LamersSystemCare
System Solutions for Industry, Maritime & Agriculture

Combating marine growth from fresh water

Preventing blockages in pipework

The case

In this case study we discuss the RWS monitoring station in Eijsden. Since 1974, this floating pontoon has been carrying out 24/7 measurements to analyze the water quality.

Ensuring clean water is one of Rijkswaterstaat's main tasks. That is why they continuously measure the biological and chemical quality of the water. The RWS monitoring station is used to analyze water samples and thus assess the water quality. There are three monitoring stations that carry out comparable activities: in Lobith, Keizersveer and Eijsden.

This study describes the situation at the monitoring station in Eijsden, what problems they encountered and how the Ultrasonic Antifouling System has helped.

The company

The monitoring station in Eijsden measures the quality of the river water of the Maas 24/7. This is important from a public health point of view, so that harmful particles, such as radioactive substances, are detected in time when they are in the water. For example, a few tens of kilometers away, Maaswater is used to make drinking water. Exceedances of certain substances are regularly measured in the Maas water.

Together with the fresh water of the Rijn, the Maas provides drinking water for 7 million people. By actively taking measurements, drinking water companies can be warned in time.

The findings of the found substances and the amount of these in the water samples can be found at www.aqualarm.nl. The publications are updated every day.

The RWS monitoring station in Eijsden

The company

The monitoring stations in the Netherlands have two functions:

First, they provide information for multi-year trend analyses, so that discussions can be started about tackling pollution sources. This allows them to monitor the drinking water intake even better.

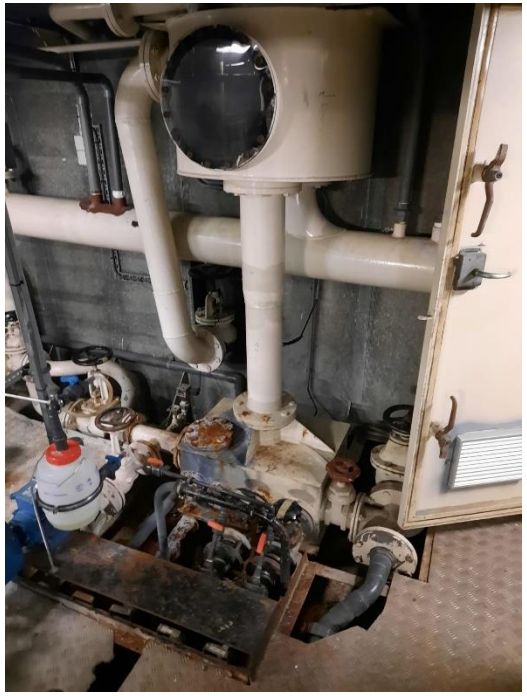
Second, the monitoring stations are the river's ‘fire alarm’. As an example, the monitoring station noted in 2007 that 80 kilograms of pesticide had ended up in the water. This led to the death of at least 100,000 fish. Without monitoring, this would have ended up in drinking water.

The RWS monitoring station in Eijsden

The situation

The system that sucks up the water that has to be measured is constructed as follows: suction pipe, filter, pump, branches and a discharge pipe in case the water pressure is too high.

The sampling is done from several branches of a suction pipe, through which the fresh river water of the Maas flows. This pipe system, and in particular the drainage system when the water pressure is too high, closes up on the inside, so that the flow in these systems becomes less and less. The fouling accumulates against the walls of the pipes, especially in bends or after valves. One of the marine organisms that settled in the past were freshwater mussels.



Part of the sampling system

The problem

The monitoring station has a guideline that it aims to meet. They want to actively take measurements at least 95% of the time. Because the flow was so impeded by fouling, this quota was not met because the water pressure was lost.

Due to this fouling problem, the piping had to be cleaned every day (!). It seemed that mussels developed in the pressure tank, which were then regularly flushed through the installation by the flow. As a result, the pipes and filters became clogged every day. Mussels quickly develop into adults specimens in warm waters.

The filter for the distribution pumps can be seen on the right. The filter had been full of mussels every week during the problem. This was the result of accumulations of mussels, which occasionally come loose and end up in the pipework and clog the filters and pipes.

Clogged distribution filter

The solution

The choice for the Ultrasonic Antifouling System arose from the positive results achieved on the RWS patrol vessels. On these ships, the pipework, with even more severe fouling conditions, has been kept free of fouling for more than 3 years.

Until then, the lack of another structural solution was the deciding factor to install the system.

A transducer is glued to the pipes with the most problems, which ensure that fouling remains gone. The pipework amplifies the signals: both the rigid construction and the water flowing through it function as a carrier of the sound. As a result, the entire sample monitoring system is protected by means of the Ultrasonic signals.

Transducer on a pipe with a pipe adaptor

The result

7 months after installation, the laboratory technicians working at the monitoring station indicated that they were very satisfied with the application of the Ultrasonic Antifouling System. It promotes their work and it ensures that the pipes and strainers no longer need to be cleaned.

It is also no longer necessary to use chlorine to clean the pipes once in a while.

Nowadays maintenance is carried out once a week and the installation is checked. Now, no marine fouling is found during these maintenance moments. Since the installation of the system, the service providers have no longer had to clean the filters or the pipework.

The SH02 system, with 2 transducers, was used twice.

The result

Below are some snapshots taken from a video made with an endoscope. These images were taken 11 months after installation. The piping is completely clean, there is no visible marine growth that could restrict the flow. The unevenness that can be seen is the irregular structure on the inside of the piping.

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