2nd International Conference on Cellulose Fibres, 2-3 February 2021, Cologne, Germany

New sustainable textile fibre from paper-grade pulp

Janne Airola, Kari Ala-Kaila, Katja Konola-Manninen, Kari Kovasin, Annariikka Roselli, Anna Suurnäkki and Niklas von Weymarn
Metsä Group, Finland

Industrial production of MMCFs relies, essentially, on four manufacturing technologies, the Viscose, Lyocell, Cupro and Cellulose Acetate processes. These processes use predominantly dissolving pulp as their pulp raw material. Some even require very pure form of cellulose to work. A growing demand for MMCFs in the upcoming decades opens up opportunities for increased production of MMCFs using the well-known technologies, but also by looking for new technologies.

Metsä Group, a forerunner in wood-based bioeconomy and circular economy, is developing a new MMCF manufacturing technology based entirely on paper-grade pulp. The use of paper-grade pulp, notably without production of dissolving pulp nor applying derivatisation inside the process, requires the identification of new chemistry. A solvent that directly dissolves efficiently both cellulose and hemicellulose was eventually identified in close collaboration with the University of Helsinki and Aalto University. In a next stage, this solvent was integrated into a new production process that included the direct integration to industrial paper-grade pulp production, the fibreline and solvent recovery.

In late 2018, Metsä Group's innovation company Metsä Spring and Japanese ITOCHU Corporation set up a 50:50 joint venture company (JV) and within the context of the JV, started to build a greenfield demo plant in Äänekoski, Finland. In October 2020 (date of this abstract), the demo plant was in the start-up & test run phase of the investment sub-project. The goal of the demo plant, with a budget of 40 million EUR (incl. the investment and actual test production), is to demonstrate the new technology and product on a 1 t/day production scale. The demonstration phase is expected to last a few years.