



ZELLCHEMING-CONFERENCE

CELLULOSE-BASED MATERIALS –
FROM SCIENCE TO TECHNOLOGY

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Characterization and optimization of roll covers using computational fluid dynamics

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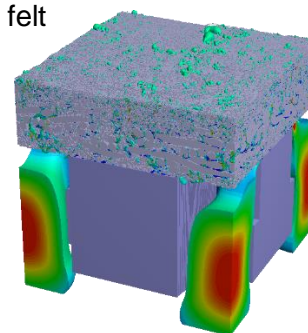
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Abstract

During press dewatering only a perfect combination of press felt design and open surface of roll cover or press sleeve will lead to an efficient dewatering and optimal paper quality. Fluid dynamic simulations give insight into the interaction between press felt and roll cover and thus open up new possibilities to optimize the combination of press felt and roll cover depending on a specific press concept. We have analyzed virtually created press felts in combination with different open structures of press rolls. We could show that grooves give a better distribution of vacuum within the press felt compared to other surface structures and thus allow for a higher dewatering rate. In addition, we have analyzed the marking potential of suction holes and have defined a dimensionless marking index to classify the roll cover - press felt combinations.





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KEYWORDS:

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Biography



Siegfried Graser is working as an R&D expert in the simulation department at Voith Paper in Heidenheim. He has a background in theoretical physics and worked in different academic positions in Germany and the United States prior to joining Voith Paper in 2011. Within his current position his work focuses on virtual prototyping and the analysis of paper machine clothing as well as roll covers and press sleeves, simulation of the forming process and computational fluid dynamics.