Application : water reuse
Technology : ceramic membrane filtration

Optimal use of ground water for drinking water production by ceramic membrane filtration:

– Reuse of spent filter backwash water, max. capacity 70 m3/h –

Case description

Treatment of spent filter backwash water to drinking water.
Increase amount of drinking water per m3 ground water intake
Demonstration plant realized and commissioned in 2014

Location : drinking water production site Wierden, NL (Vitens N.V.)

I. Key features

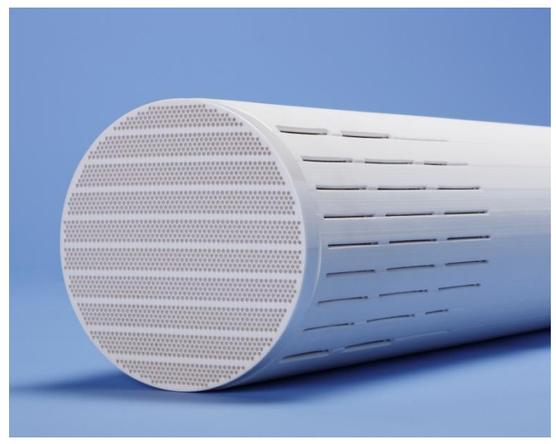
- Increase plant efficiency by reuse
- Less ground water intake
- Reduction of ecological footprint
- Low energy input, dead-end filtration
- Long membrane lifetime and low OPEX
- Reduction of chemical consumption

II. Plant design

Membrane pore	: 0,1 µm
Element membrane area	: 25 m2
Installed element no.	: 2x 12

III. Performance

- Operational data 2015
- Clear permeate production: 0,042 NTU



Left to right: filter backwash water (feed), produced MF permeate (reused to produce drinking water), ceramic MF membrane (METAWATER Co., Ltd)

Key performance data

Drinking water production	620.285	m3
Sand Filter backwash water	20.058	m3
MF permeate	19.771	m3
MF backwash water	287	m3
MF recovery	99	%
MF energy consumption	3.024	kWh
MF specific energy consumption	0,15	kWh/m3
Reduction coagulant consumption	>90	%

Outcome and future prospective

Spent filter backwash water in Europe is expected to be in the range: **1,85 – 3,70 billion m3**. With its reduction of groundwater extraction, low specific energy consumption (0,15 kWh/m3), reduction of coagulant (>90 %) and reduction of waste water effluent, ceramic membrane filtration is a promising solution to increase the source water efficiency in Europe without creating an increase in the drinking water production price.

➲For more information, please visit: http://www.iwec-water-reuse.eu. ✉ For enquiries, please contact RWB Almelo, The Netherlands (NL)
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