

Softening

Design of 4th Mega location Oasen

CT 5520

Drinkingwater Treatment 2



Floor van den Berg
Udo Ouwerkerk

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oaseo

Contents

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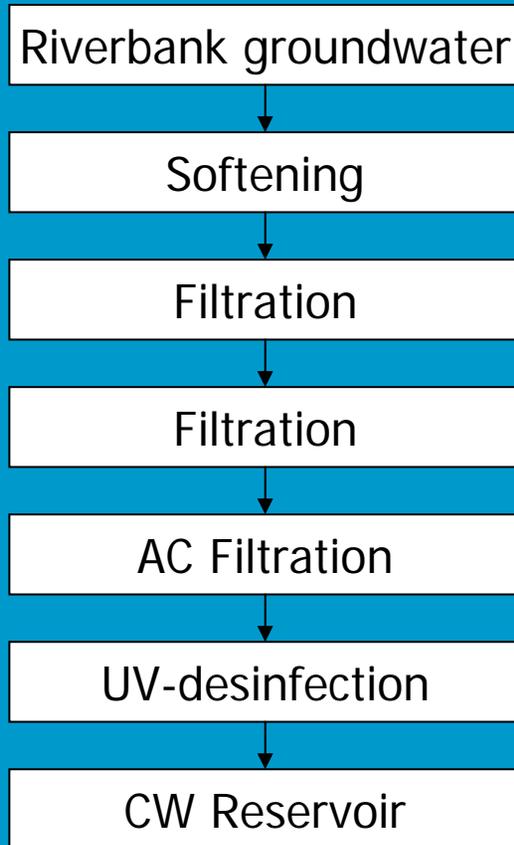


Softening

- Anaerob
- Aerob
 - Aeration
- Chemical dosing
 - Caustic soda
 - Lime
 - Soda



Softening → Anaerobe



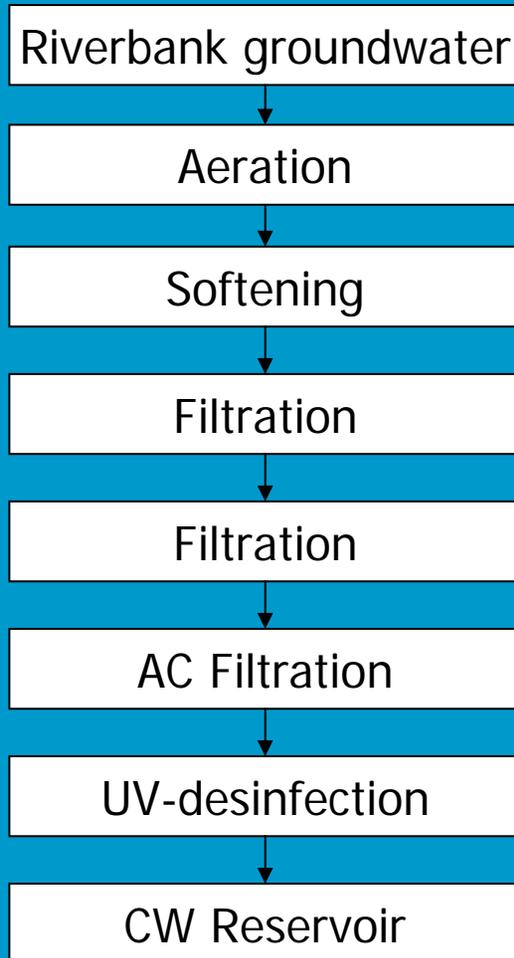
Advantage

- No aeration needed
- Reduce filter loading

Disadvantage

- High chemical dose
- Fluffy pellets

Softening → Aerobe



Advantage

- Fine quality pallets
- Ammonium reduction
- Less chemical dosing

Disadvantage

- Extra aeration step needed

Softening → Aerobe: Aeration

Suitable options

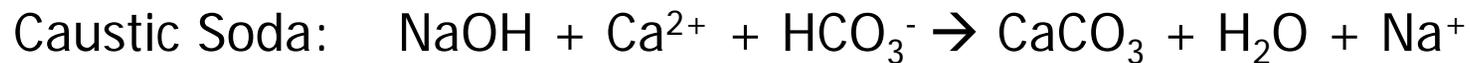
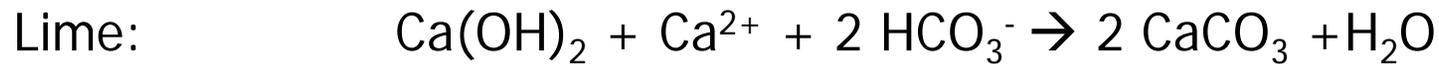
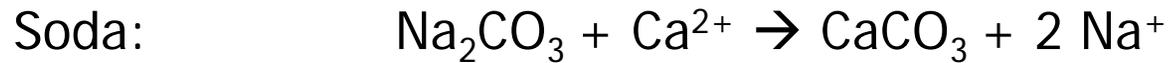
Cascade:

- robust,
- high efficiency,
- extra elevation height,
- extra space requirements,
- $RQ=0.4$, $E=10-30 \text{ Wh/m}^3$

Venturi aerator:

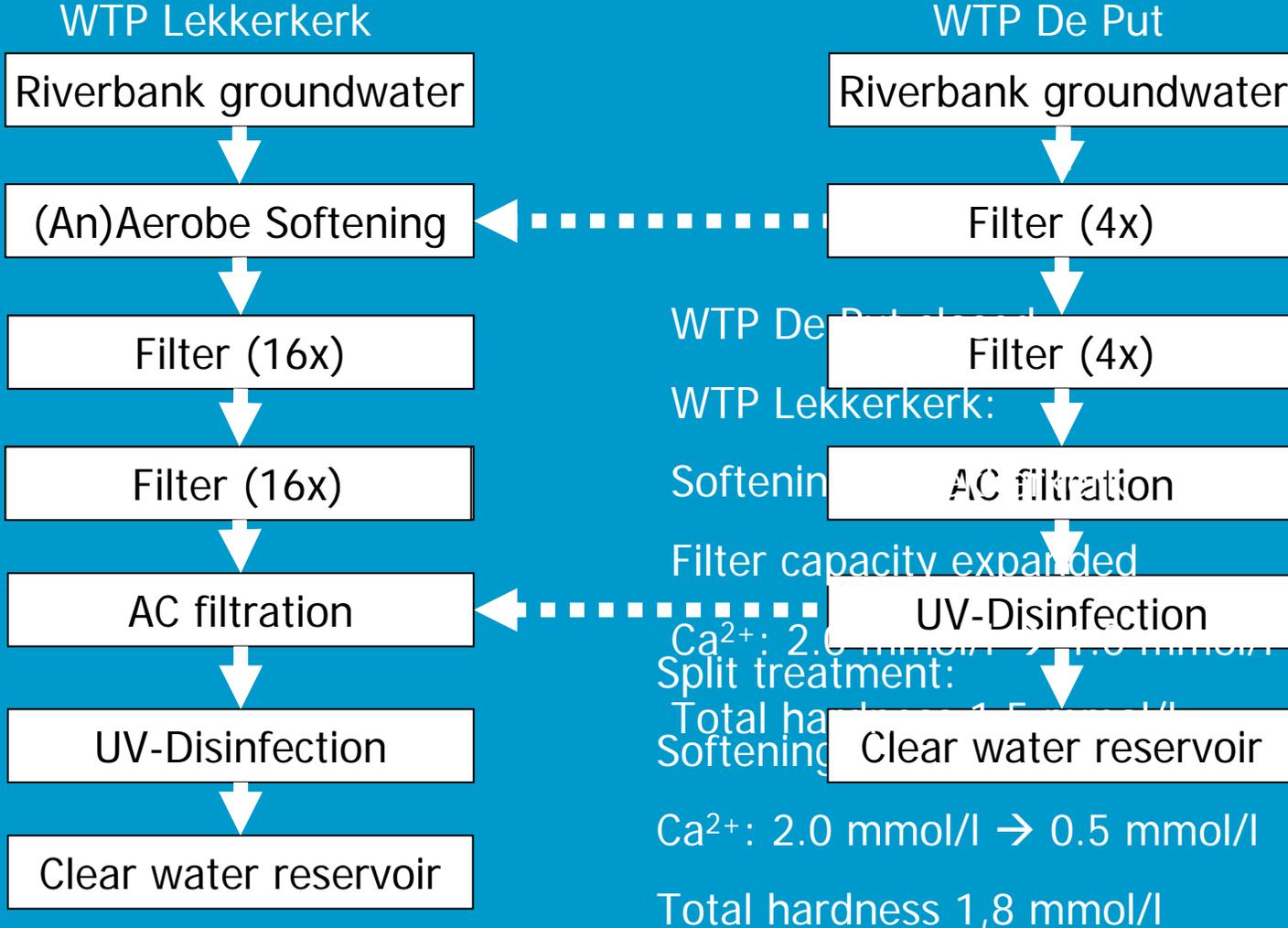
- high efficiency,
- limited flow variations can be allowed,
- $RQ=0.2-0.4$,
- $E=20-30 \text{ Wh/m}^3$,
- requires little space

Softening → Chemical dose

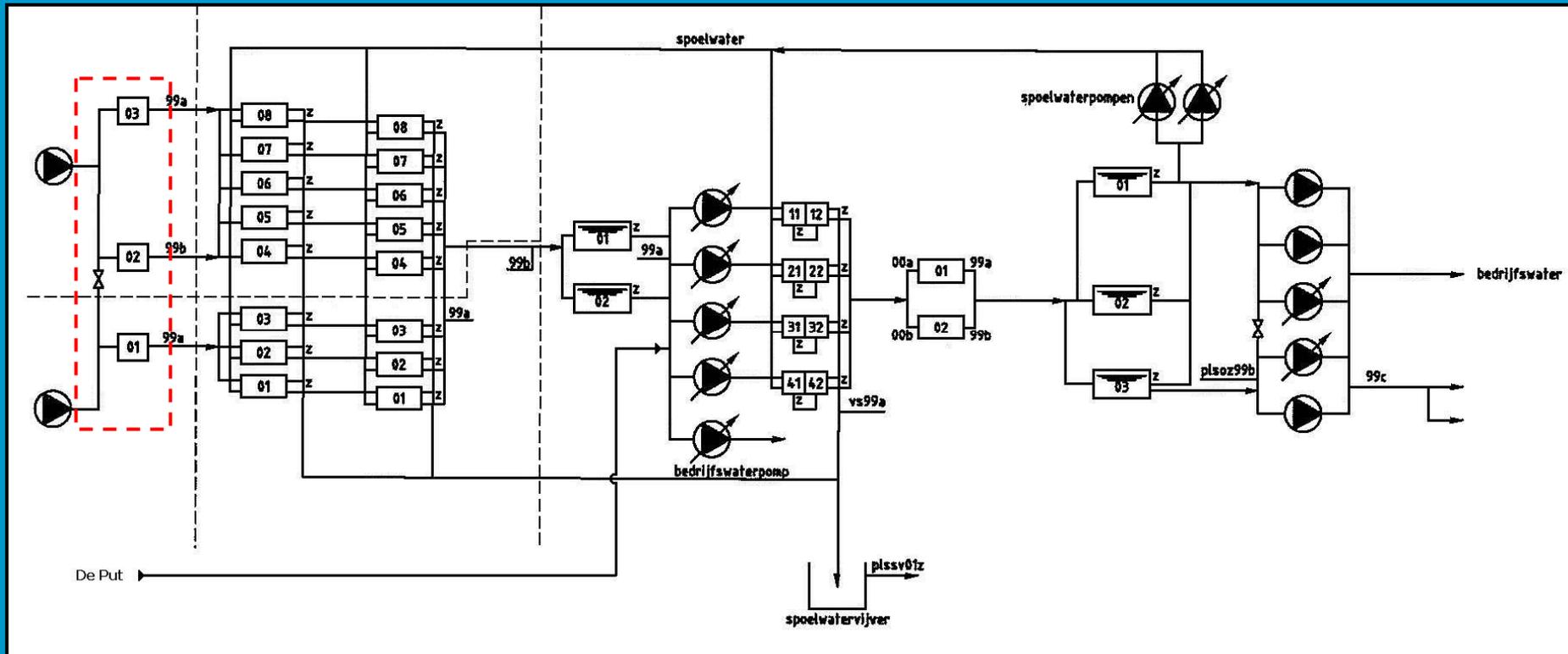


- $\text{Na}^+ < 150 \text{ mg/l}$ → • Soda not possible for split treatment
 $\text{HCO}_3^- > 60 \text{ mg/l}$ • Lime is more complicated in dosing than caustic soda

Selection



Process scheme, split treatment



Next step

- PID
- (Structural) Design drawings
- Construction alternatives
- Specific calculations
- Finances



Questions?



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