R3Water

Reuse, Recovery and Resource efficiency: Innovations in urban wastewater treatment

This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 619093.

R3Water Workshop:

Potential application fields for innovative wastewater treatment technologies

R3Water:

Demonstration of innovative solutions for **R**euse of water, **R**ecovery of valuables and **R**esource efficiency in urban wastewater treatment

Brussels, 1st of December 2014

IVL Swedish Environmental Research Institute

R3Water

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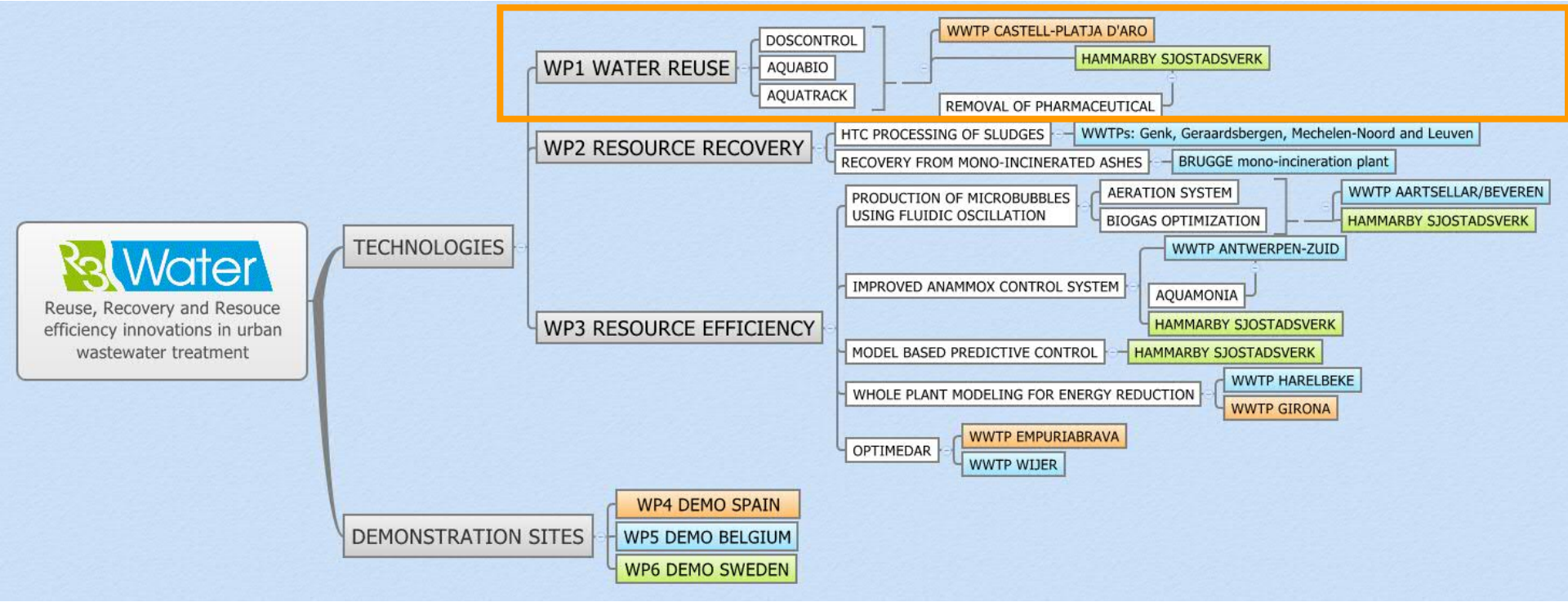
R3Water Technology map



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doscontrol®
combined water disinfection

Water disinfection controller for water reclamation facilities

WATER REUSE

Description

- Automatic control of the water disinfection process through a dosing concept.
- Technology: doscontrol® combines two disinfectant agents as Chlorine and UV radiation (chemical and physical disinfection), the synergistic effects deliver enhanced microbiology load reduction and operational costs optimization.

Applicability

- doscontrol® can be applied into new or existing disinfection treatments lines.
- The system can also work with other chemical oxidizers (e.g. Ozonation).

tecnologías y equipos para el medio ambiente

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doscontrol®
combined water disinfection

Water disinfection controller for water reclamation facilities

WATER REUSE

Benefits

- Wide disinfection spectrum, effective against *Giardia lamblia* and *Cryptosporidium parvum*. The chemical oxidation ensures a remnant concentration of biocide in the distribution network.
- Reduction in O&M associated costs due to less chemicals, energy used and manpower needed.
- Data is continuously monitored providing to the operator valuable control and knowledge on real time about the disinfection process.
- Delivers valuable information for an adequate maintenance management.
- The operator can decide to use doscontrol® or change to the previous operational mode if desired

- Contact: Ernest Mejías (ernest.mejias@teqma.com)

teqma
tecnologías y equipos para el medio ambiente

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aquaBio

online measurement of Escherichia coli and total coliforms

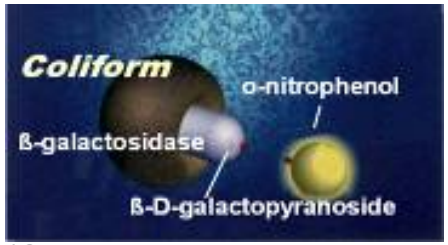
WATER REUSE

Description

- Continuous measurement equipment for: Escherichia coli and total coliforms simultaneously.
- Used technique: Defined Substrate Technology® (DST®) and detection system by measuring fluorescence and absorbance. The bacteria concentration is correlated with the time that the fluorescence and / or colour appear.
- Maintenance: fortnight reagent replacement and a semi-automatic cleaning is performed each month

Applicability

- E. coli is a bacteria widely used as an indicator of faecal contamination, as reflected in the Directive 2006/7/EC on the quality of bathing water
- E. coli and total coliform parameters are also key indicators for determining the potential uses of reclaimed water from a WWTP tertiary treatment.



ADASA

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aquaBio

online measurement of Escherichia coli and total coliforms

WATER REUSE

Benefits

- Early warning in case of the water reclamation plant malfunctioning.
- Efficient production of reclaimed water, avoiding overdosing of disinfection chemicals and excess of UV power consumption.
- Production of fit-for-purpose reclaimed water, according to the intended water quality for the reuse in irrigation of vegetables, wood crops, golf courses or other industrial uses.

- Contact: Montserrat Batlle (mbatlle@adasasistemas.com)

ADASA

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AQUATRACK™

Early Warning System/Sampling for pathogens and organic pollutants in water

WATER REUSE

Description

- 24/7 optical laser scanning of contaminants in a flow of water
- The system is optimized to create a dynamic fingerprint of the water quality every minute in accordance with our propriety software algorithm
- Captures automatically water samples for analysis of contaminants when the fingerprint of the water deviates from its predetermined level
- Optical system with high accuracy and immediate response

Applicability

Municipal:

- Monitoring of source/lake, drinking and reclaimed water

Industry:

- Food, beverage and breweries
- Pharmaceutical and cosmetics
- Pulp and paper process water
- RO based plants

AQUA-Q
Online Water Control & Ozone Application

R3 Water

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AQUATRACK™

Early Warning System/Sampling for pathogens and organic pollutants in water

WATER REUSE

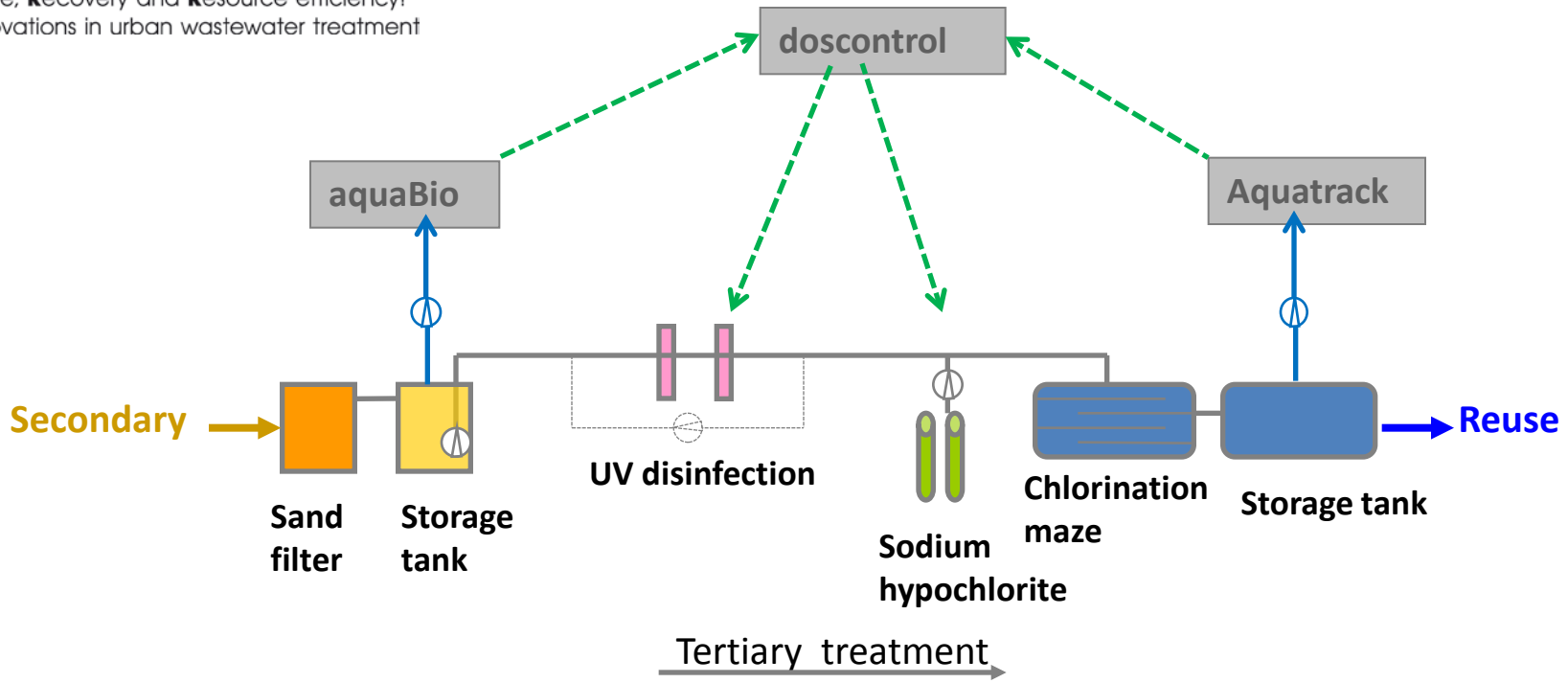
Benefits

- Water safety with fingerprinting, updating every minute
- Continuous monitoring of contaminants in a flow of water
- Quality assurance
- Real time water sample with time and date when the contamination occurs
- Provides correct water sample for quick analyse
- Cost reduction in operation
- No more random sampling
- Optimized treatment process, disinfection, UV and chlorine
- Create new de facto standard for quality control

- Contact: Sudhir Chowdhury (sudhir@aqua-q.se)

AQUA-Q
Online Water Control & Ozone Application

Technology integration



Demosites

- WWTP Castell d'Aro (Consorci Costa Brava, Spain): 175.000 P.E., 35.000 m3/day, with 15,000 m3/day production capacity for reclaimed water, by combined UV + Clorine disinfection.
- Hammarby Sjöstadsverk (Sweden) (IVL testing facility). Water reclamation by combined UV (to be confirmed) + Ozonation disinfection

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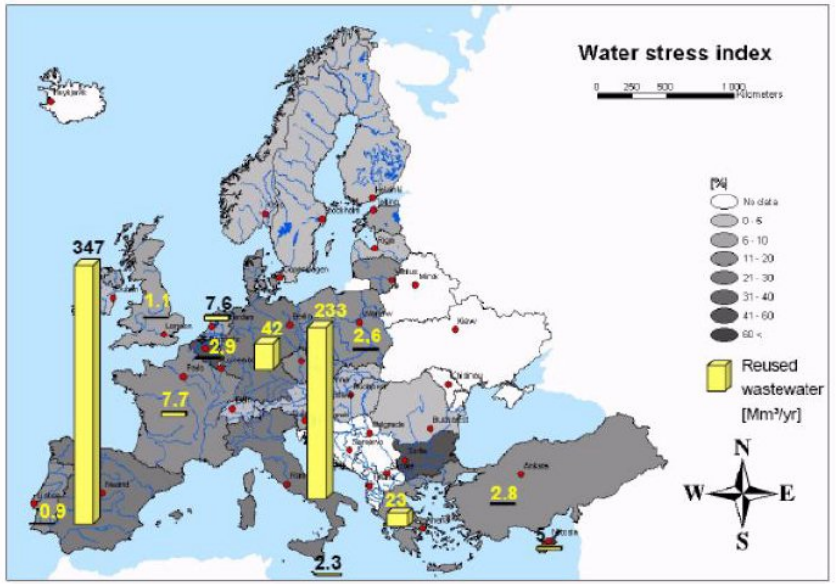
Market assessment

WATER REUSE

Some facts about reclaimed water reuse:

- Water scarcity is the driver for the reuse
- 2.4% of all treated wastewater is reused
- Mainly in Spain and Italy
- Agriculture is the dominant use (75%)
- Regulations exist in many countries, but no harmonised at EU level



Source: 2013 report by Typsa for DG ENV

Future trends

- According to ”Background document to the Public Consultation on Policy Options to optimise Water Reuse in the EU”: in spite of its numerous advantages and development potential, the reuse of reclaimed water is not widely implemented in many Member States
- World Café:
  - Challenges and needs (technical, regulatory, organizational/societal)
  - Application opportunities/scenarios in municipal waste water treatment