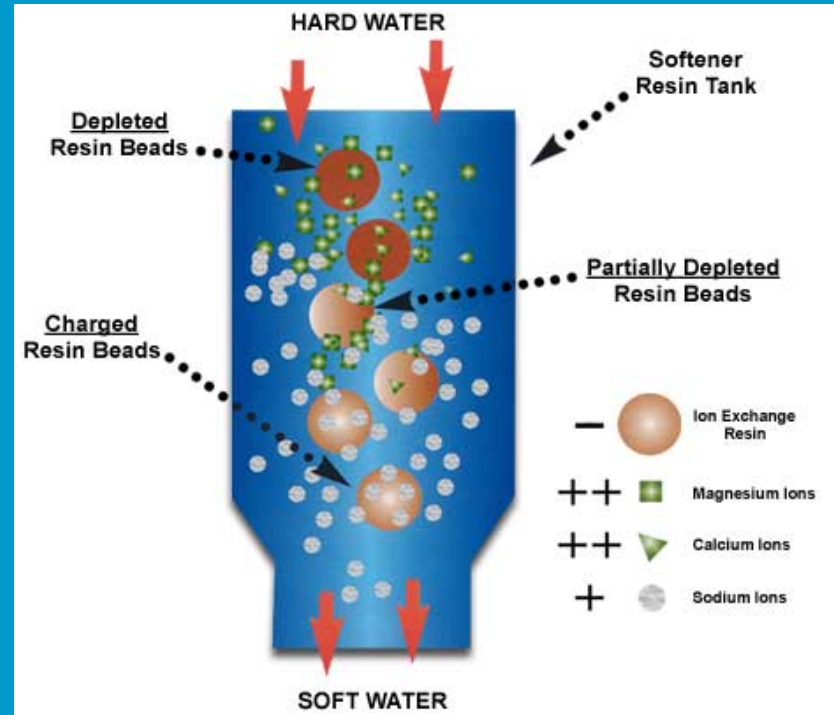


# Softening Ion-exchange

Marianne van der Griendt  
Heleen van der Vliet



Design of 4<sup>th</sup> Mega location Oasen

CT 5520, Drinkwater Treatment 2

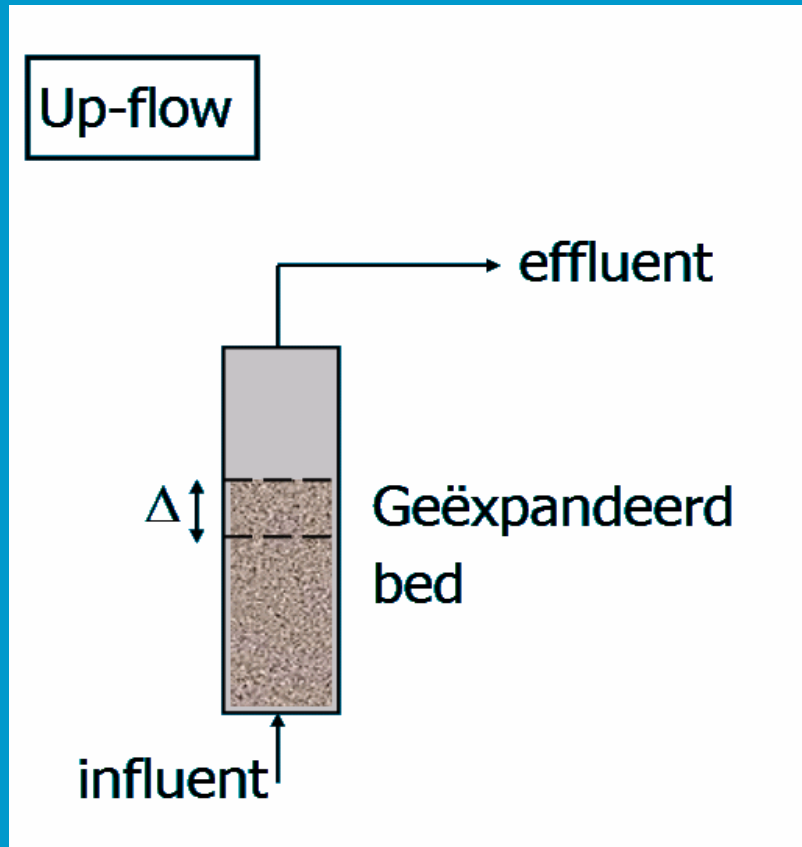
25 May 2007

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# Content

- System of operating
- Dimensions
- Regeneration

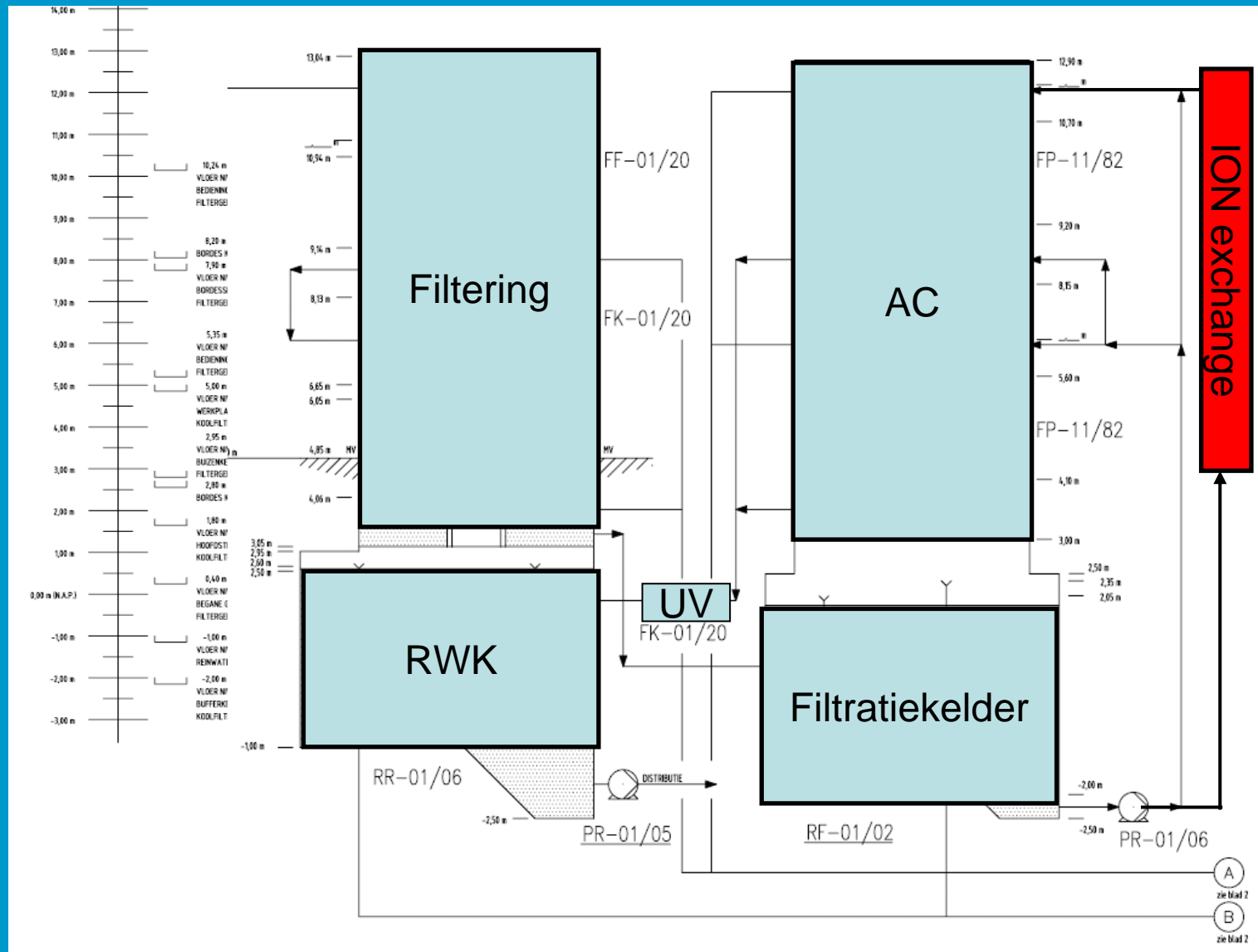
# Operating system of ion exchange



Fluidized Bed:  
No canals and air bubbles

Floating resins:  
Mass of resins = resistance over  
the bed.

Perfect insertion in current  
design!

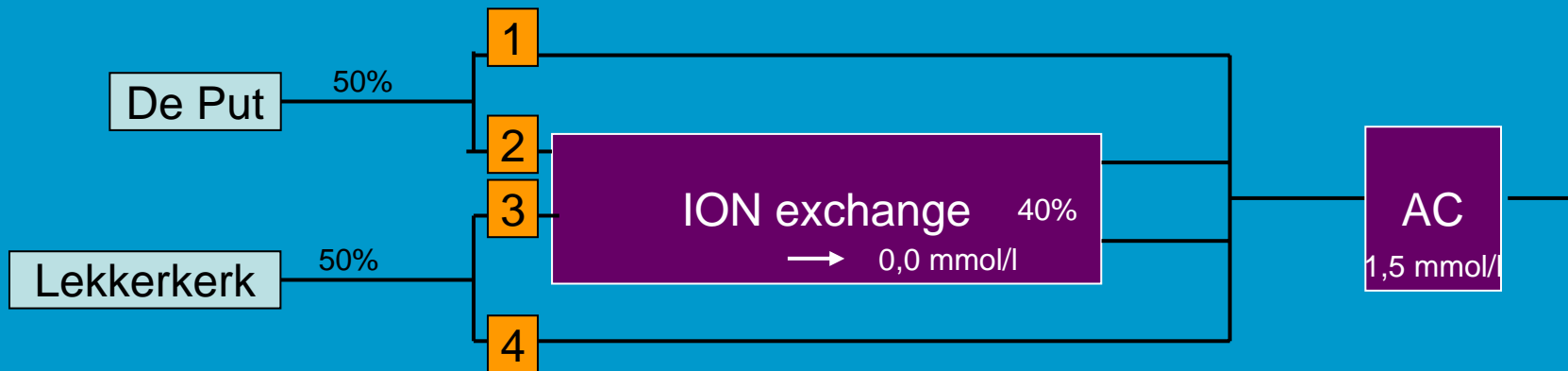


# Flow Ion-exchange

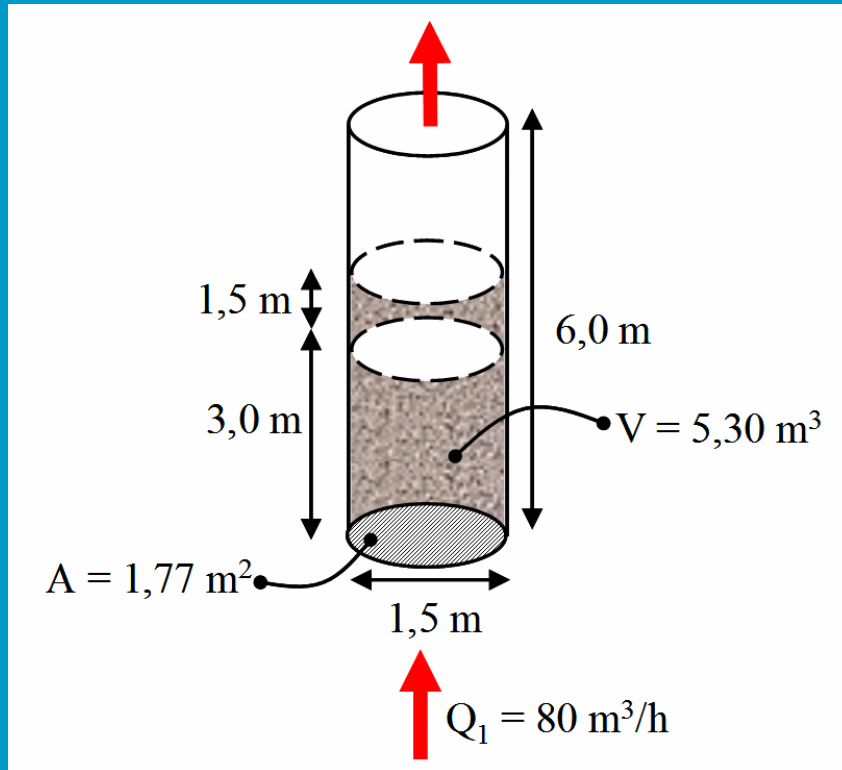
Flow 'de Put' is equal to flow 'Lekkerkerk'

40% treated by ion exchange gives hardness of 1,5 mmol/l

Flexible design!



# Dimensions



Max flow:  $640 \text{ m}^3/\text{h}$

Quantity: 10

Diameter: 1,5 m

Height: 6 m

Bed volume:  $5.3 \text{ m}^3$

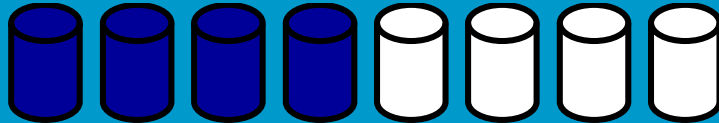
Design flow:  $80 \text{ m}^3/\text{h}$

Resistance: 7 cm

# Operating Ion exchange

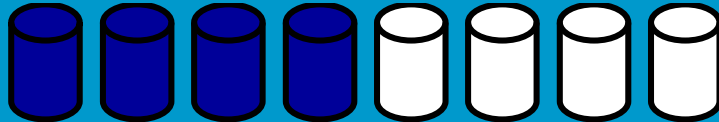
Design softening Lekkerkerk

Max flow 320 m<sup>3</sup>/h

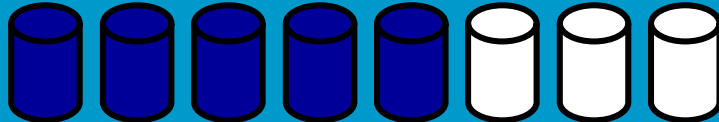


Design 4e mega location:

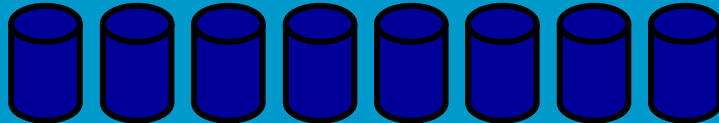
Min flow: 340 m<sup>3</sup>/h



Average flow: 430 m<sup>3</sup>/h

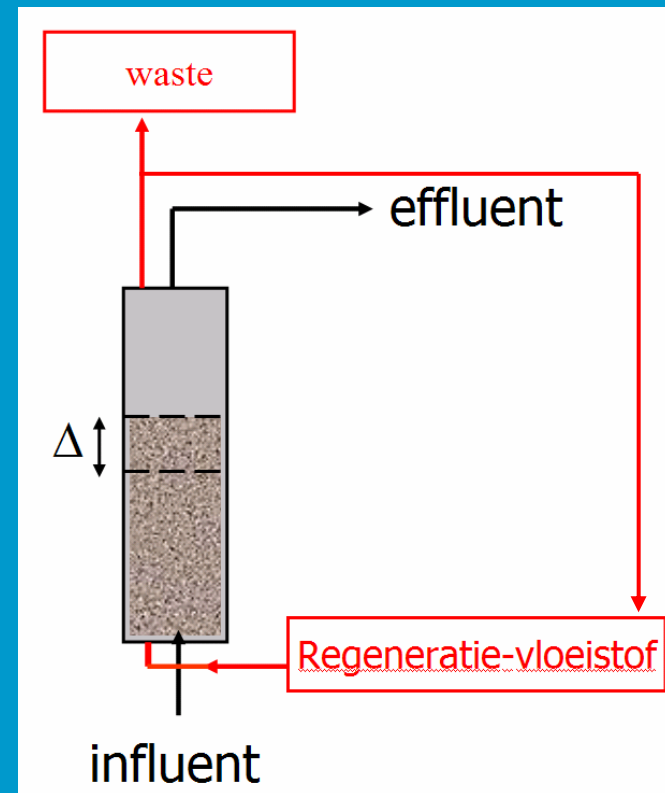


Max flow: 640 m<sup>3</sup>/h



# Regeneration

- Upflow, Every 12 hours
- Regeneration tank: 25 m<sup>3</sup>
- Liquid NaCl
- Recycling NaCl with NF and precipitation with soda.
- Production of CaCO<sub>3</sub>





# Process scheme ion exchange

