

**MECANA**  
UMWELTTECHNIK

# TOTAL SUSPENDED SOLIDS AND PHOSPHOROUS REMOVAL

WWTP IN GOSSAU, SWITZERLAND

## OBJECTIVE

To obtain operating data for filtration used for phosphorus reduction following coagulation.  
To demonstrate the efficiency of pile cloth media filtration in comparison with the existing traveling bridge sand filter.



SAND FILTER



TEST FILTER TF2-S

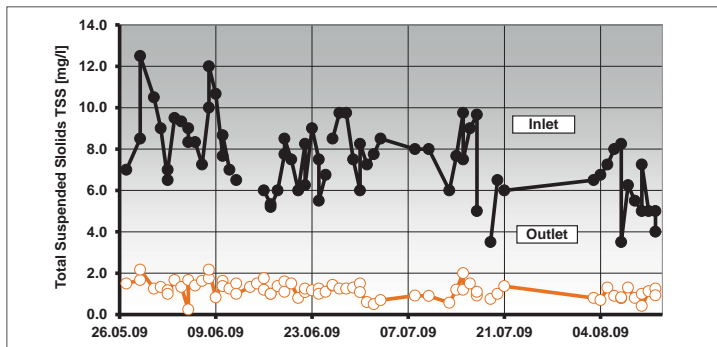


DRUM WITH  
MICROFIBRE CLOTH

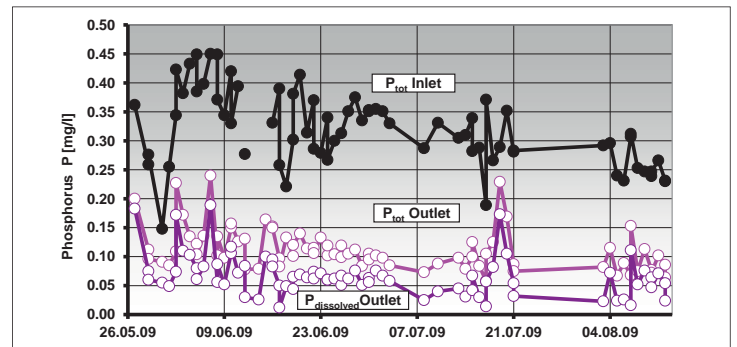


GOOD RESULTS ALSO  
UNDER HIGH SHOCK  
LOADINGS

## RESULTS FOR TOTAL SUSPENDED SOLIDS (TSS) REMOVAL



## RESULTS FOR PHOSPHORUS (P) REMOVAL



### TEST FILTER

- Drum Filter Type TF2-S
- Filtration surface: 2 m<sup>2</sup>
- Filtration velocity: 10 m/h
- Filter cloth: Microfibre
- Test period: 2009

### INLET

- Test filter inlet = sand filter inlet = final clarifier outlet after coagulation with Fe<sup>3+</sup>
- In normal operation inlet concentrations were:  
TSS: 4–12, av. 7.5 mg/l  
P<sub>tot</sub>: 0.15–0.45, av. 0.32 mg/l
- During shock loading trials inlet TSS concentrations went above 300 mg/l

### OUTLET

- Pile cloth media filtration is capable of very high removal efficiencies:
  - In normal operation outlet TSS was in the range 0.3–2.2 mg/l (av. 1.2 mg/l)
  - Similarly, outlet P<sub>tot</sub> was in the range 0.06–0.24 mg/l (avg. 0.11 mg/l) with the higher values only occurring at peak P<sub>dissolved</sub> concentrations
- Even during trials at extremely high shock loadings, outlet TSS remained < 5 mg/l

### COMPARISON TO SAND FILTER

Average outlet TSS concentrations:  
Sand filter: 2.3 mg/l  
Pile cloth media filter: 1.2 mg/l