



PAC4TOC

Combining PAC and Ozone

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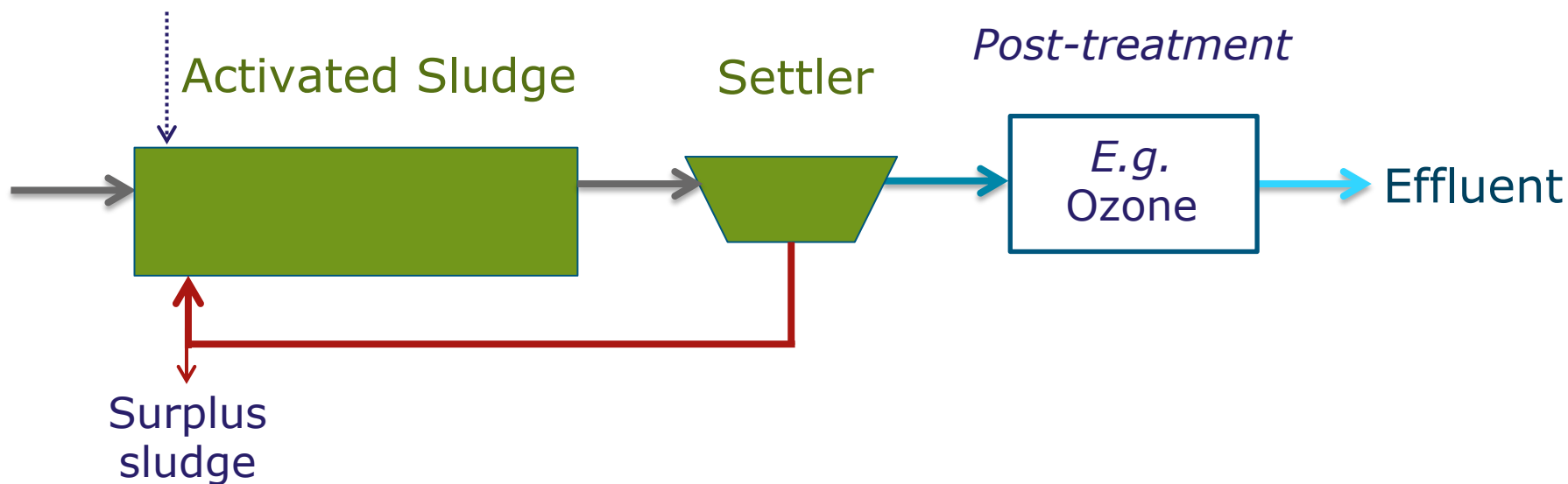
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**Dutch Innovation on Micropollutants
Removal from Municipal Wastewater
November 7th 2019 Aquatech Amsterdam**

PAC4TOC Technology

Adsorption AND Oxidation

Low doses PAC



PAC4TOC Technology

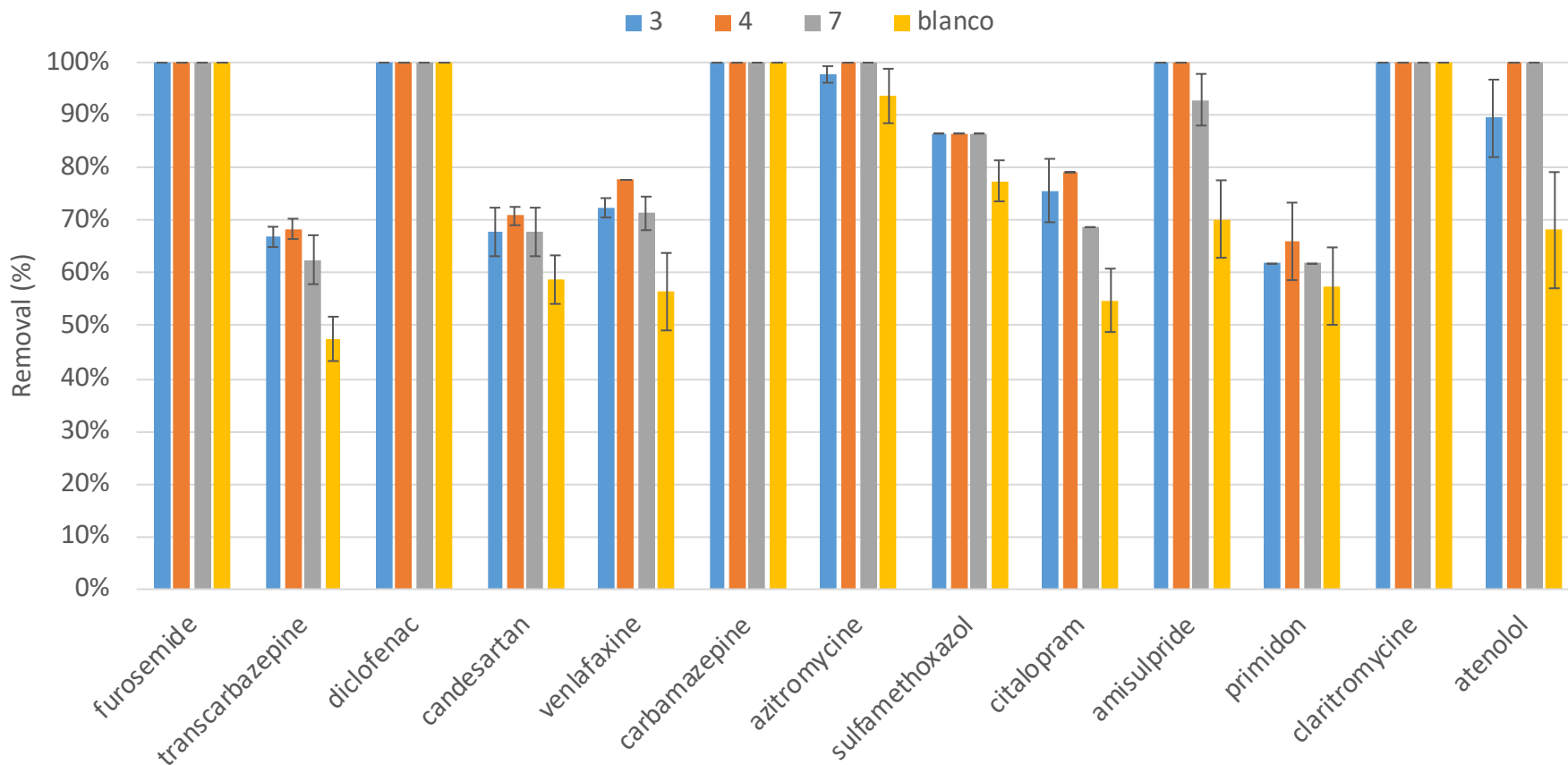
- Powdered Activated Carbon
 - Low dosage (<10 mg/L)
 - Removal of easily absorbable micropollutants
 - E.g. benzotriazole and irbesartan
 - Organic Carbon removal (DOC/TOC)
- Ozone
 - Low ozone dose (<0,5 g O₃/g DOC)
 - Removal of easily oxidizable micropollutants
 - E.g. diclofenac and carbamazepine
 - No/low bromate formation
 - Less oxidation by-products

Feasibility Study

- Literature study
 - Broad pallet of micropollutant
- Lab-tests
 - Various low costs PACs available
 - Low PAC and O₃ doses effective
 - €0,07 – 0,09/m³
 - Limited selection of micropollutants



Feasibility Study



Results

Criterium	Score of PAC4TOC in respect to ozonation + sandfiltration
Removal of micropollutants	+
CO2 footprint	0
Costs	0
Ecotoxicity	0
Microplastics	0
Antibiotic resistance	0

Further research

Additional lab-tests:

- Relation dosages PAC - O₃
- Broad selection of micropollutants
- Influence of DOC concentration
- Bromate formation



Thank you for your attention!

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