

# Drive savings using Dynamic Torque Waveform technology



## How healthy are your pumps?



New developments in smart monitoring and pump management technology reveals the extent to which pumps across your lift station fleet, including those your operator team feel have little or no issues, can be heavily impacted by the problem of partial ragging. Our research has found that many pumps suffer substantial loss of flow through undetected partial ragging.

This debilitating condition often goes unnoticed as the extent of blockage is not enough to cause a pump to trip – and the detrimental impacts are not detected by the usual status monitoring on telemetry. A pump operating in an unhealthy imbalanced condition will suffer more damage and wear more rapidly than a clean running pump.

## Impact on risk of flooding

The risk to service is two fold for partially ragged pumps – if your pumps are under-performing on an ongoing basis and flow rates are reduced it goes without saying that your lift station is at increased risk of being beaten by a

storm, or worse losing station capacity through premature pump breakdown caused by the dynamic effects of long term running with partial ragging imbalances. Regrettably this hidden issue can be playing out undetected across the fleet, with even the ‘good’ stations affected.

For more insight into this challenge refer to our white paper ‘**Innovative technology reduces sewage pumping ownership costs by 15%?**’.

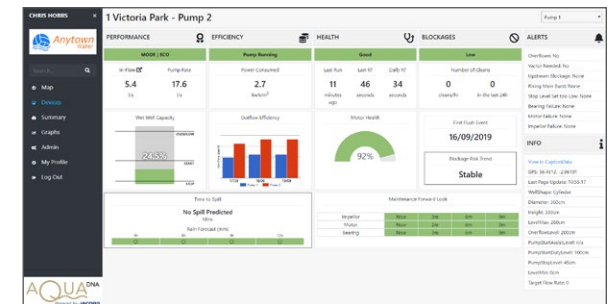
## What can be done?

There is an emerging technology that is effective at preventing sub-optimal running: **real-time Dynamic Torque Waveform (DTW) analysis**. This technology, whose benefits have not previously been widely recognized, is a highly sensitive way to detect even small deviations from a pump’s optimal clean running state. Technology provider Clearwater Controls developed this technology originally to create their patented DERAGGER®+ solution. It works to prevent the buildup of debris in the pump through monitoring the variance in Dynamic Torque Waveform using smart machine learning algorithms and triggers early cleaning of the pump at the onset of any debris-related distortion.



Recognizing the clear benefits from DTW technology and the need to better understand and manage the unseen menace of partially blocked pumps, **Jacobs have developed an asset management platform – AquaDNA™ – to provide Operations and Maintenance teams with a greater overview of station performance.**

## AquaDNA – the medical chart for pumps



Example AquaDNA analytics dashboard

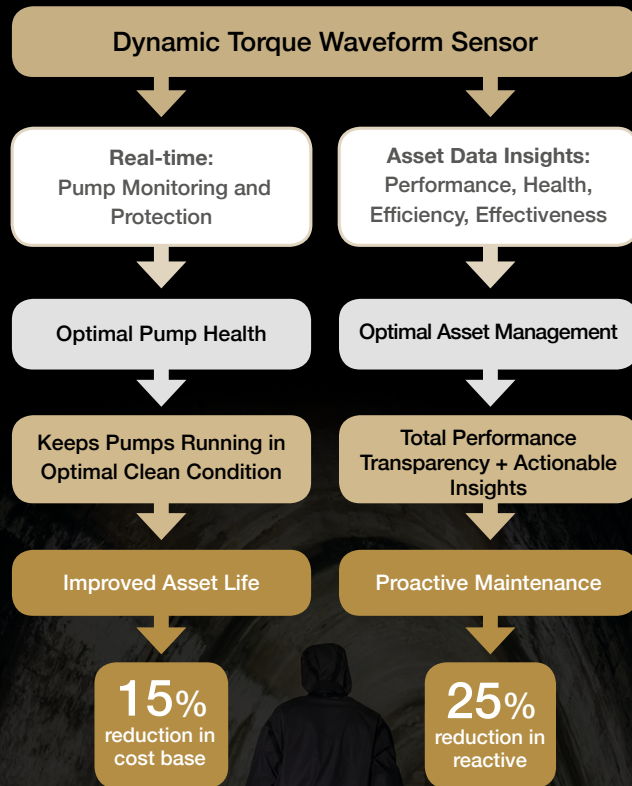
The platform makes use of the highly sensitive and very granular DTW sensor technology and couples this with real-time, predictive insights of lift station performance to continually monitor pump performance, health, efficiency, storm handling, and asset care. That the solution can quickly pay for itself through savings generated from the DTW technology is an obvious plus.

Our vision for AquaDNA is to allow teams to have full 24/7 visibility of all their pumps in real-time rather than having to wait and see how pumps are performing when routine (or emergency) maintenance visits are carried out. Teams can use this platform to see when pumps are veering away from their optimal running condition and proactively step in where they need to, keeping pumps running at optimal levels and minimizing the risk of flood events occurring.

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Save money,  
improve performance



## A solution that pays for itself

Installing AquaDNA provides a baseline saving of 15% on the cost of ownership and is shown to dramatically reduce reactive call outs, so you save from day one and the solution becomes self-funding over a short period of time.

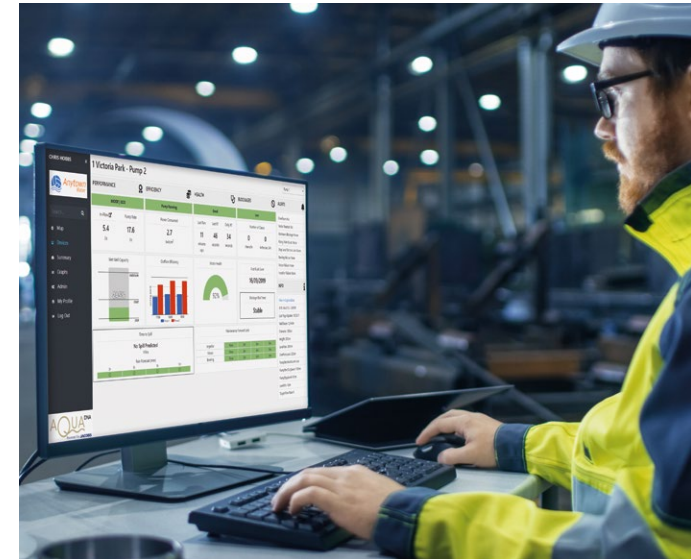


Harnessing the abundance of real-time insight from DTW sensors and focusing on key insights through the lens of AquaDNA gives you:

- Real-time and predictive insight to better manage your pump fleet in the near and medium term
- Allows the application of longer term asset management best practices that are driven by meaningful hard data
- Facilitates the move away from reactive maintenance and gives the opportunity to reshape how best to keep your lift station fleet in a healthy and robust state

## A helping hand for field teams

With the field operator in mind, the proactive nature of AquaDNA provides better and safer working conditions for your maintenance team. Problems with pumps are less severe and require less time input when tended to, resulting in less time working over water or in confined spaces, fewer emergency overnight callouts and a reduced need to work to clear contaminated materials.



## Keep your existing pumps fit

We have designed AquaDNA so it can be integrated alongside the DTW technology within your current pumps and control panels, meaning you don't need to change all the pumps across your pumping station portfolio to benefit from this solution. Better still, the AquaDNA platform has an intuitive interface which makes platform learning straightforward – and before long, monitoring your pumps in real-time will become second nature.

You too can apply an efficient solution to help you better manage your lift pumping stations' performance. Combining advanced analytics with robust asset portfolio management, AquaDNA lets you monitor your pumps in real-time and step in before problems begin to build.