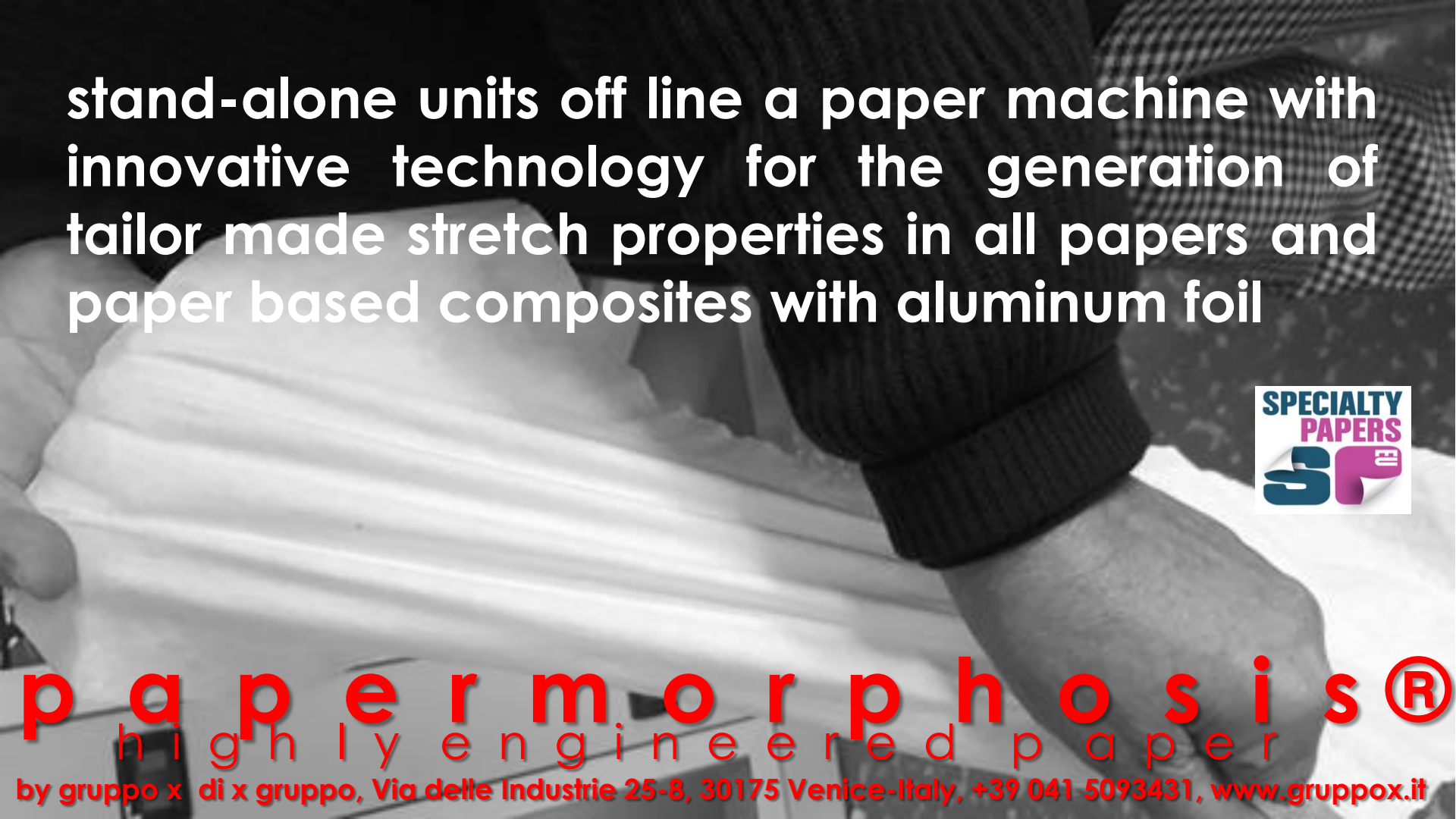

stand-alone units off line a paper machine with innovative technology for the generation of tailor made stretch properties in all papers and paper based composites with aluminum foil
SPECIALTY PAPERS
SP
papermorphosis®
highly engineered paper
by gruppo x di x gruppo, Via delle Industrie 25-8, 30175 Venice-Italy, +39 041 5093431, www.gruppox.it

the past: how we started

in the early 1990's we felt the need to find a sustainable material to compete with plastics for 3D packaging.
we developed "MOULD PAPER", a stretchable paper **out of highly refined pure, long virgin fiber to be produced in a paper machine**.

the technology is today exclusively licensed to Billerudkorsnas for Europe

mould paper

from Mould Paper..... to FiberForm

today: novel technology for all papers

for paper makers but also converters

high stretch for 3D

- up to over 10% CD
- up to over 40% MD

p a p e r m o r p h o s i s®

focused increases of stretch for better runnability during converting

reproduction of standard grades, saving costs for furnish and refining

stretch on paper according to quality

- stretch far over 20% in MD on top of base MD values

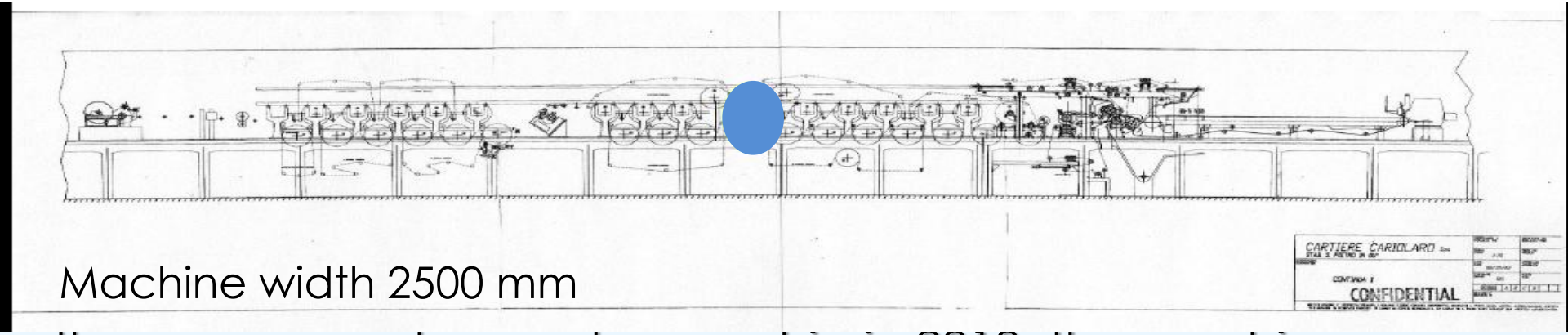
- stretch up to an add on of 8% in CD on top of base CD values

Test results on potential performance in CD:

recycling grade: starting from 2% in CD, **final 8,5%**

long fiber: starting from 8% in CD, **final 16%**

unit: retrofitted in-line at Cariolaro mill-Italy for proof of concept



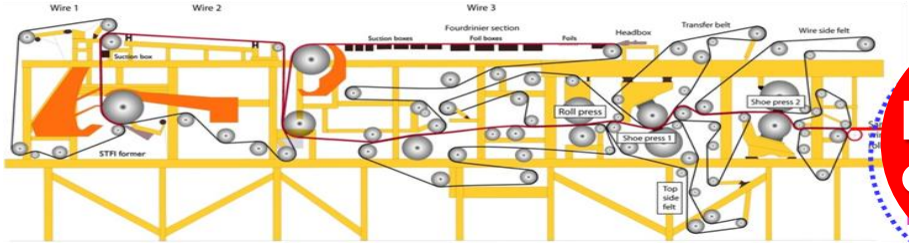
Machine width 2500 mm

the company changed ownership in 2013, the machine was dismanteled and we needed a place to invite customers to show the performance.

mid 2015 the pilot was installed at the paper research institute INNVENTIA, now RISE Bioeconomy, in Stockholm

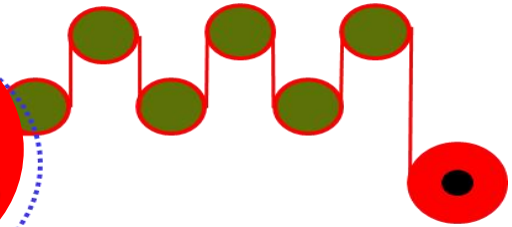
experience from the pilot in Sweden (2015 – 2019)

FEX pilot paper machine



paperm orphosis

Multi-cylinder Drier



Initial idea:

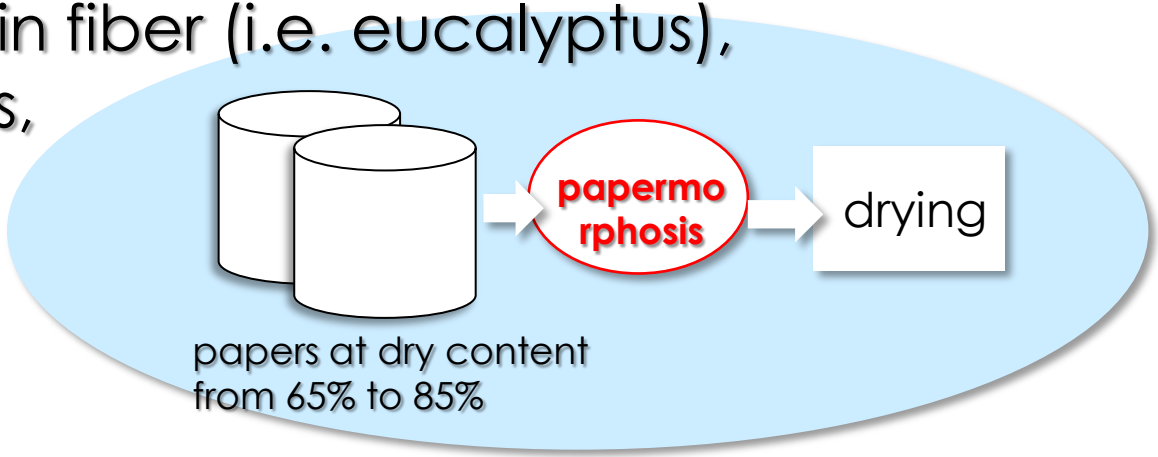
- reproduction of customer's papers on RISE's paper pilot
- processing them on our equipment for focused stretch

the process off-line a paper machine

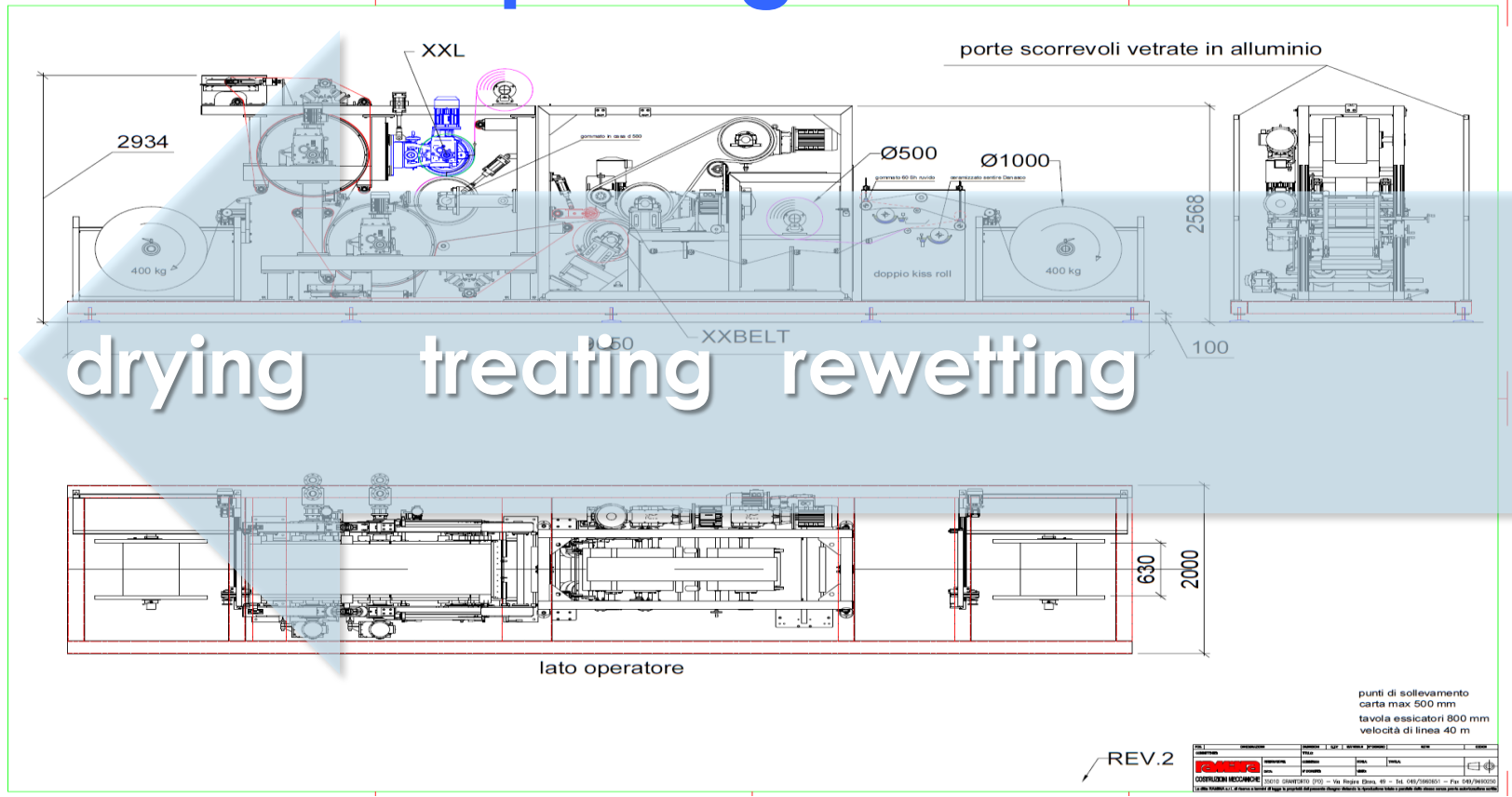
as a lot of paper makers instead wanted to test their original standard grades, many treatments have been carried out, just remoistening their papers, treating them with the relative unit, and drying them completely.

It worked perfectly for

- long and short virgin fiber (i.e. eucalyptus),
- various fiber blends,
- recycling grades,
- bagasse
- grass paper



autumn 2019: return of the pilot to Italy for completing it as off-line unit



integrated pilot unit in Italy

possible grades and widths

23 cm as from paper pilots

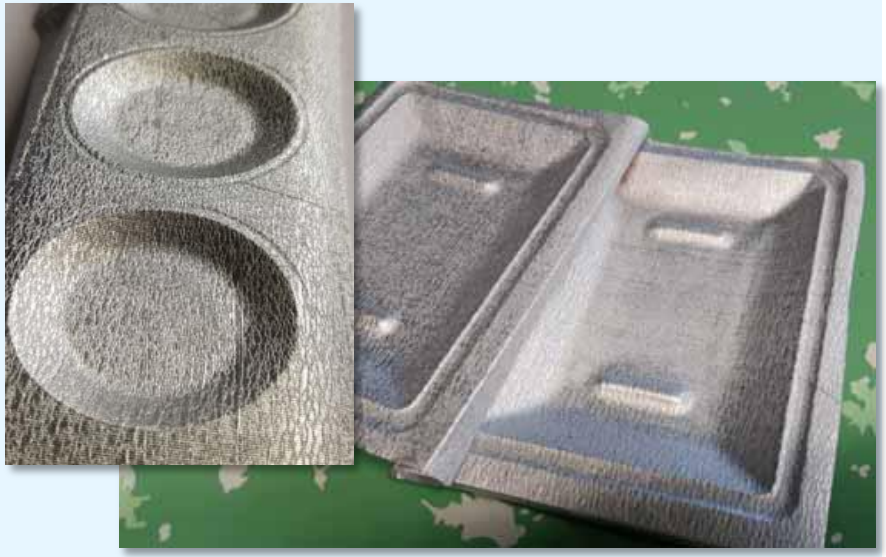
42 cm of any industrial grade

- for long and short fresh fiber, recycling grades, bagasse, etc
- thin aluminum alloy, aluminum coated paper
- grammage range from 25 gsm to 200 gsm and more

stretch not only for paper

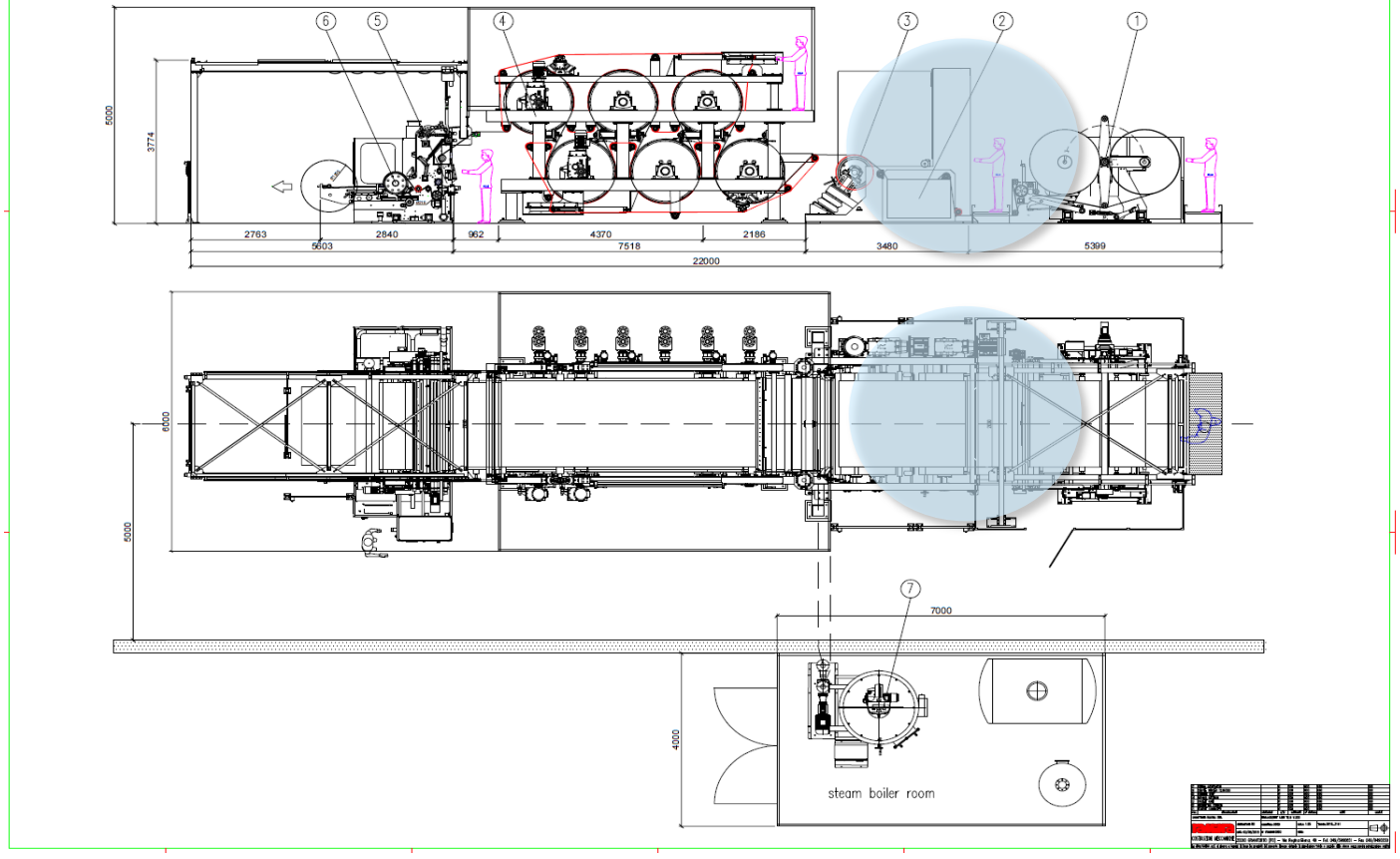
alu-foil provides the best barrier properties i.e. for pharmaceuticals. 45µ to 90µ are common for 3D deformations. alu-foil stretches by getting thinner.

recent trials showed that with a technology deriving from paper even thin alu-foil (9µ to 14 µ) and its combinations also to paper for packaging can be transformed to a alu-foil layer with high stretch properties, reducing specific weight per m² for cost saving and sustainability



layout for unit: 300 mpm, 2 m wide

(30-80 gsm bagasse and eucalyptus paper)



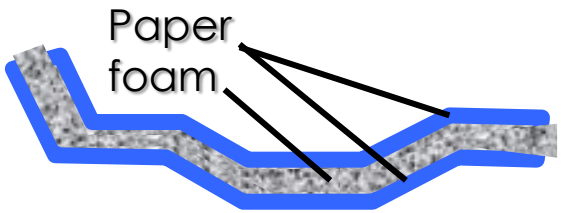
stretch for packaging

small adjustments in stretch for better runnability in converting

high stretch for 3D packaging,

stretch for deco foil, automotive, casting paper

high stretch for 3D macro and micro structures

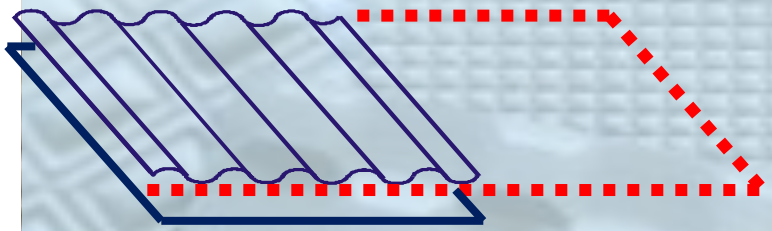


stretch for technical applications

High or low stretch properties for tapes and electric isolation papers

High stretch for wrapping of goods on pallets

option for novel 3D corrugates



Traditional flute:

1 m² = 1 m² + take-up factor

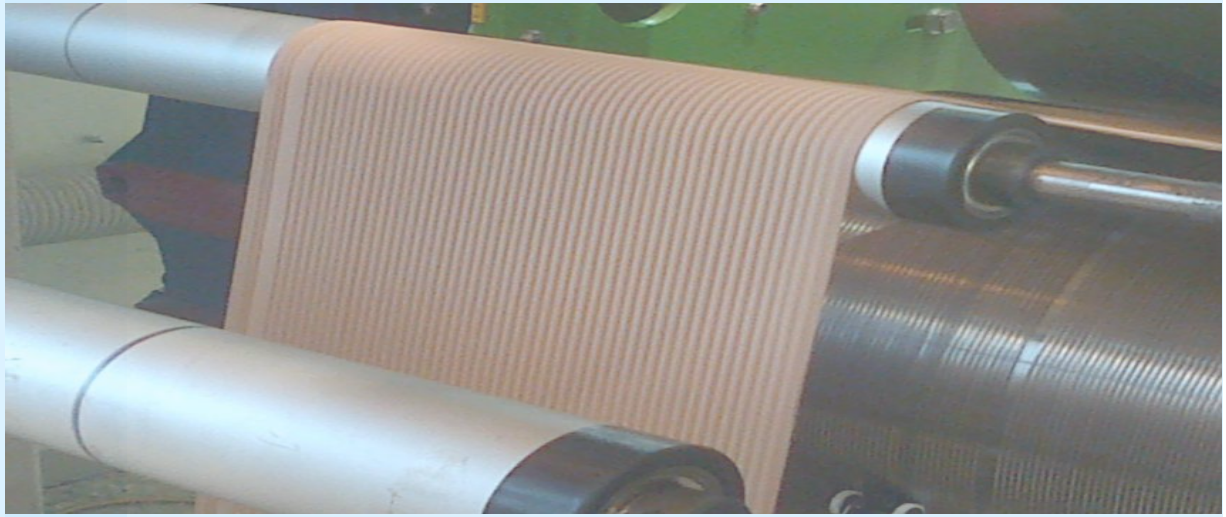
3D micro structures starting from stretchable paper

1 m² = 1 m²

not only stretch with the technology

novel flute in MD by changing one cylinder, **NO treatment for stretch needed**

- stable wave without liner
- no shrinking of web width



- can be rolled up

1st commercial agreement

Since October 2019 strategic collaboration on stretchable paper between Gruppo X di X Gruppo and Domtar on

p a p e r m o r p h o s i s®

Domtar's official release:

"Domtar, the largest integrated manufacturer of uncoated freesheet paper in North America, and Gruppo X di X Gruppo srl, a technology and innovation company based in Italy, have entered into a strategic collaboration to industrially develop Gruppo X's patented Papermorphosis® technology, which holds the potential to expand the use of products made from sustainable wood fiber that people rely on every day."

pilot operative since march 2020

we patent our innovations, develop them and license technology and know how