



AquaFit4use

# Filtration Assisted Crystallization Technology for Ca-removal

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knowledge  
transfer  
and  
dissemination

SP 6

## PRINCIPLE

Filtration Assisted Crystallization Technology (FACT) is a hybrid process combining heterogeneous crystallization and a simple filtration step. The heterogeneous seeds should allow both fast crystallization and easy filtration. The principle can be applied in aqueous solvents and organic solvents to remove hardness and other salts. The heterogeneous seeds grow during the FACT process until the moment that they have sufficient size and are bled off.

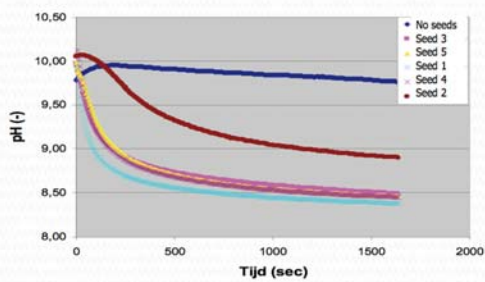


Figure 1. Comparison of the effect of various seed materials for CaCO<sub>3</sub> removal in a laboratory test

## ADVANTAGES (PAPER INDUSTRY)

- Closing of water cycles (and saving energy for heating water).
- Product (= seeds + CaCO<sub>3</sub>) is used as filler, resulting in ± 25-50% reduction of raw filler material.
- Removal of hardness can be easily tuned between approx. 50 and 98%.
- More efficient use of cationic additives in the wet section (due to low [Ca<sup>2+</sup>]).
- Small volume and footprint, because of relative fast reactions.
- Competitive to conventional techniques like the pellet reactor.

## INNOVATIVE ASPECTS

A relatively small amount of heterogeneous seeds (about 1 g/l) create a significant increase of the crystallization kinetics, while at the other hand the use of seeds allows a compact and cheap filter for the S-L separation.



Figure 2: Pilot in paper industry. Crystallizer with seed tank (right)



Figure 3: Pilot in paper industry. Second frame with PTS-WDCD filtration unit

DISSEMINATION  
AND  
training



Project funded through the 7<sup>th</sup> Framework Programme of the European Community for research and technological development