

# The Way from Laboratory Testing to Full Scale U.V. Applications

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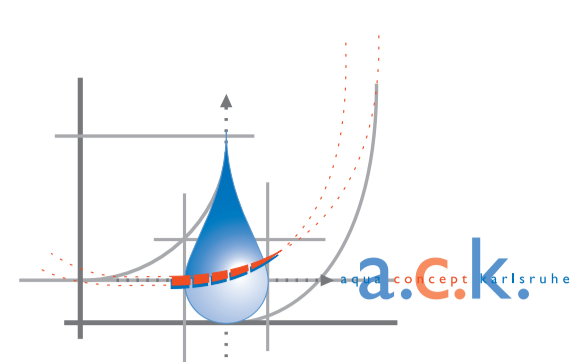


Fig. 1  
Laboratory scaled U.V. facility for waste water applications

We guarantee all our U.V. applications and systems therefore thorough research and laboratory testing is essential. Without preliminary investigation we would be unable to offer the reliability of function, custom built to specification and adherence to industrial parameters that is a.c.k.

There are a lot of companies, especially in the U.V. Oxidation and Advanced Oxidation Process sector that do not present a high number of positive references. Our reputation is built on a large and ever growing number of satisfied clients for which we have designed, engineered and fitted innovative and cost effective U.V. applications and units.

All new projects enter the research and development laboratory where general testing begins, based on the experience gained through hundreds of successfully running commercial applications. The laboratory installation (Fig.1) is a scaled U.V. facility for research and development. For batch treatments a certain amount of medium is pumped through the system. From the treatment tank to the U.V. reactor and back into the tank. During the treatment cycle the medium is monitored and parameters related to the project are measured. The results of this testing phase determine the values from which the degradation graphs can be produced (Fig. 2). These results are a reliable base for up scaling.

Here begins the detailed test work and the preparation and planning of the full scale system in relation to the clear specifications of the client. In Fig. 2 the application of the detoxification of industrial waste water is shown, these values are the results from the laboratory testing as described above. The aim to increase bio availability and TOC degradation is in this example clearly shown. A pilot test phase with a small commercial flow through unit around 6 tons per day, is conducted on site to reaffirm the initial findings from the laboratory test phase. If as this example shows (Fig. 3), the same profile as the laboratory test is confirmed we move on to the commercial construction phase.

In this example the end result comprised of a successfully functioning Enviolet® U.V. plant (Fig. 5). The clients specifications were met (Fig. 4) for two different kinds of effluent. The graph shows the TOC concentration of the effluents coming into the U.V. unit and the concentration of TOC after the Enviolet® U.V. Oxidation in the final storage tank which is the interface to the bio reactor where the reduction is increased another 65% achieving an overall reduction of 95%.

Depending on the load and the inflow to the plant the number of active U.V. reactors is variable, which through optimisation allows for the lowering of the running costs while maintaining high performance of U.V. degradation. This is shown in Fig. 4, the waste water from the different products and flow rates altered without a significant change to the degradation percentage.

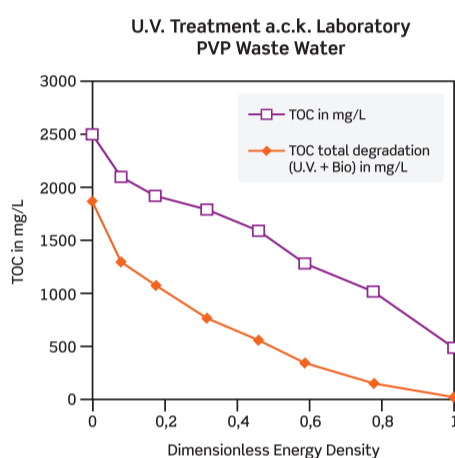


Fig. 2  
Laboratory treatment (a.c.k.). TOC degradation by U.V. oxidation and subsequent biological elimination (Z/W Test after 2 days).

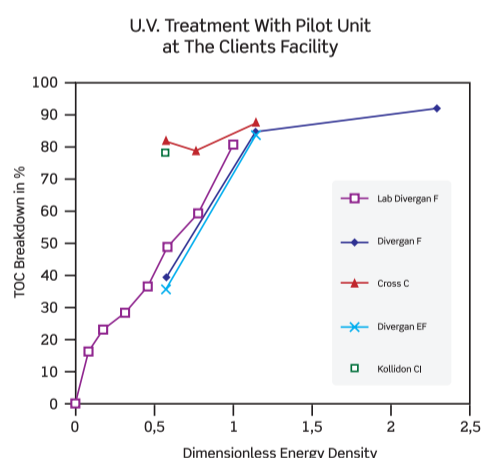


Fig. 3  
Pilot operation at client (a.c.k. pilot plant). Comparison of the degradation to the laboratory scaled facility and the pilot plant.

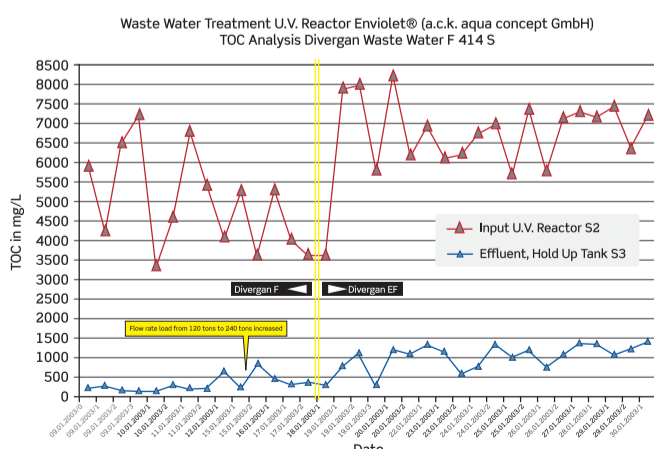


Fig. 4  
Industrial operation of the U.V. plant. Different types of waste water and flow rates.



Fig. 5  
Industrial U.V. Plant.