

MECANA
UMWELTTECHNIK

ACHIEVING LOW PHOSPHORUS CONCENTRATIONS USING PILE CLOTH MEDIA FILTRATION

PROBLEM

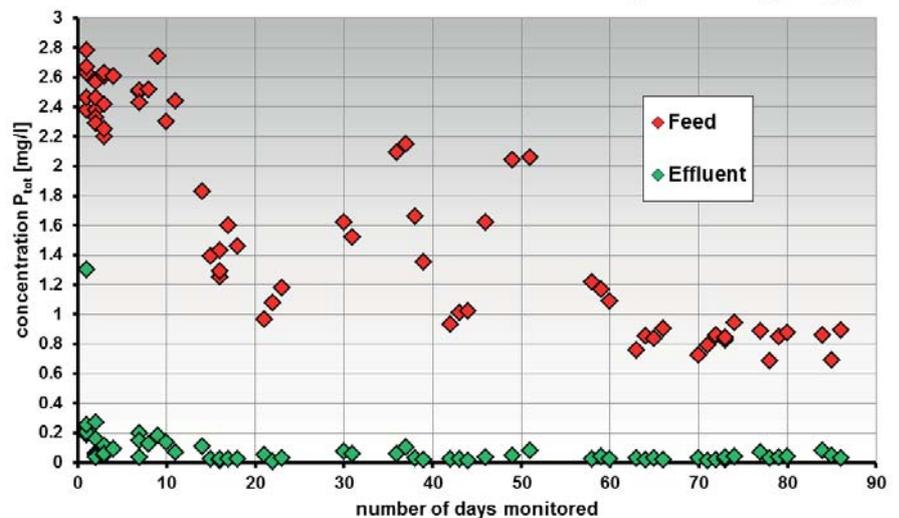
The presence of high levels of total phosphorus (P) in wastewater treatment works effluents are a significant cause of eutrophication in the world's fresh water resources. The reduction of the concentration of total P in final effluents is a major objective of the EU's Water Framework Directive, with tough targets being set for sensitive receiving streams.



RESULTS



Pile Cloth Media Filtration achieving $< 0.1 \text{ mg/l P}_{\text{tot}}$



SOLUTION

Adding a metal salt, such as ferric chloride, to the secondary effluent starts precipitation of the dissolved P which is further enhanced by the formation of floc in specific process vessels. The insoluble P is then removed along with the rest of the TSS, leaving a final effluent with total P concentrations as low as $< 0.1 \text{ mg/l P}$ if needed.

Control of the chemical dosing and floc time allows for various target P levels to be achieved. This combined with simple control systems, based on industry standard instrumentation, allows for easy operation and confidence in the final effluent quality.

CONCLUSIONS

Full scale results from Europe, USA and Canada confirm that pile cloth media is a very reliable process for the removal of phosphorus from secondary municipal effluents.

The system can be designed to target a particular final effluent P concentration, with control of the chemical dose and the flocculation time.

The amount of filtration area required to achieve the desired P level is dependent on the incoming P loads from the secondary clarifiers, which should be minimised in order to maintain the final filtration as a polishing stage to achieve very high effluent quality.

Backwash water volumes produced vary depending on the total solids applied to the pile cloth media, but can be designed to be $< 5\%$ at all times and are typically 2-3% for secondary P concentrations $< 1 \text{ mg/l P}$.