

The reliability and usability of flow measurements in process control



On-line measurements from filtered samples

Chromatographic measurements (HPCE, HPLC etc..)

- HPCE - anions (*sulphate, chloride, thiosulphate, sulphite, carbonate,..*)
- cations (*calcium, sodium, potassium, magnesium, aluminium*)
 - organic acids (*acetic, formic, propionic, glycolic, malic, malonic,..*)
 - biocides (*glutaraldehyde,..*)
- HPLC - carbohydrates (*six wood monosaccharides,..*)
- extractives, phenolic acids

Sum parameters

- alkalinity
- DOC
- ions determined with Courier

Continuous determination of anions

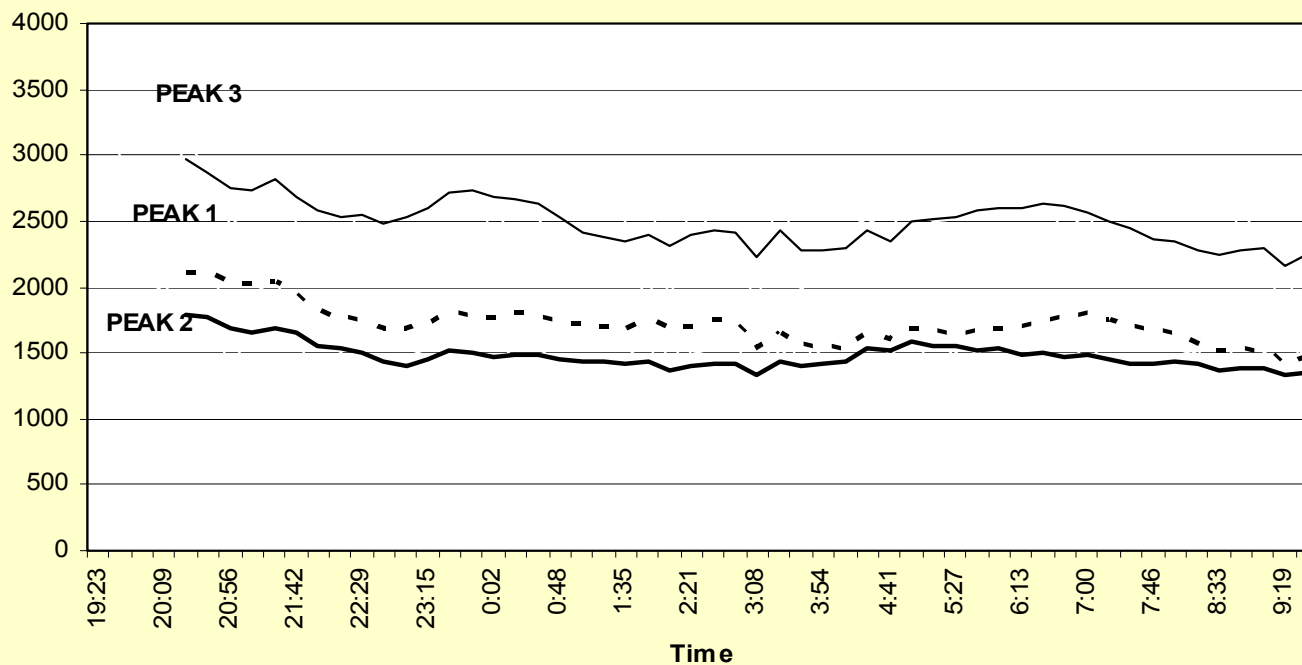
Filter
operation
test:

CONCENTRATION OF ANIONS IN FILTRATE

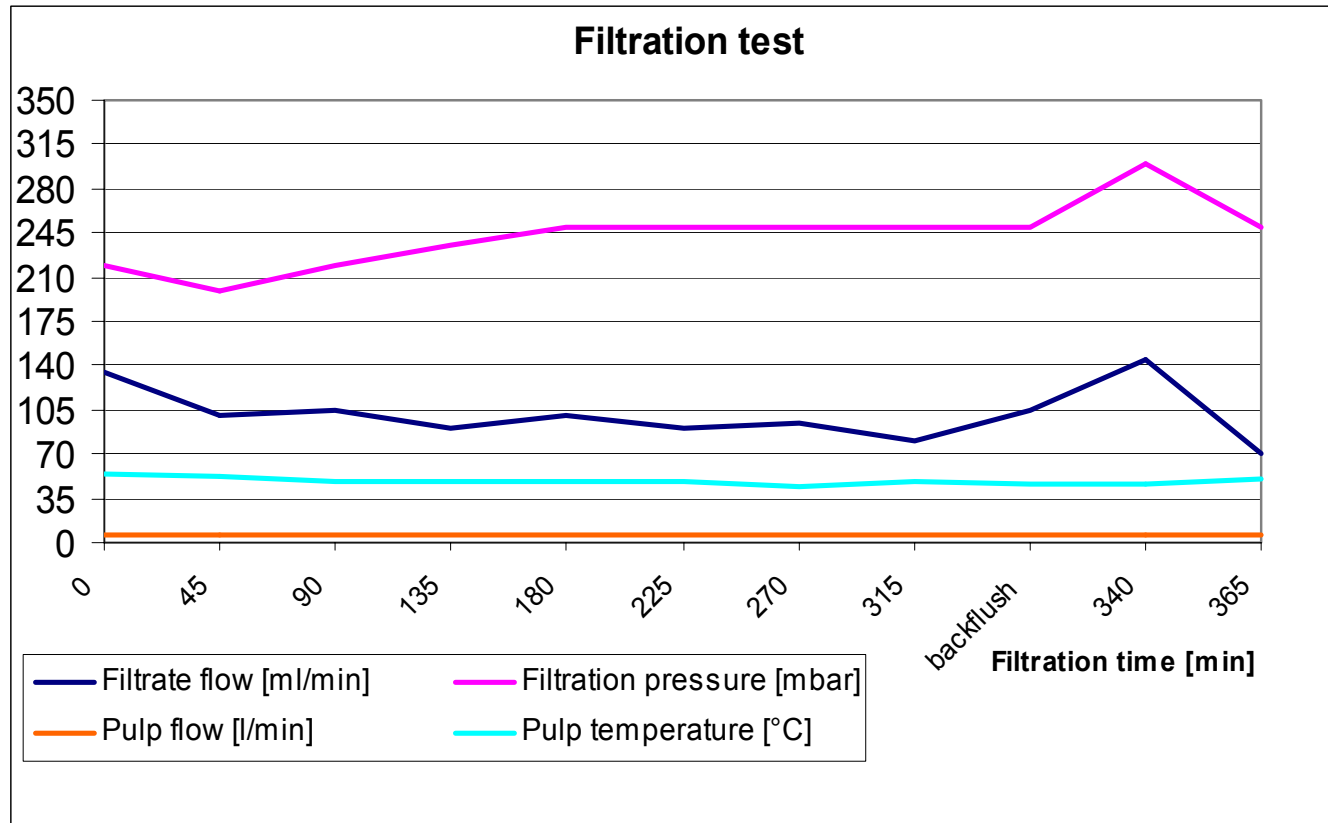
Overnight filtration

Ceramic filter: $l = 25 \text{ cm}$, $0,2 \text{ um}$

Peak area

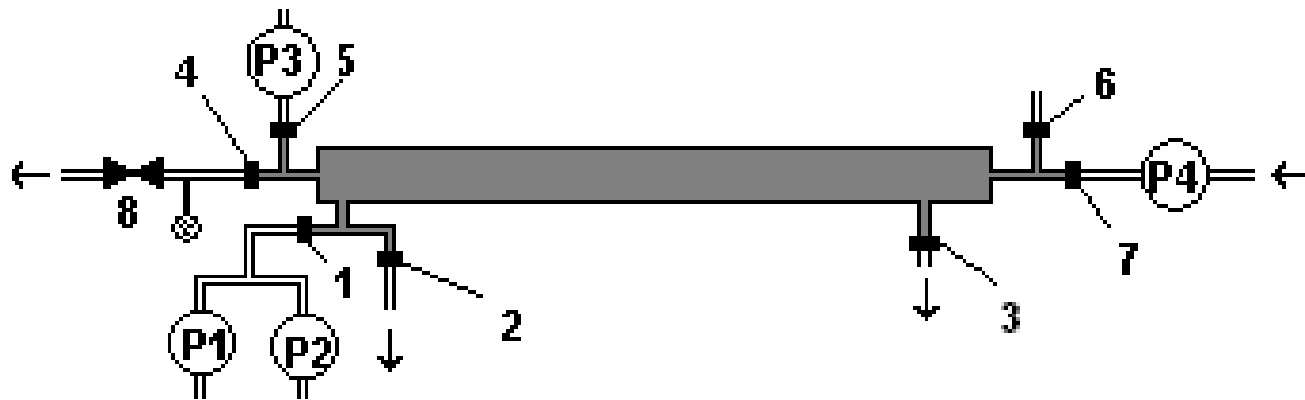


Continuous operation of cross-flow filter



Ceramic cross-flow filter unit

P1: water, P2: washing solution, P3: water, P4: sample flow.



Process measurements in a mill



Continuous filtration of process water

