Simulation of Press Dewatering

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Objectives
- Virtual felt design
- Advanced analysis methods
- Pore size distribution
- Permeability analysis
- Behaviour under pressure
- Simulation of the nip dynamics
- Understanding as basis for prediction

Virtual vs. Real

Process for a Press Simulation

- µCT Scan of an existing felt
- Fluid flow through a felt
- Permeability analysis of felt layers
- Rheological felt data (viscoelastic model)
- Press Nip Simulation
- Paper machine data
  - Speed, line load
  - Roll cover properties
  - Paper properties

Example – Shoe Press

- Upper felt: 0.051 m/s = 10.0 cfm
- Lower felt: 0.035 m/s = 6.9 cfm

Status
- New rheological model implemented
- Basic automation of
  - Layer detection
  - Fluid & permeability analysis
- Support of
  - Global Press development
  - Product management

Next Steps
- Enhance roll cover modelling
- Rheological properties
- Flow properties of different surface design
- More support of product management with more case studies
- Automated Process
- Flow simulation & analysis
- Permeability analysis with layer detection