Novel longitudinally corrugated web as stable wave obtained by the Papermorphosis process (left), combined to traditional corrugate (right)

Gruppo X

The Twist with the Stretch

Gruppo X is a company based in Venice, Italy. The company generates patents on innovations in the paper sector, develops those patents with industrial partners, and licenses patents, know how and technology.

In the past, the company found the need of a cost saving and sustainable alternative to plastics or alu in 3D packaging. Groupo X invented the "Mould Paper Technology": a purely mechanical treatment with no particular chemical additives for the production of a paper with over 20% stretch in Machine Direction and up to 16% stretch in Cross Direction, combined to a high strength deriving from virgin fiber and high refining.

The Mould Paper technology has been licensed by BillerudKorsnäs exclusively for Europe and the product is on the market under the trade name Firbreform. After this Gruppo X has generated more and novel processes to influence and generate dimensional variations in fibrous webs.

All the so-called "Papermorphosis" processes are purely mechanical and consist in units to be inserted into existing papermachines, excludable if not needed. Papermakers can use them for:

- producing standard products with reduced costs (furnish, refining)
- producing improved standard products
- producing totally new paper grades

Whereas Gruppo X has only worked on highly stretchable papers for 3D-packaging in the past – only made

Highly deformable recycling paper

Various possibilities for 3D surface structures

possible by the use of plastics –, today all of these and also the new systems, which they have comprised under the name "Papermorphosis", allow to influence, separately or combined:

- customized MD and CD elongations in paper on demand (even bilateral high for 3Dpackages), and so far
- to influence the mechanical properties
- to balance TEA values over the mere choice of fibers or refining, even if high strech values are not required.
- to increase bulkiness (i.e. for tissue)
- to prestrech webs in order to partially recuperate width, lost due to drying, resulting also in a gain of stiffness in cross direction

The pilot units were installed at the paper pilot line of RISE Bioeconomy (former Innventia AB), Stockholm and „we are continuously progressing and upgrading our work on the most different paper grades with the most different needs to be adjusted accordingly," Gruppo X said.

RISE Bioeconomy puts it like this: In 2015 RISE Bioeconomy's pilot papermaking facility FEX was expanded with new equipment for making paper that is stretchable in both directions. The new equipment was installed by the Italian R&D company Gruppo X di X Gruppo. Their patented technology "Papermorphosis" enables the development of a variety of paper qualities, including where high performances are not visible to the final customer but important for a paper maker. Better mechanical properties can be achieved using mechanical means instead of investments into high-quality fibre or costly energy consuming high refining.

Highly stretchable paper opens up possibilities for the use of paper in a number of applications currently being manufactured in plastic and thereby reduces the amount of non-biodegradable plastic waste.

"The equipment, consisting of two units for separately customizing both CD and MD elongations, together with our competence and knowledge, provide the industry with enhanced opportunities to develop new and improved mechanical properties for many paper qualities. GruppoX's goal is to generate improved paper out of the poorest fibre," says Marion Sterner at Gruppo X. For RISE Bioeconomy, this is a new kind of collaboration to achieve better value for the customers, making it possible to provide technology and competence as well as pilot equipment. Gruppo X, on their part, can take advantage of the flexibility offered by the FEX pilot facility. In Gruppo X´s opinion the development is not over yet "During focused customer trials, we saw that our system can meet many targets," Gruppo X stated.

Use of 3D deformable paper for furniture

The processes are supposed to contribute to fluffiness and bulkiness for paper and even non wovens. ■

Simply stretchable, even recycling paper Photos: Gruppo X