

Top water quality and less chloramines - thanks to low-pressure UV system

In public swimming pools, the safe and high quality of the water, along with the well-being of the bathing guests, are a must. This is a great challenge especially when there is a large number of visitors.

An efficient and reliable solution to address water quality concerns is the installation of the Wedeco low-pressure UV systems from Xylem. This technology has proven itself, in the water recreational facility, H2O, of the Herford Public Utility Company (Stadtwerke Herford). The chloramine load was reduced and the water quality was guaranteed, in a very energy-efficient manner, even with an influx of bathers. At the same time, the Wedeco system used by the Stadtwerke Herford consumes only about 10 percent of the total energy required when compared with an alternative medium- pressure system, as recommended by DIN 19643.

Task

"Even with a high number of visitors, the limit values for chlorine compounds and other substances in the water must be maintained without extra effort. In particular, the chloramine load should be reduced and a more energy-efficient solution should be used." With this objective for H2O, the Stadtwerke Herford approached Xylem.

Compliance with the chloramine limit values without additional measures is a main concern for the efficient operation of a swimming pool or water recreational facility. This saves the operator cost of fresh water and energy for heating the fresh water, and prevents skin and eye irritation. Stadtwerke Herford initially tested the Wedeco systems through a rental agreement. Those responsible were quickly convinced of the effectiveness and results, and decided to assume the system. In this manner, the operator was able to test the low-pressure UV solution without any major investment risk. DIN has so far recommended medium-pressure UV systems despite the much higher energy consumption.

COUNTRY:	Germany
CUSTOMER:	Freizeiteinrichtungen Stadtwerke Herford GmbH
APPLICATION:	Water treatment
PRODUCT:	Wedeco UV-System of the BX650e series and Spektron 900e
DELIVERY:	2019



Carlos Silva from Xylem (right) explains the technical aspects of the UV system.

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“Our low-pressure UV systems break down mono-chloramines. They are then no longer bound, and therefore less chlorine must be added to the pool water.”

Xylem offers rental solutions for many swimming pool applications. UV systems can be rented on a long-term basis and for short-term use, in the course of a filter infestation or filter renovation.

Low-pressure UV system efficiently disinfects the water

The Wedeco UV system was integrated into the water circulation process. “We had extensive consultation, recorded the parameters and designed a tailor-made solution,” says Carlos Silva, Area Sales Manager Process Technology. In H2O, a Wedeco BX650e (flow-rate of 850m³/h) and a Wedeco Spektron 900e (flow-rate of 99 m³/h) are now working invisibly in the background for the guests. “Shortly after the systems had been taken into use, we received feedback from our staff that the odor nuisance had noticeably decreased,” reports Friedrich Peters, head of the H2O technical team. In addition, the Stadtwerke’s laboratory management team checked the values of bound chlorine compounds several times. The limits were only exceeded once during the entire test phase.

The excess in chloramine values took place on a public holiday. In such occasions, the pool and its superfluous values are not considered to be in their normal state due to the maximum load. Since the low-pressure UV system’s operation in this recreational pool facility, the chloramine limit values have been consistently maintained according to DIN standards. It treats the water effectively and energy-efficiently. The additional disinfection provided by the Wedeco systems, on top of the normal chlorine dosage in the pool, represents a process-engineering solution that deviates from the DIN recommendation. “We have already proven several times that the DIN recommendation is not entirely correct. Certifications and validations are also provided with this more efficient UV solution,” emphasizes Silva. The Xylem UV system with low-pressure has several advantages. It requires only one tenth of the total energy required for the medium-pressure solution recommended by DIN. The OptiDose™ control system increases energy efficiency even further. It doses the UV intensity according to the water quality and controls the power consumption.

The amortization rate is therefore fast with continuously running systems compared with the somewhat relatively lower-priced medium-pressure alternative. A service life of at least 20 years is calculated for the Wedeco units in the Herford swimming pool facility. As a rule, the Wedeco UV lamps, EcoRay®, function faultlessly for 1½ to two years. Each lamp has a guaranteed lamp



Wedeco UV System

life of 14,000 hours – thus, in some cases twice as long as other solutions.

Less chlorine, synergistic effects

A positive side effect is that double savings are achieved. Because there is less fresh water supplied to comply with the limit values, this also reduces the heating energy requirement needed to bring the pool water to the desired temperature. An increase in chlorination dosage is therefore unnecessary.

The Xylem solution also has a preventive effect through the lasting disinfection. The UV treatment with the Wedeco systems inactivates 99.99 percent of micro-organisms or pathogens, which means they lose their cell division ability and become harmless. In this way, micro-bacterial accumulation is prevented, for example at the filter systems,, and a contamination of the swimming pool can thus be avoided from the outset. This in turn, reduces the need for chlorine and consequently, the number of bound chloramines. “Our low-pressure UV systems break down mono-chloramines. They are then no longer bound and therefore less chlorine must be added to the pool water. This also prevents the formation of bi- and tri-chloramines,” explains Silva as another advantage of using UV for swimming pool treatment.

Deutschland

Xylem Water Solutions Deutschland GmbH
Boschstraße 4 -14
D-32051 Herford
Tel.: +49 5221 930-0
E-Mail: info.de@xyleminc.com
www.xylem.com/de-de

Österreich

Xylem Water Solutions Autria GmbH
Ernst-Vogel-Straße 2
A-2000 Stockerau
Tel.: +43 2266 604
E-Mail: info.austria@xyleminc.com
www.xylem.com/de-at