



## Reference case



# Biodosimetric validation of high dose 2500J/m<sup>2</sup> disinfection and water treatment



### The background

In drinking and potable water disinfection generally a UV-C dose of 30-40mJ/cm<sup>2</sup> is considered, mandated and proven to be adequate for at least Log-3 disinfection. However different applications desire different treatment goals, one of these is Horticulture. UV-C disinfection is a long time staple technology in this market with an important difference. Here the UV-C dose applied is generally much higher, 250mJ/cm<sup>2</sup>, because many plant pathogens, viruses and fungi are often highly UV resistant because of the simple fact that plants generally grow in full sunlight.



### The case

Van Remmens valued partner Ridder Growing Solutions has a long history with UV-C systems. Because they understand the value of precise and scientific validation of disinfection systems and Van Remmens experience in this field we were asked to design and validate a system at this very high UV-C dose of 250mJ/cm<sup>2</sup>. This seems like a simple question at first hand, but finding a good linear biosimulator (the micro-organism or spore used in testing) in this range is difficult because of the very high UV-c dose.



### The solution

After an extensive search and some testing, that included a bacteria strain NASA Isolated off a satellite coming back from space, a suitable biosimulator was found. This dosimeter proved to be linear and gave reproducible results within the narrow window of variance dictated by the strict Ö-norm our systems adhere to.



### Facts



#### Contractor

Ridder Growing  
Solutions



#### Location

The Netherlands,  
Maasdijk



#### Purpose

Validation of high dose  
250mJ/m<sup>2</sup> disinfection  
and water treatment



#### Solution

VitaLite

## Results

The validated Ridder Vitalite system performed even better than our preparatory calculations predicted and yielded a precise validated UV-c dose of 250mJ/cm<sup>2</sup> over the specified range of water quality and capacity. The final system supplied to Ridder is fully modular and can be expanded to meet a wide range of capacities and water qualities for their customers while staying within the carefully tested validation specification. To aid customers, calibrated UV-c sensors are integrated which work with Ridders operation platform for hassle free and guaranteed disinfection at every flow and water quality.



### Customer quote:

*"Ridder Growing Solutions, formerly HortiMaX, has been working closely with Van Remmen UV Technology since 2013 because of their in-depth knowledge of UV systems and components. At Van Remmen, people are always willing to think along to meet challenges and respond to new opportunities. I have always appreciated that. Thanks to Van Remmen, we have been able to improve the design and efficiency of our UV disinfection unit, the Ridder VitaLite. UV dose and disinfection are not just theory but secured by Van Remmen with a step-by-step validation. This allows greenhouse growers worldwide to rely on the safety of their water. Due to disinfection and recirculation of drain water, they can save considerably on water and fertilizers."*