

Cleaning of disc diffusers makes Prochamp's wastewater treatment greener

In Velddriel, The Netherlands, mushroom processor Prochamp treats its own wastewater using membrane technology. Soon after starting this biological treatment method, the membrane disc diffusers were found to be clogged with scale particles. However, this problem was satisfactorily solved by Xylem's mobile Diffuser Liquid Cleaning Service.

Prochamp is an international producer of canned mushrooms with its entire production chain in-house: from preparing the compost, cultivating mushrooms, to canning and sterilising the mushrooms. For years they have been strongly focused on running a sustainable business. Plant Manager Arjan Peffer:

"We are as economical as possible in our use of energy and raw materials, and we treat our wastewater among other things from the mushroom blanching process using biological means. A few years ago, when our wastewater treatment plant needed to be replaced, we switched to an energy-efficient purification method that involves membrane disc diffuser technology."

Aeration installation

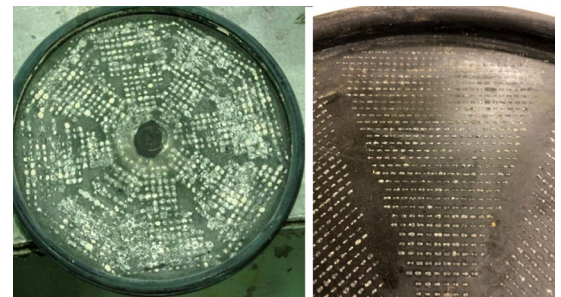
Xylem delivered, installed and commissioned an advanced sequencing batch reactor (SBR) technology for the industrial wastewater treatment plant in 2016. It is a fully automated process that combines aeration, decanting and controls. At the heart it has four blowers that aerate the three basins in eight-hour cycles. Outside air is blown upwards into the basins for six straight hours. In the remaining two hours, purified water rises to the top where it is then decanted off as effluent.

The membranes are sensitive to the deposition of dissolved minerals from the water - similar to boiler scale - and this can form a breeding ground for unwanted biological colonisation. Although no significant problems were initially expected with the quality of Prochamp's wastewater, this proved to be too optimistic.



Prochamp's green treatment plant with SBR technology

CUSTOMER:	Prochamp
APPLICATION:	Industrial water treatment
XYLEM SOLUTION:	Sanitaire SBR, Diffuser Liquid Cleaning
RESULT:	30-40 mBar back-pressure reduction on the blowers per cleaning cycle



Membranes showing scaling and clogged pores

Diffuser Liquid Cleaning Service

After several months, the installation showed signs of clogged membranes. For example, rising back pressure and labouring blowers, while the required oxygen levels could not be met. In consultation with Xylem, it was decided to deploy the Diffuser Liquid Cleaning Service.

Cleaning agent

This service entails injecting cleaning agent into the system using a mobile unit. This cleaning agent is dispersed directly, evenly and effectively into the diffusers by the air pumped in by the blowers. It dissolves the contamination on the membranes, and then passes into the basin along with the dissolved contaminant particles. Because the alkaline mineral particles neutralize the acidic cleaning agent, this waste flow has neutral acidity and causes no further contamination of the waste water.

The required concentration and dosing of cleaning agent, plus the duration and frequency of cleaning, are determined by Xylem based on various criteria. These criteria are specific to each application, and depend on the size of the basin and the degree of contamination, among other factors.

Easy to use

The mobile units, complete with controller, have been developed in-house by Xylem and offer several distinct benefits:

- Prochamp's disc diffusers can be cleaned by a single unit in just half a day.
- The cleaning process takes place during active aeration operation.
- No additional pipework is required; a connector is sufficient to inject the cleaning agent.

Timely cleaning provides the following benefits:

- Lower energy consumption thanks to 40 mBar back pressure reduction on the blowers per cleaning cycle.
- Prevention of breakdowns caused by clogged diffusers.
- Extended operating life due to removal of fouling.
- Reduced maintenance costs.

Satisfied customer

Arjan Peffer:

“Since we started cleaning the diffusers approximately every three weeks, we’ve no longer had any problems. This saves us a lot of money. Not simply due to fewer breakdowns, but also because aeration with clean diffuser membranes ultimately consumes much less energy.”



Service engineer prepares for Diffuser Liquid Cleaning



Mobile unit with controller



Immediate result with 40 mBar back pressure reduction on the blowers