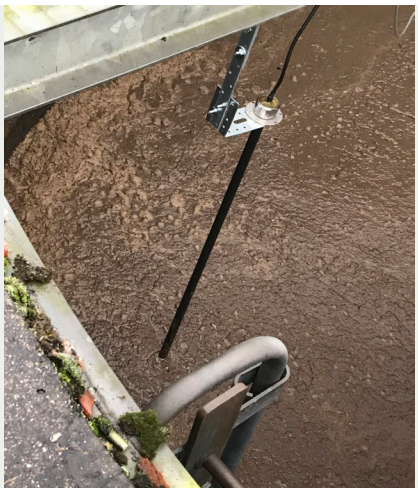
Sometimes you have to get down and dirty to achieve the best results .



When, as a water utility company, you have in excess of 300 sewage treatment works, of various sizes and some in very rural locations, having accurate data regarding their operating status is paramount in ensuring efficient and high environmental quality operation.

This need for accurate data is even more pronounced when the sewage treatment works are unmanned, operating away from one of the company's facilities depots, necessitating long and costly journeys to site.

One utility company in the United Kingdom was having a particular problem detecting the levels in the primary settlement tanks. Some sites have 1 tank and others 2 tanks, but the common problem was reliable level detection of liquids with a high sludge content.

They were using float sensors to detect levels, but these proved very unreliable with repeated failures as the floats succumbed to the build-up of contaminant which either made them stop functioning or report false readings. These missing or false readings could lead to either unnecessary maintenance visits - to extract the sludge when it was not required, for example - or an overflow with extreme environmental consequences as well as considerable process upset.

The company was planning to install ultrasonic sensors to cure this ongoing problem, but although they were confident that the new technology would improve the number of failures or misreads, they were also aware of some operational shortcomings which meant that they could still suffer from the occasional process disruption.

Although the non-contact design of the ultrasonic sensor would eliminate the immediate problem of solids build-up they were encountering with the float sensors, the outdoor installation environment could pose problems with humidity and fog. Additionally, because the sensors use time-of-flight, their accuracy is affected by temperature change - which alters the air density - and therefore the speed of

the ultrasound pulse as it travels through the air.

If the tank contents have a turbulent surface, this can also cause an inconsistent measurement output, as will any foaming that the turbulence causes. Installation of the sensors could also only take place when the tanks levels were low to make sure there were not any obstructions within the tank that could provide a 'false echo'. This would make the installation process longer and more costly.

So before they committed to the ultrasonic sensors, they tested the Gill 7014 water utilities liquid level sensor alongside an ultrasonic device.

As a conductive sensor, this is a counter-intuitive solution when you are already encountering problems with immersed float sensors. However, the 7014 sensor has a smooth measurement probe, entirely sealed in a hydrophobic FEP coating, which is non-stick and therefore does not suffer from solids build-up. Coupled with the elimination of any holes in the probe and no moving parts, means the sensor can withstand the challenging liquid without its measurement reliability being compromised.

This smooth, non-stick probe also means that it is not affected by suspended solids, flocculants, surface turbulence or foaming. The FEP coating also makes it compatible with sludge, colloids, effluents, acidic fluids and high viscosity liquids.

The probe has been engineered to withstand the lateral loadings it will encounter with fluid flows in the tank, and the stainless steel housing makes it able to withstand whatever the weather can throw at it.

Both sensors were linked up to a remote monitoring hub with its own power supply, enabling the outputs from the sensors to be remotely monitored. This helped keep the installation costs down and the low power consumption of the Gill sensor meant that it could run for at least two years on the battery supply.

The early results of the trial showed that both the sensors performed as expected, but the level of accuracy and responsiveness from the Gill sensor was improved over the ultrasonic model, with fewer measurement anomalies recorded.

The trial continues, to asses the long-term performance when more weather variations will be experienced, along with the maintenance requirements of the sensors to maintain their current performance levels.

To find out more about how the Gill 7014 water utilities level sensor could help you with your level sensing needs, visit **gillsc.com/water**.