

Optimizing the performance of drinking water filtration with the i::scan

Drinking water treatment monitoring

In Puerto Rico the i::scan is used to assess the efficiency of different coagulants and to optimize cleaning protocols of drinking water filtration units.



Green Innovation Technologies Inc.



Parameters monitored:

- NTU
- TOC
- UV254

Facts & Figures

Company:
Green Innovation Technologies Inc.

Location:
Puerto Rico

Application:
Drinking Water

Key Products installed:
i::scan, con::lyte

Background

Green Innovation Technologies Inc. (GIT) is installing and operating surface water filtration units for the drinking water supply in Puerto Rico. The replacement of old systems with new, modern water filtration plants ensures that the people served by these plants will enjoy safe and clean drinking water for years to come.

GIT is using silicon carbide ceramic membranes for the filtration units. Silicon carbide ceramic membranes offer a longer life cycle and are more resistant to in deep cleaning methods as their polymeric membranes counterparts. However, since this is a new technology, it is important to determine the optimal operating conditions in terms of coagulant dose and cleaning cycles.

s::can's solution

An i::scan is installed together with a con::lyte terminal to monitor the filtered drinking water. s::can's i::scan is a powerful tool for monitoring water quality, providing cost-effective monitoring with very low maintenance and operation costs.

TOC, UV254 and NTU of the raw and filtered water are measured in real time by a single i::scan. The measurement data is used to calculate how much of the TOC is removed by the filtration.

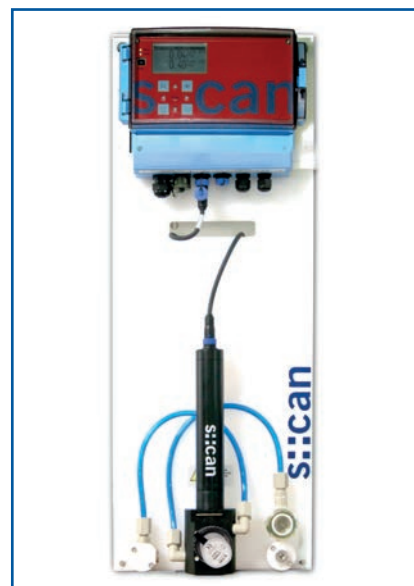
The raw water at the intake has only little turbidity and a low level of solids (left cup in the image above). With the filtration unit it is possible to con-

centrate the organic matter (middle cup) and reduce the TOC content of the water.

TOC removal is important because lower TOC means lower formation of disinfection byproducts and other undesirable substances such as

trihalomethanes. But excess coagulant dosage will only increase cost without a significant increase in TOC removal.

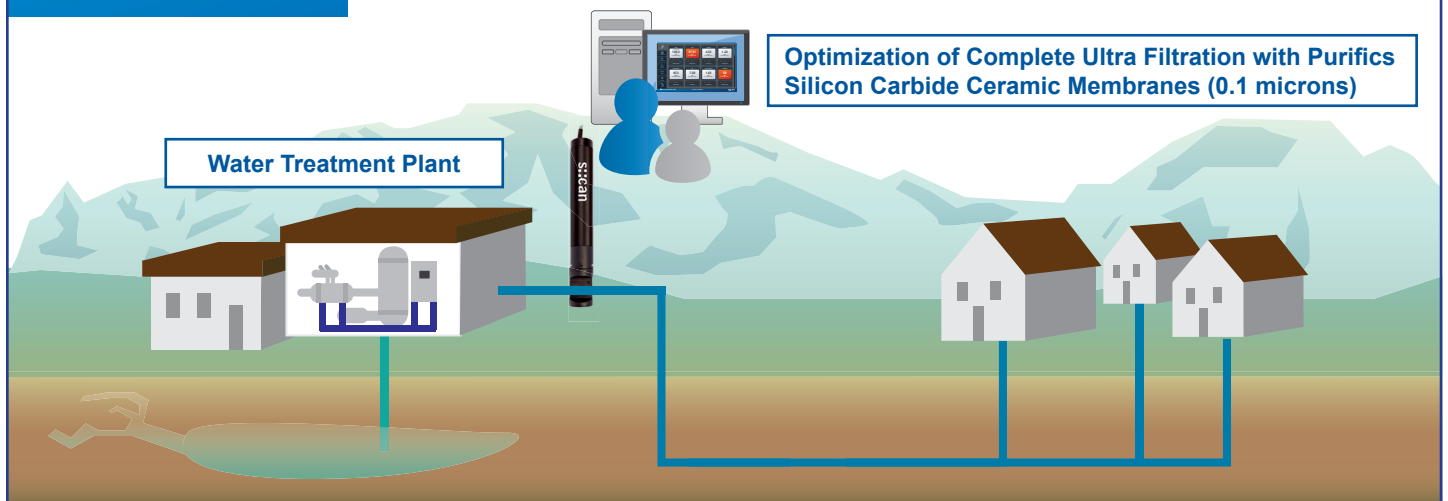
The i::scan enables quick evaluation of the efficiency of different coagulants and aids in finding the optimal coagulant dosage. This greatly reduces the time and effort needed for the start-up and operation of new filtration plants.



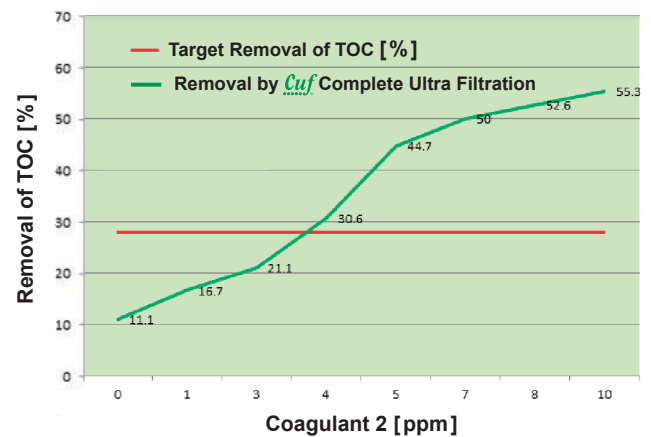
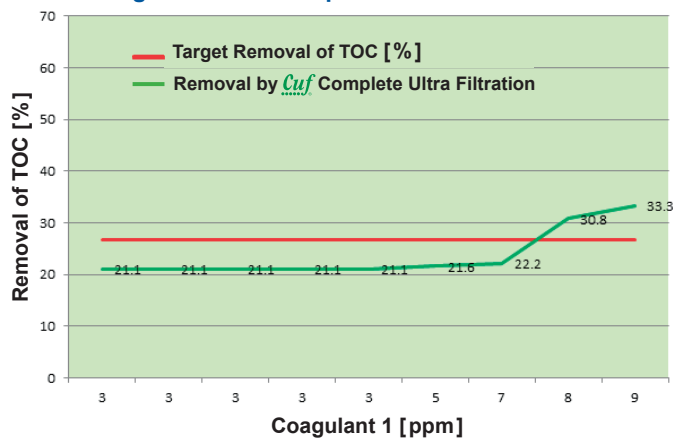
“The beauty of the data produced by the i::scan is, that it is in real time, so the optimization of cleaning protocols and coagulant dose can be performed very quickly”

Carlos Gonzalez, GIT

Process Schematic



The graphs below show the efficiency of TOC removal for two different coagulants. This data can be used to optimize the drinking water filtration process



The i::scan is an optical online probe that uses a new LED light source and can measure up to four parameters simultaneously.

Parameters that can be measured accurately include Turbidity, TSS, COD, TOC, DOC, Color and UV254.

Due to the use of multiple wavelengths, cross-sensitivities can be automatically compensated.



The flow cell for the i::scan can be equipped with a rotating brush to automate the cleaning of the optical windows.

Cleaning intervals and the duration of cleaning can be freely configured to guarantee optimal cleaning performance depending on the specific application.



By monitoring the treatment of raw water sources s::can helps to protect the health and safety of the population.

s::can is the world technology leader for submersible online spectrometer probes, water protection systems and event detection software.

More than 6000 s::can monitoring systems are in use worldwide for drinking, environmental, waste, and industrial water applications.