

MPOX reduces treatment costs at coastal sewer network.

A pumping station sited in the United Kingdom receives all the flow from the combined sewers in the area. The station is un-manned.

The pump main between the station and treatment works is some 10 kilometres long and has a marked undulation due to the geological outline of the coast. The result of this geology is that at some points near the station, the Sewage Transfer Pipeline is fully flooded and is pumping full bore upwards towards the treatment works. However, after only 1500 metres, there is a 45 metre drop in pipe level which leads to the pipeline operating only partially filled. The changes in pumping characteristics make it very difficult to determine the actual hydraulic residence time in the pipeline.

Currently, in order to manage the problems of septicity in the pump main, Calcium Nitrate is being added at the pumping station. However, despite dosing taking place septicity is still being picked up 7 kilometres downstream at a second pumping station. This intermediate station is situated just south of the town and had historically led to odour complaints from residents who live close to the facility. During monitoring at the intermediate station hydrogen sulphide levels of around 170ppm were picked up in the pumping station.

The current theory for this septicity lies in the fact that the hydrogen gas responsible for the septicity has already been formed in the collection system prior to the addition of the Nitrate chemical. The dosing of Nitrate is highly dependant on the sewage being fresh and free from any gas. Unfortunately this doesn't seem to be the case on this occasion.

Treatment with MPOX Active

MuSol have developed an extremely efficient way of dealing with inlet septicity in sewage systems. By effectively manipulating the stability of a proprietary oxidising agent MuSol are able to deal with any amount of existing gas present prior to dosing.

In addition, MuSol have the capability of designing the chemical addition to create a chemical reservoir in the pumped main which will allow for the hydraulic residence time of the system. Effectively, MuSol design the product around the application as opposed to trying to shoe horn an existing product into a new application as is normal. The result is a chemical addition that works, is extremely cost effective and easy to manage.



Baseline Monitoring

Baseline monitoring was undertaken at the treatment works inlet. During this time 5000 litres/day of Calcium Nitrate was being added to the pumping system.

We can see from the graph that a typical diurnal pattern on hydrogen sulphide production was being observed. Peak diurnal hydrogen sulphide concentrations were typically around 200ppm. Average hydrogen sulphide concentration was calculated at around 75ppm.

MuSol were invited to carry out a back to back trial against the Calcium Nitrate incumbent product

MPOX Active Results

- 30% lower cost of treatment
- 490 litres/day MPOX compared to 4600 litres/day Nitrate.
- Delivery frequency reduced to a tenth of the Nitrate.
- Zero H₂S if required.
- Reduced operator call outs for deliveries to an un-manned site.
- The trial dosage was not flow proportional. It was manually controlled to follow the diurnal pattern. If the dose could be linked to flow then usage should reduce further.

MPOX Active versus Calcium Nitrate Comparison Data

