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Improvement of de-watering and drying energy efficiency by using functionalized cellulose fibers

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Alabama Center for Paper and Bioresource Engineering is developing a technology to advance the drying process in the paper manufacturing. This topic is extremely important from the energy consumption and sustainability perspective. Paper drying accounts for some 80% of the energy that is used for paper making. The main process used for drying is vaporization. This technique has high energy requirements and thus energy and cost effectiveness of different physical means of dewatering can potentially far exceed the process of vaporization drying. Therefore a novel method of improving significantly the physical dewatering process has been developed. In the research it was discovered that the additions of hydrophobic fibers to the pulp furnish can bring major benefits to the drying process. From the author's research it can be shown that the addition of hydrophobic fibers at even a few weight percent may have a major impact on the freeness and water retention properties of the furnish. These preliminary results are very encouraging and therefore we continue to develop this novel concept aiming at significantly improving drying effectiveness and related economic savings in the physical dewatering of webs made using hydrophobically tailored furnish material.

Biography

Marko Hakovirta has a PhD in Physics from the University of Helsinki, Finland and MBA from Emory University, USA. He has worked as a Directors funded postdoctoral fellow at Los Alamos National Laboratory and as a Fellow at CERN. He was also a Research Fellow of the Academy of Finland. He has served as a reviewer for several peer reviewed journals. He has also an extensive industrial background having worked in industry for about 10 years in different leadership positions in corporate strategy, R&D and environmental management. Before joining Auburn University he worked as an Associate Director for IPST at Georgia Tech. He is currently Director of Alabama Center for Paper and Bioresource Engineering and Professor in the Department of Chemical Engineering at Auburn University.

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