BO_3-technology

Sustainable removal of organic micropollutants

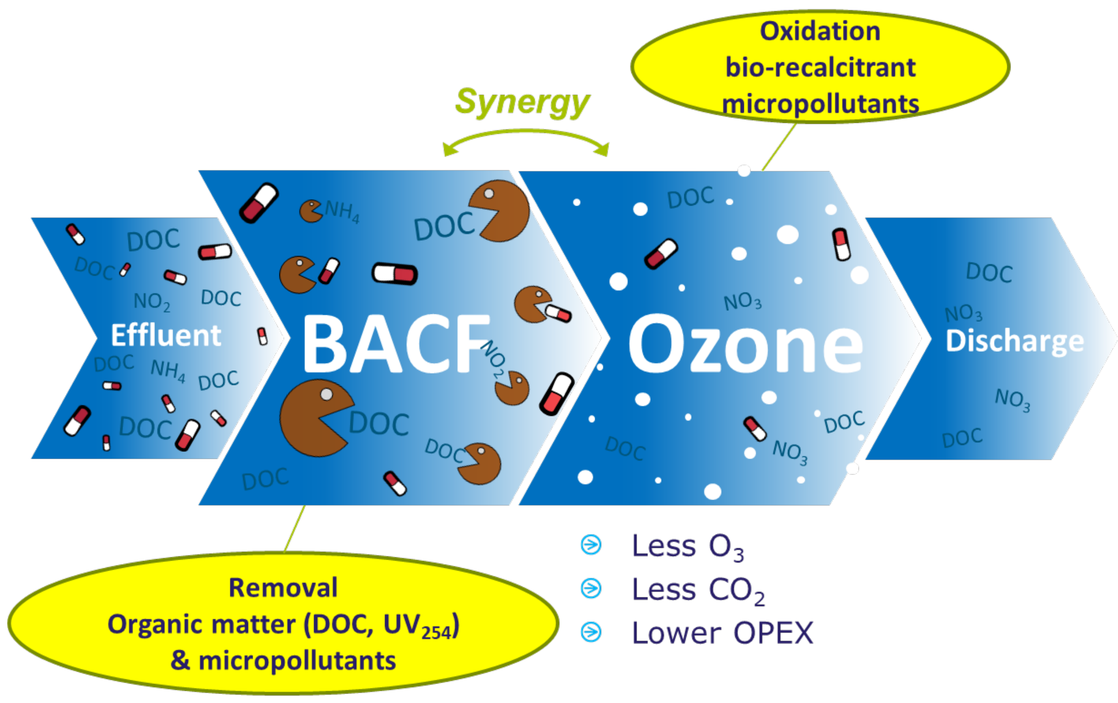
Development partners

Royal HaskoningDHV — Enhancing Society Together

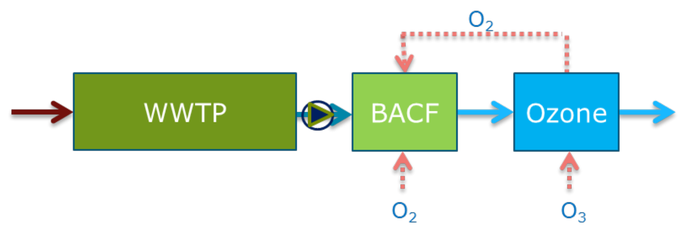
WAGENINGEN UNIVERSITY & RESEARCH

Basics of the technology

- Biological Activated Carbon Filtration (BACF) + Ozone treatment



- Post-treatment

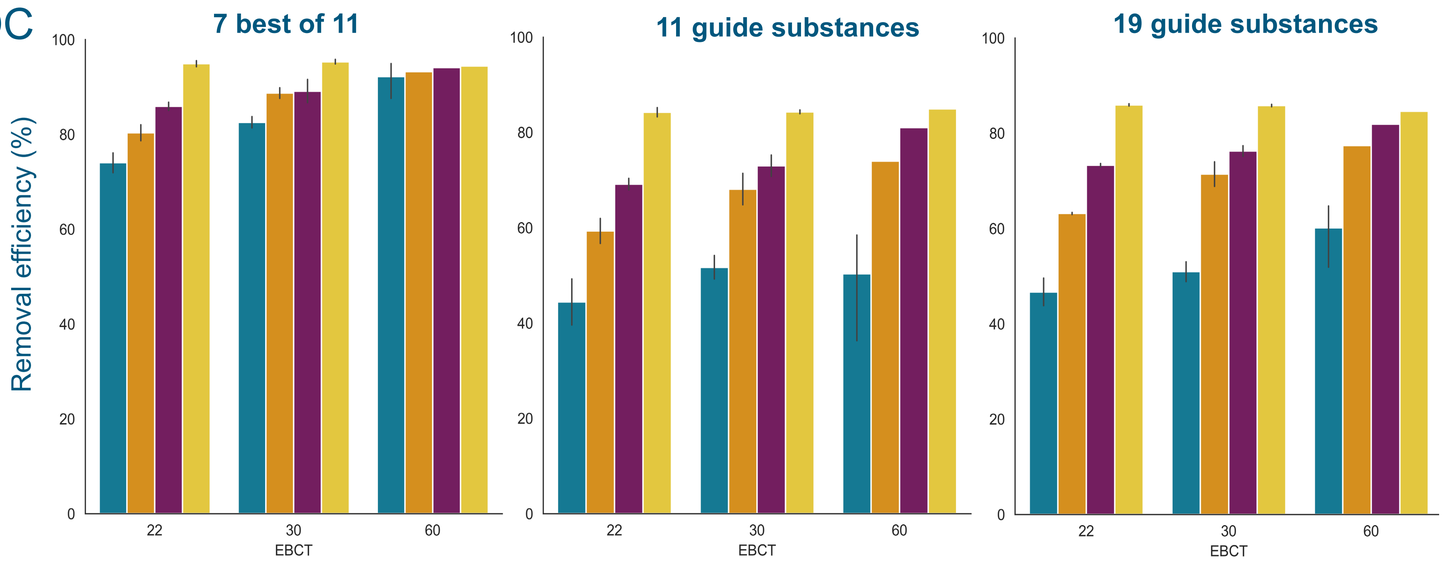


- BACF:
  - Aerobic biological process
  - No regeneration of activated carbon
  - Organic matter (DOC, UVA_{254}) removal
  - Organic micropollutants removal
  - Nitrification
- Ozone:
  - Very low ozone dose
  - Low energy and oxygen consumption

Results and Performance

stowa — Rijkswaterstaat *Ministry of Infrastructure and Water Management* — waterschap amstel gooi en vecht — Royal HaskoningDHV *Enhancing Society Together*

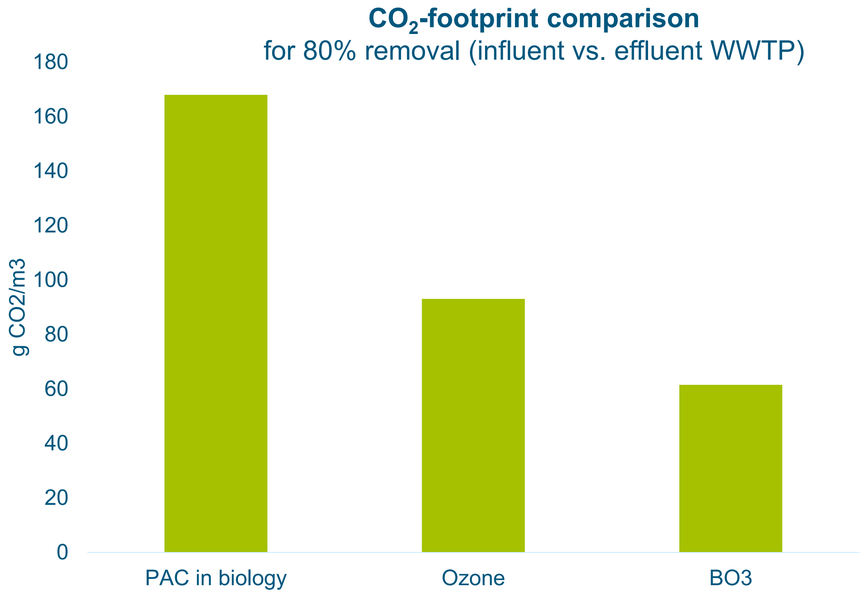
- Piloting 7 months at WWTP Horstermeer
  - BACF Empty Bed Contact Time 22 – 60 minutes
  - Specific ozone dose 0,1 – 0,4 g O_3/g DOC
- Broad spectrum removal
- Ecotoxicity reduction
  - >50% for a set of 7 bioassays
- Full nitrification
  - NH_4-N 1,0 to <0,015 mg/L
  - NO_2-N 0,3 to <0,015 mg/L
- Limited bromate formation
  - Less than 1 µg/L up to 0,3 g O_3/g DOC



Average removal of the Dutch guide substances in the BO_3-pilot at various empty bed contact times (EBCT) in the BACF and various specific ozone doses.

Due to concentrations below detection limit in the pilot outlet the maximum achievable removal efficiency is limited to about 95 – 98% per setting

Features BO_3-technology



- High removal efficiency organic micropollutants
  - Broad spectrum of compounds removed
- Minimal energy requirement
  - Electricity consumption 0,05 – 0,07 kWh/m^3
- Sustainable technology
  - Carbon footprint 50 – 65 g CO_2/m^3
- Low operational expenditures
  - OPEX savings 30 – 40% compared to ozone treatment

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