

Décorative paper machine converted to produce masking tape

Flexible paper for masking

If when painting walls you forget to mask off the doorframes, no matter how careful your brushstrokes, you will never get a clean result. This is why there is masking tape. It is flexible, prevents the penetration of paint or lacquer and is easily removed again from the surface to which it is stuck. Since the fall of 2007, the PM 4 at Munksjö Paper in Besozzo, Italy, is now able to produce masking tape in addition to décor paper as a result of a rebuild.

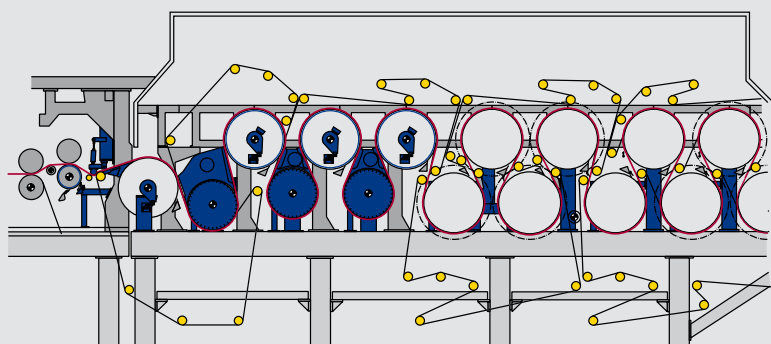
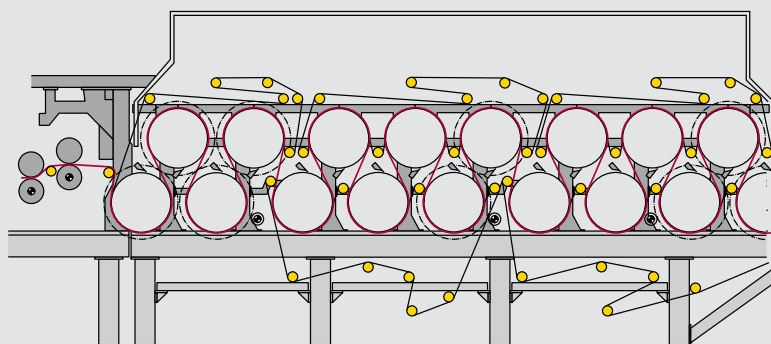
Masking tape is a paper with a self-adhesive coating on one side. Its elongation in machine direction must be high and it must be easy to tear in

order to apply it to various surfaces. The elongation is achieved by wet-creping the paper web during the paper production process. This involves

creping the paper in the wet section of the paper machine. The moist web adhering to the surface of the roll is removed by a doctor. The special

Masking tape has to be flexible. Its elongation is the result of the wet creping of the paper web.





Before the rebuild by Voith Paper, the paper machine in Besozzo was a fourdrinier machine with dandy roll producing décor paper. The rebuild now makes it possible for the PM 4 to produce masking tape as well.

The entire scope of delivery:

- CeraSize roll cover
- Crepe doctor
- 3 DuoStabilizer rolls
- 3 DuoStabilizer boxes
- Coating of drying cylinders 2, 3 and 4
- Total of 7 Voith Drives for the dryer section

“The conversion to wet-creped paper posed a special challenge in Besozzo.”

Philipp Buchhold, Engineer for Process Technology, Voith Paper

design of the creping doctor and the doctor angle causes the paper to be compressed as it is doctored off the roll. Fine wrinkles are formed in the sheet. The wrinkles run in cross machine direction and shorten the paper web, which requires a considerable speed difference between the press section and the dryer section. “The change to wet-creped paper posed a particular challenge in Besozzo,” explains Philipp Buchhold, engineer for process technology at Voith Paper. The existing PM 4 for décor paper needed to take over the production of masking tape from another location while of course delivering the same quality as well.

Sophisticated rebuilt for an additional paper grade

The PM 4 in Besozzo is a fourdrinier machine with dandy roll. The transfer into the press section is realized with an open pickup. The press consists of two bottom felted, one top felted straight through presses. In order to produce wet-creped papers, Voith Paper installed a special cover and creping doctor on the smooth bottom roll of the third press nip. Blade angle, facet and protrusion of the creping doctor provided by Voith Paper can be adjusted. In connection with the release properties of the roll cover, these significantly affect the creping quality.

The wet crepe process has special requirements for the web run of the paper into the dryer section as well as inside the dryer section itself. To prevent creases from forming, the sheet run must be controlled precisely and gently. The high elongation potential of the paper requires that the draws throughout the dryer section can be adjusted individually in order to minimize the loss of crepe. In the PM 4 this problem is solved by using short dryer groups that allow minimized web tension as well as minimized felt draws. The felt run in the first part of the pre-dryer section was therefore rebuilt to slalom run. Instead of the lower drying cylinders,

Voith Paper installed three DuoStabilizer rolls. In the open draws the paper web is guided safely by three new DuoStabilizer boxes. The high degree of flexibility of the DuoStabilizers offers a great advantage in the case of the PM 4 because of the big variations of the sheet width.

The pre-drying section was additionally rebuilt to ropeless threading in order to make the tail threading more efficient and stable and to prevent breaks. Parts of the framing of the pre-dryer section were replaced in order to guarantee the ideal arrangement of rolls and doctors.

The Voith Drive, a new drive concept from Voith Paper, is also being used in Besozzo. In the past, the drying

cylinders were driven by an open spur gear. In order to realize smaller drive groups, seven Voith Drives were installed. The concept eliminates the need for the spur gears. The first four drying cylinders are driven on front side and the three DuoStabilizer rolls on drive side. The direct drive, which does not need any interposed mechanical components, is ideal for the limited space available on PM 4 in order to allow the first cylinders to be driven individually.

Voith Paper also improved the coating of the drying cylinders. Three of them now have an anti-adhesive coating made by Voith's subsidiary PicoTeknik in order to prevent a scaling of the drying cylinders. At the same time, the cylinders can still be

doctored for the production of décor paper. The wire speed during the production of masking tape with 38 g/m² on the PM 4 was increased to 500 m/min from the 350 m/min capacity of the previous production location. The quality of the crepe and the elongation of the masking tape paper were fully achieved. In addition, the PM 4 can still be used to produce décor paper at the same speed and quality level as before the rebuild.

Contact



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A brief cultural history:

Masking Tape

In 1923, engineer Richard G. Drew came across a problem: For two-toned auto paint jobs, the finished parts could only be covered with great difficulty. He spent two years experimenting with various materials, including vegetable oils, resins and rubber. In 1925 he presented his first results.

The paper base material, which was only coated with adhesive on the edges, did not stick adequately. Drew improved his tape by completely coating the base material. Hundreds of different types of modern tapes have been developed based on this original prototype of tape paper.





Mirroring of the creped
paper web

Paper web

Creped paper

The paper creped by a crepe doctor below in the picture is mirrored in the roll (left in picture). The finished crepe paper is visible at the right in the picture.