

## NanoTextSurf Newsletter 3

NanoTextSurf is progressing very well and all the planned demonstration trials are carried out. However, the Covid-19 pandemic has caused some delays in the characterisation and end use testing of some demonstrators. The open access pilot services are available; our partners can continue their trials focusing on product development or new customers exploit the results in other industrial areas.

Several pilot trials have been completed for all four different application areas; membranes, protective textiles, friction pads and abrasive materials. Technical improvements in the existing open access pilot line SutCo at VTT were finalised and tested for these applications. Both VTT's pilot lines, the upgraded surface treatment pilot SutCo and printing pilot Roko are available as open access services.

### NanoTextSurf Project in short

The project aims at creating unique material properties and next generation products with coatings containing nanocelluloses. Nanocelluloses are plant or wood-based nanomaterials with particle sizes in nanometre scale. The nanotextured surfaces are created on textile, paper and plastic webs with various application techniques. Nanocellulose can directly provide the desired property or act as a co-binder or an additive in coating pastes.

Based on nanocellulose

CNF



MFC



CNC



PROOF OF CONCEPT FOR ANTIFOULING OR CAPTURING LAYERS

OPTIMIZED PASTES FOR SCREEN-PRINTING

COATING FORMULATION FOR FRICTION AND ABRASIVE MATERIALS

Four application examples



Antifouling layer for membranes or filters

Substrates are coated with cellulose nanofibrils. Coating surfaces enable anti-fouling performance or give an ability to capture unwanted substances or inorganics.



Lean breathable materials

Textile web is screen-printed with nanocellulose paste. A thin nanocellulose-based layer improves strength while maintaining breathability in workwear.



Sustainable friction materials

Textile web is impregnated with nanocellulose-based dispersion. These bio-based and durable friction materials will be used in multiple-disc clutches.

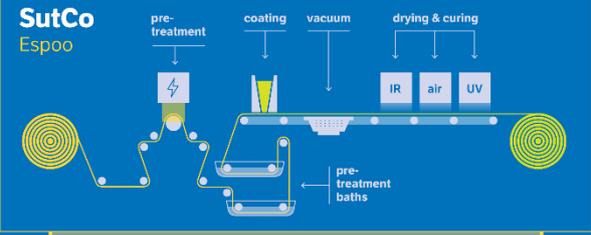


Sustainable abrasive materials

Substrates are foam coated or screen-printed with dispersions of abrasive particles, binders and cellulose nanocrystals as an additive to stabilize pastes.

Upgrading Pilot facilities for the applications

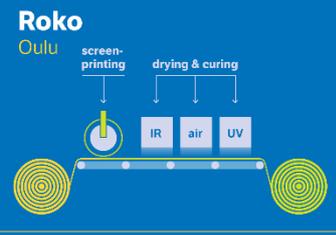
SutCo  
Espoo



VTT SutCo, Surface treatment Concept, is a versatile pilot-scale coating line used for research and product development. Surface treatment facility enables the use of various coating materials on wide selection of base substrates with different coating methods. Base substrates may include plastics, paper and carton board, textiles, or non-woven based materials. SutCo was recently upgraded for manufacturing nanotextured products in industrially relevant scale.

VTT ROKO is a unique roll-to-roll (R2R) pilot manufacturing environment for the development of printed products and processes to serve versatile customers' needs. This unique facility enables companies to explore radically new manufacturing approaches and to reduce the commercial and technical risks before starting fully commercial operations.

Roko  
Oulu



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Customer trials with pilot facilities are offered by VTT Technical Research Centre of Finland Ltd



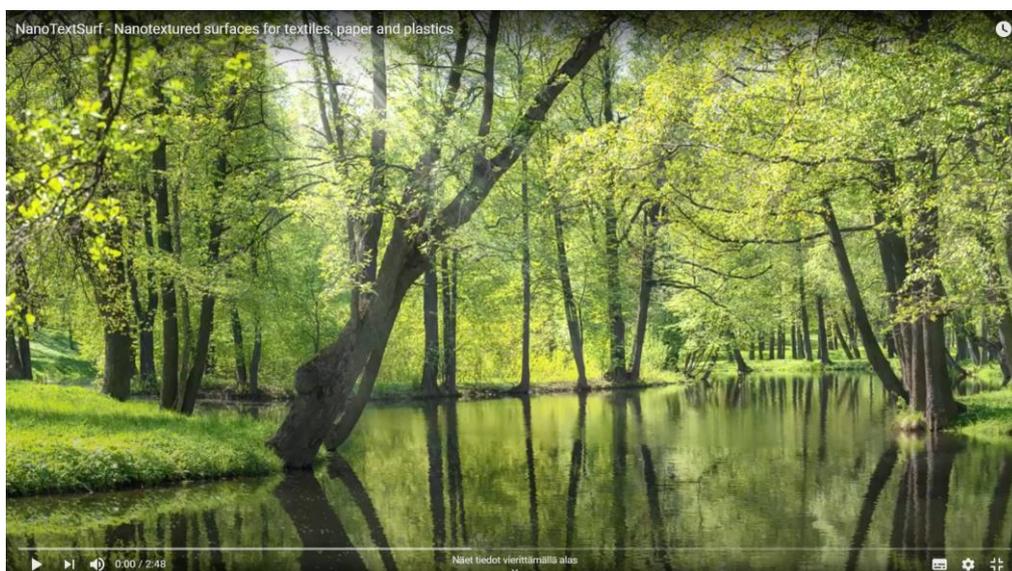
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 760601

NanoTextSurf Flyer about the open access pilot services can also be found from our web pages: [http://www.nanotextsurf.eu/pdf/NanoTextSurf\\_Flyer\\_web.pdf](http://www.nanotextsurf.eu/pdf/NanoTextSurf_Flyer_web.pdf)

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All conferences have been cancelled in spring and summer due to the Covid-19 pandemic and our dissemination activities have been delayed. ACS Spring 2020 Conference in USA, TAPPI International Conference on Nanotechnology for Renewable Materials in Finland, and AUTEX 2020 - 20th World Textile Conference in Portugal are all postponed to next year. Therefore, we are looking for new possibilities to present the results as publications in Open Access Journals and prepare presentations for events next year. We will replace the planned NanoTextSurf workshops with webinars in autumn. Stay tuned to get more information about these events and how to register to the webinars on our web pages <http://www.nanotextsurf.eu/news.htm>.

However, some general information showing as the overview of the NanoTextSurf project is available in digital format in Open Access Government <http://www.openaccessgovernment.org/nanotextured-surfaces/85471/>. It is available in two page article in both printed and digital format in Open Access Government April 2020 Journal. The NanoTextSurf video highlights some examples of our demonstrators, available in YouTube: <https://www.youtube.com/watch?v=7vIz8GL-sE>.



This information came out in CORDIS website in five other languages in addition to the English version written by the Cordis team to promote dissemination across Europe targeting especially to reach SMEs: <https://cordis.europa.eu/article/id/418047-making-use-of-the-unique-properties-of-cellulose-based-nanomaterials>. The open access pilot services are available for our current partners to continue the pilot trials focusing more on product development or any new customers interested in nanotextured products to exploit the results in other industrial areas. These could include e.g. industrial wipes, hospital textiles, food packaging materials and air purification filters.

15.6.2020, Espoo  
Ulla Forsström, VTT

## Acknowledgements

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