doscontrol® disinfection processes optimization in water reclamation

Water Reuse conference DEMOWARE Project 14th June 2016
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\textsubscript{10} %), fouling potential
UV disinfection limitations

And also affected by the operation conditions

- Equipment related: Lamp aging, sleeve fouling
Chlorination as back-up option

- Chlorine based disinfection (Cl₂, NaOCl, ClO₂...) 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.

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[Image of water treatment facility]
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)
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 nº 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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