needs to do more, with less, for less, so the adoption of innovative techniques to extract greater performance is critical. Effectively harnessing enabling technologies within the asset base, to avoid stranded assets, will consequently become of greater importance to water utilities. Take anaerobic digestion for example, as a traditional solids treatment technology, with high sunk costs. Water utilities must focus on technologies which enhance the performance of this asset in order to continue improving its inherent value. Pre-treatment technologies can improve performance and capacity, or configuration changes can increase effectiveness without significant additional upgrade or replacement costs.

TRANSFORMING O&M WITH DATA

Water utilities need to change the way their operations and maintenance (O&M) functions work if they want to meet the needs of the public. With the pressure on capital investment, and reduced budgets for asset maintenance, the ability to conduct "right time" (driven by cost or risk), rather than "just in case" (schedule-based) or "just after" (reactive) maintenance schedules is vital.

Data analytics, coupled with real-time sensors, can support both reactive and proactive management of day-to-day operations. Today water utilities operate in silos across functions and with multiple versions of the same data sets, creating duplication, misinterpretation or conflicting strategies. Utilities organisations of the future should be creating a single data platform which allows simultaneous cross organisation access to the same data source.

The City of Atlanta for instance, has used predictive analytics along with geospatial visualisation on all of its existing sewer level sensors to create an effective means to identify potential pollution incident sites before they happen.

MAKING THE MOST OF WASTEWATER

Modern wastewater treatment endeavours to deliver maximum possible value from the process and the system as a whole. However, by its nature, wastewater treatment can be energy intensive, which is driving the industry toward net energy neutral treatment plants, or energy factories which produce more power than they consume.

The Netherlands launched its Energy Factory initiative several years ago to harvest the chemical energy that is present in organic matter in wastewater to move towards energy neutrality. Providing a glimpse into the future, this industry-leading application provides the utilities industry with a benchmark to guide future system planning.

ENGAGE CUSTOMERS WITH UNREALISED TREATMENT BENEFITS

Cross-industry best practice has shown how greater customer engagement can be achieved through the use of customer behaviour analytics. More meaningful engagement with customers in the dialogue around water and wastewater services is becoming a fundamental tenet of utility operations worldwide. For instance, the Sydney Park Stormwater Project harvests and treats up to 850 million litres of stormwater from Newtown's Munni Street catchment each year, releasing the cleansed water into the park's main pond and creating a popular waterscape for tourists. Beyond an aesthetic water feature, the waterscape creates an opportunity for residents and visitors to be educated on the concept of water capture and cleansing; ultimately increasing engagement and interest levels.

While Sydney Park stormwater created a community landmark, other issues such as sewer abuse do not provide the same level of uniting community engagement opportunities. Despite this, by moving into greater levels of customer transparency, by sharing blockage hotspots for example, utilities can support a greater sense of community, which, in turn, can support education programs to tackle the problem source.

By embracing these emerging trends in the water and wastewater treatment industries, water utilities will be able to face the challenges and demands of the future. The industry is heading away from benchmarks based on historical performance and generalised cases, which can be applied broadly, towards benchmarks based on a series of interconnected models, with more focus given to performance trends. The future operating model also moves all those engaged in O&M towards an outcome-based model rather than scheduled task or output-driven one, leading to a higher degree of productivity. **U**