



FORSCHUNG

BERATUNG

MESSTECHNIK

WEITERBILDUNG

Paper Technology Specialists
Services in the paper value chain

Services offered by the PTS Pilot Plant

Development and application trials of fillers using the pilot plant facilities of PTS Heidenau - II

Task and methodology – Example no. 2

Task

- Filler activation by means of polymers for strength enhancement.
- Testing of a paper (grammage: 55 gsm) and 2 fillers, total filler content of 35%
- Selecting the optimum activation systems for full-scale trials, and deriving recommendations for industrial applications

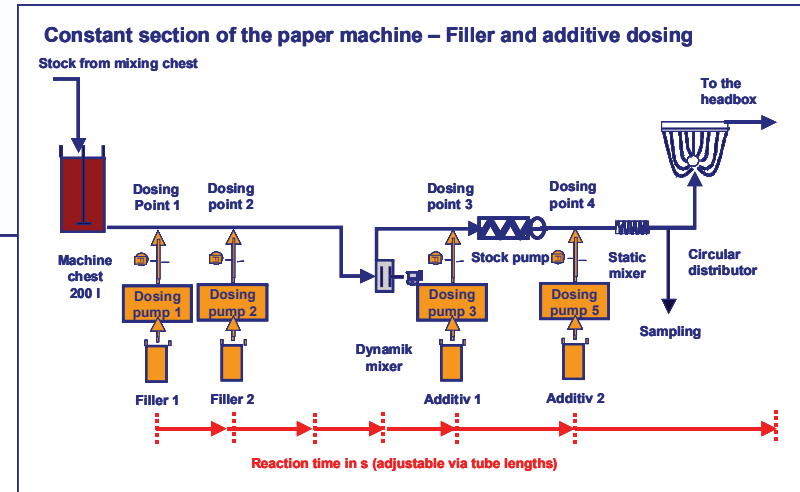
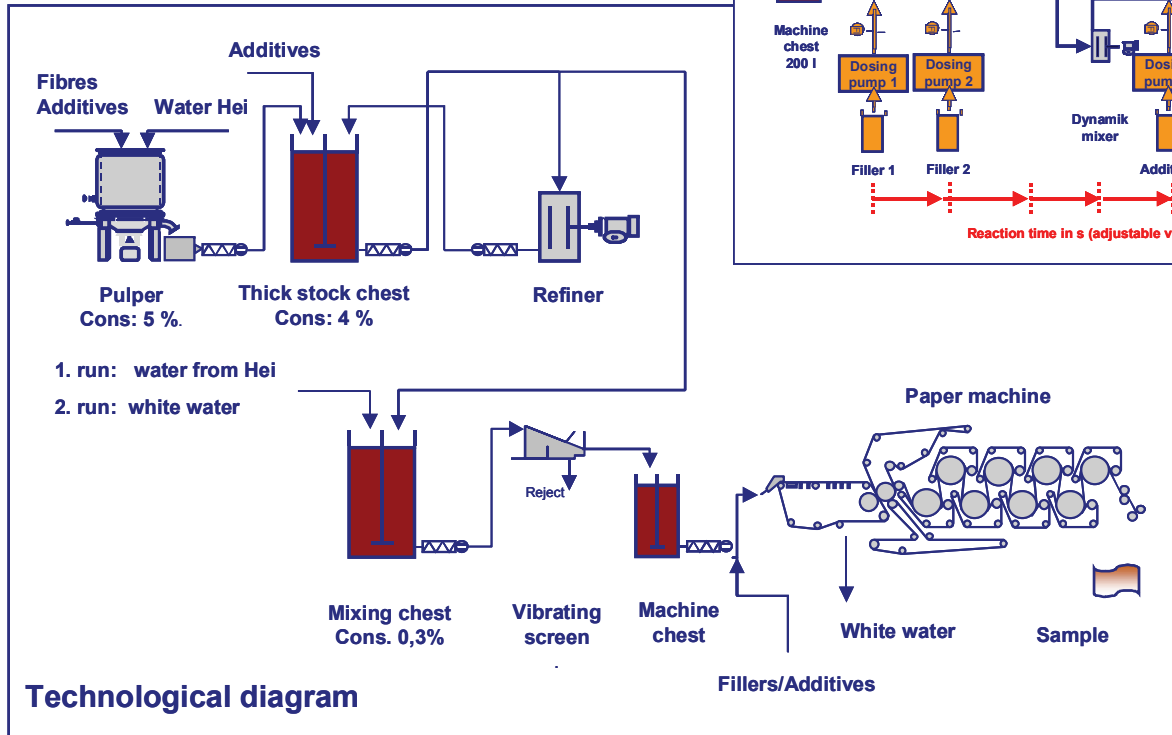
Methodology

- Paper manufacture under near-practical conditions on the pilot paper machine, varying the
 - Polymer additions (types and amounts) for filler 1
 - Polymer additions (types and amounts) for filler 2
- Measurement of
 - Retention,
 - Dewatering results in the wet presses and drying section.
- Testing and evaluation of samples

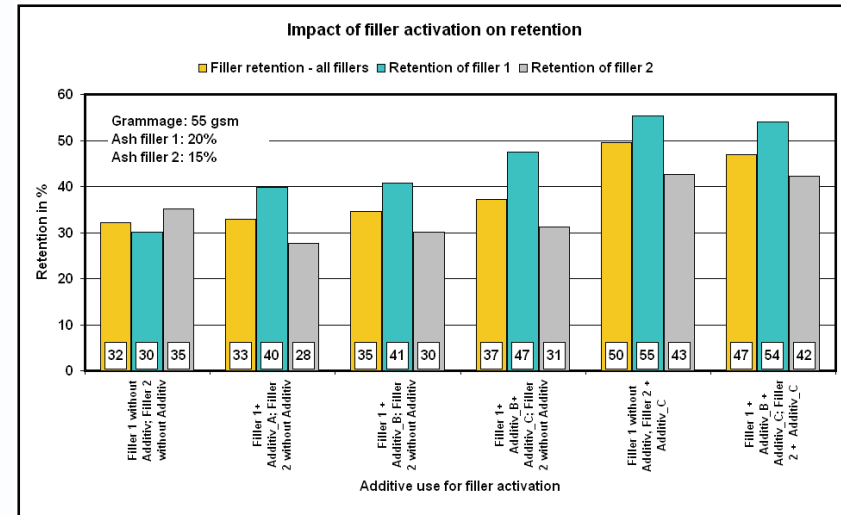
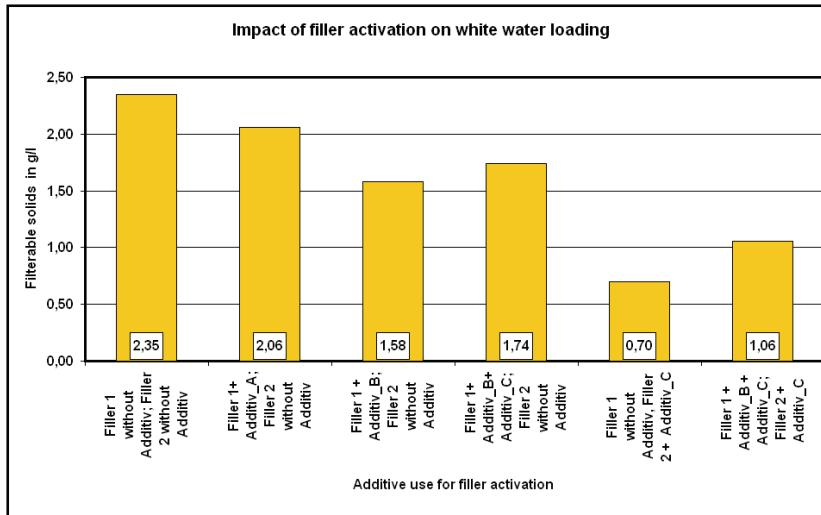
Test stand

Circuit closure:

1. Mixing chest process water Heidenau
2. Mixing chest white water from prep.1



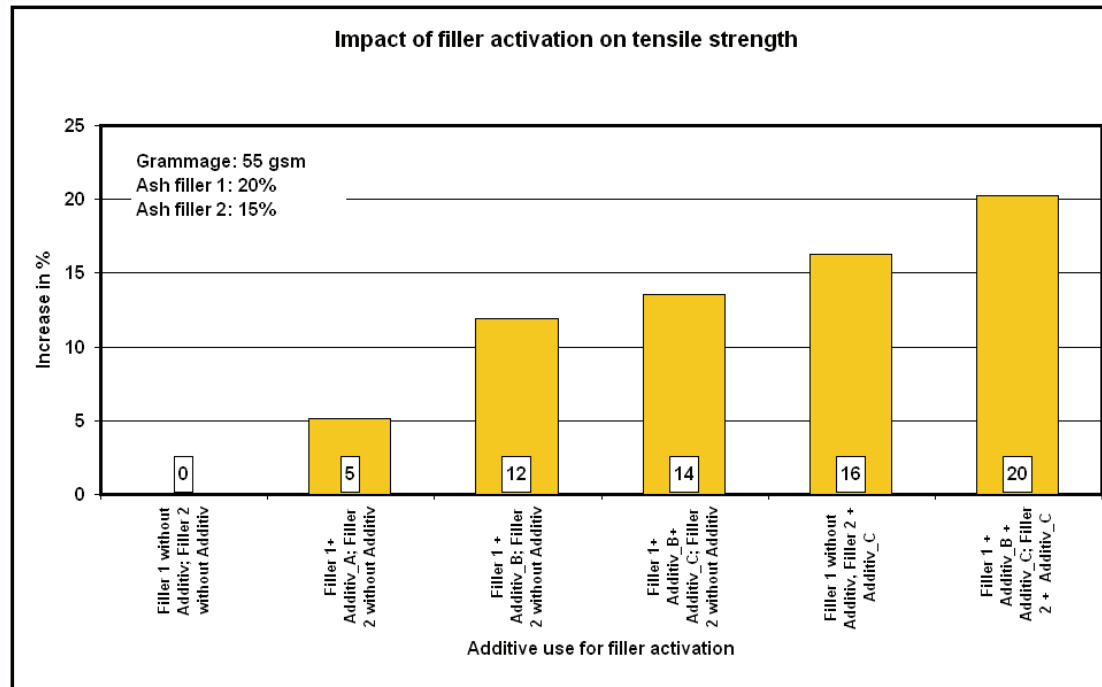
Results – Retention



The filler activation causes an increase in retention. The effect depends on the type and amount of the polymers added. In a system with two fillers, there are mutual interactions – partly also in opposing directions - regarding the effects on retention.

For optimum retention, the polymer systems of the two fillers must be properly adjusted.

Results – Strength parameters



As compared to papers with non-activated fillers, the tensile strength was increased by up to 20% .

Based on these results, it is possible to identify the optimum polymer system in terms of strength enhancement and the extra costs for polymers.

Benefits

- Practically relevant evaluation of polymer systems for filler activation regarding their effects on retention, dewatering, drying and paper characteristics, which could not be done - or only with considerable outlay - in the laboratory.
- Testing of many different polymer systems under comparable conditions within a short period and at low cost.
- Pre-selection for full-scale trials in terms of cost and benefits.
- Deriving recommendations for full-scale applications regarding
 - Polymer type and dosing quantity
 - Dosing sequences.
- Reduced risk and cost of full-scale trials

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