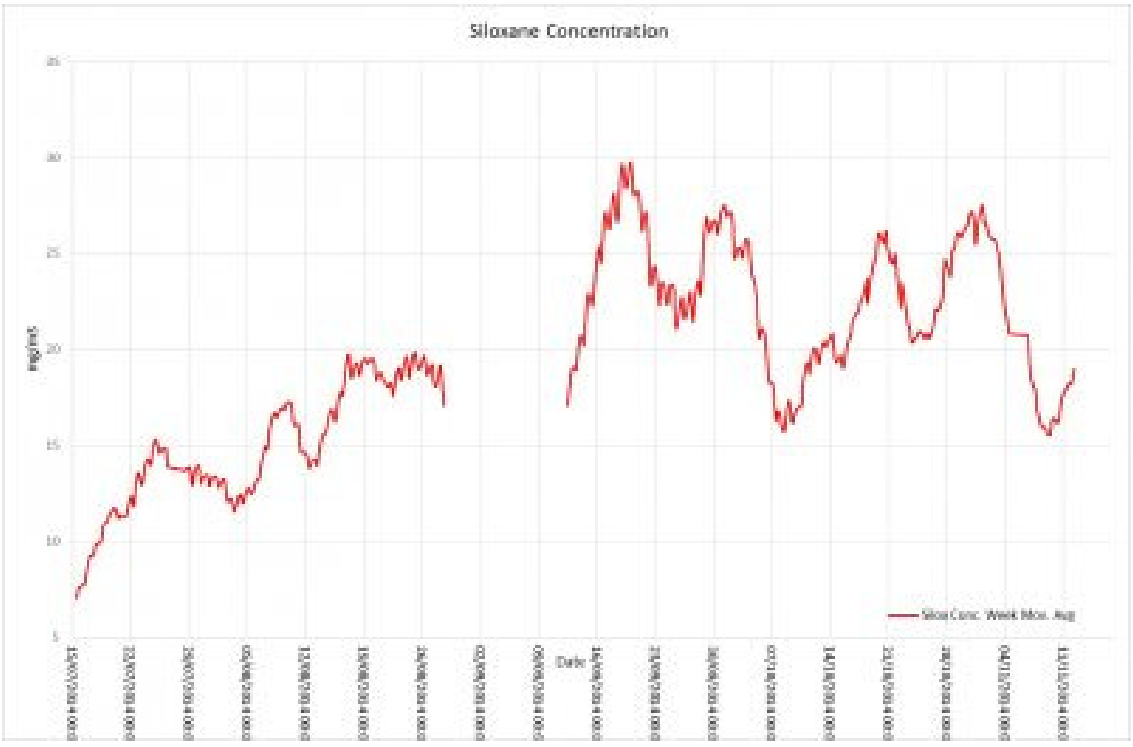
Monitoring of Siloxanes in Sewage Treatment Plant derived Biogas.

The first Trial site of the STS Siloxane Monitor was on a modern Sewage Treatment Works producing biogas from a AD plant supplied from domestic sewage and some tankered effluents.

The trial was designed to test the robustness of the instrument, its stability over time and its ability to identify trends in the Siloxane loading being supplied to the engines. The interest from the Water Company was in the potential reduction of costs from frequent oil changes, engine head overhauls and replacement of Spark plugs amongst others. Engine overhauls can be very expensive at up to £50,000 a time, Spark plugs can be £10,000 a set and Oil a huge ongoing cost dependent on the engine size.

The ability therefore to be able to stop the Siloxanes from entering the engines is very attractive and in this case is achieved by the use of a single Carbon Filter vessel. The site runs 2 engines although usually only one is run at a time and not always at full capacity.

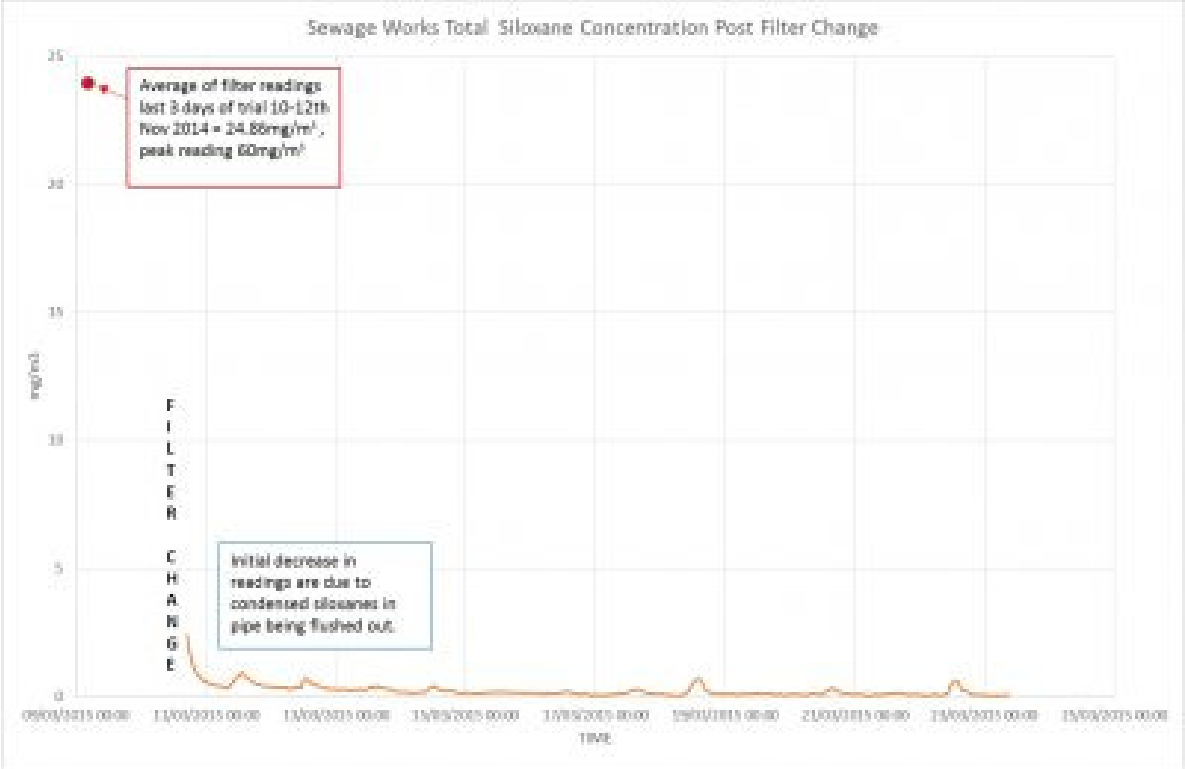


The trial on this site ran for over 5 months and rapidly demonstrated the instruments reliability and stability.

Despite recommendations a heated line was not installed on this site and as a result diurnal fluctuations were evident as the Siloxanes condensed out in the pipe overnight and were then released as temperatures rose during the day.

That apart the instrument identified the increasing trend of Siloxane contamination which built steadily over several months.

An interesting phenomenon appeared where the Siloxane levels then seemed to rise and fall sharply - this has been explained by Filter manufacturers as channelling within the filter where one part becomes saturated and the gas flow then finds a new cleaner path through the filter.



After changing the filter the Siloxane levels returned to near Zero and have remained less than one for over 6 weeks. The experience form other sites is that the filters work very well until they become saturated, at that point the release of Siloxanes from the filters increases rapidly over a short time frame, meaning that online monitoring is essential to manage and mitigate damage to the engines.