

doscontrol® disinfection processes optimization in water reclamation

teqma

tecnologías y equipos
para el medio ambiente



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Dealing with treated water

- Water reclamation is a process to improve WQ for further reuse
- Technologies for WR have been usually adapted from DW treatment, filtration, disinfection, AOP→ need for specialization
- Complex water matrix affected by upstream processes.
- Presence of solids, nutrients, DOC, microbial pathogens..... with variable concentration and composition in time.



UV disinfection limitations

Strongly affected by upstream processes

- WQ related: TSS, UV absorption (UVT_{10} %), fouling potential

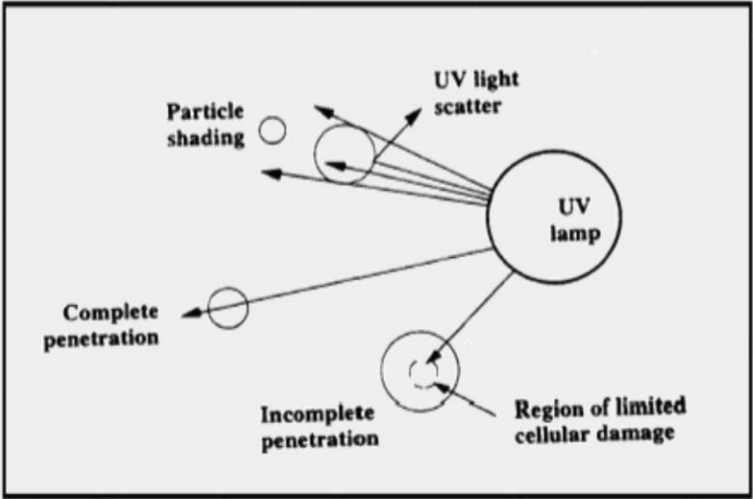
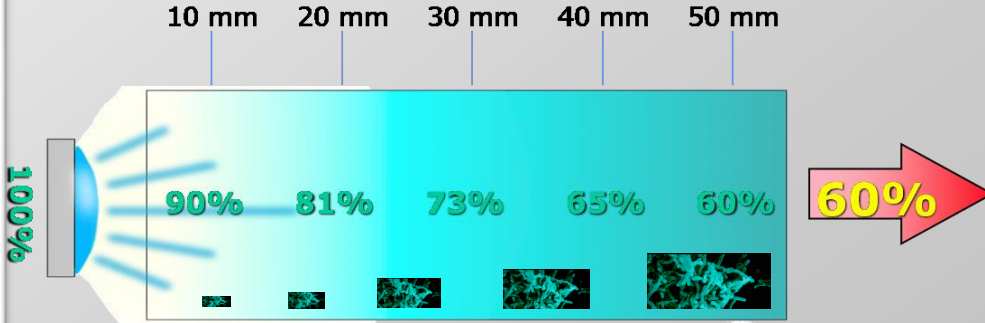


Figure 2.4: The Effect of Particles on UV Intensity (Snider et al., 1991)



UV disinfection limitations

And also affected by the operation conditions

- Equipment related: Lamp aging, sleeve fouling



Chlorination as back-up option

- Chlorine based disinfection (Cl_2 , NaOCl , ClO_2) to achieve stable disinfection level and ensure a **residual effect** in the distribution network.



- To consider: Associated chemical risks → combination with other substances. Formation of chloramines, THM and other DBP.

Bringing reliability to combined disinfection

- Robust controller for the combined disinfection process.
- Continuous data gathering from conventional sensors installed in the plant and from the disinfection equipment → boundary conditions
- Operator settings → internal conditions
- Logic control



Features & Benefits

Features

- Automated control of the disinfection equipment
- Disinfectant agent dosage defined according to the gathered process and water quality information
- The controller provides reliable and resilient disinfection capable to adjust to changing conditions
- Data is continuously monitored
- doscontrol® can be easily installed into existing or new disinfection treatment lines

Benefits

- ✓ doscontrol® delivers the necessary dose of disinfectant (physical and chemical) in order to continuously produce safe water
- ✓ Reduction in O&M associated costs
- ✓ Valuable control and knowledge on real time of the disinfection process
- ✓ Compact controller with reduced installation footprint
- ✓ The operator can decide whether to use doscontrol® or change to the previous operational mode



doscontrol® in Castell –Platja d'Aro WRP (Costa Brava)

WATER REUSE



Benefits to Castell-Platja d'aro WWTP

Preliminary results since summer 2015:

- Adaptability of the disinfection process to the changing inlet water quality (affected by upstream processes) → Reliability
- **-30% to -45%** Sodium hypochlorite consumption at the same sanitary level (dosage optimization) avoiding overdose – DBP formation
- Optimization of power consumption of UV system by controlling n° units ON, and power level.



Take home message

- doscontrol® offers a continuous, reliable and broad spectrum reclaimed water disinfection while reducing costs
- A doscontrol® unit can be visited in Castell-Platja d'Aro WRP

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