

Thirtieth anniversary of the Nipco system – Fitter than ever for the next thirty years



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The fascinating story of the Nipco roll started three decades ago – with 4.4 m working width, 250 m/min web speed and 120 N/mm line force – in the press section of a paper machine. That very first Nipco roll (Fig. 1) is still in service and doing its job just as well as ever. But its successors are clearly superior:

- Operating speeds are now eight times faster,
- Working widths have more than doubled, and
- Line force is five times higher – and in special cases even sixty times.

In view of this, there is only one thing to say: Nipco inventors have scored a great hit.

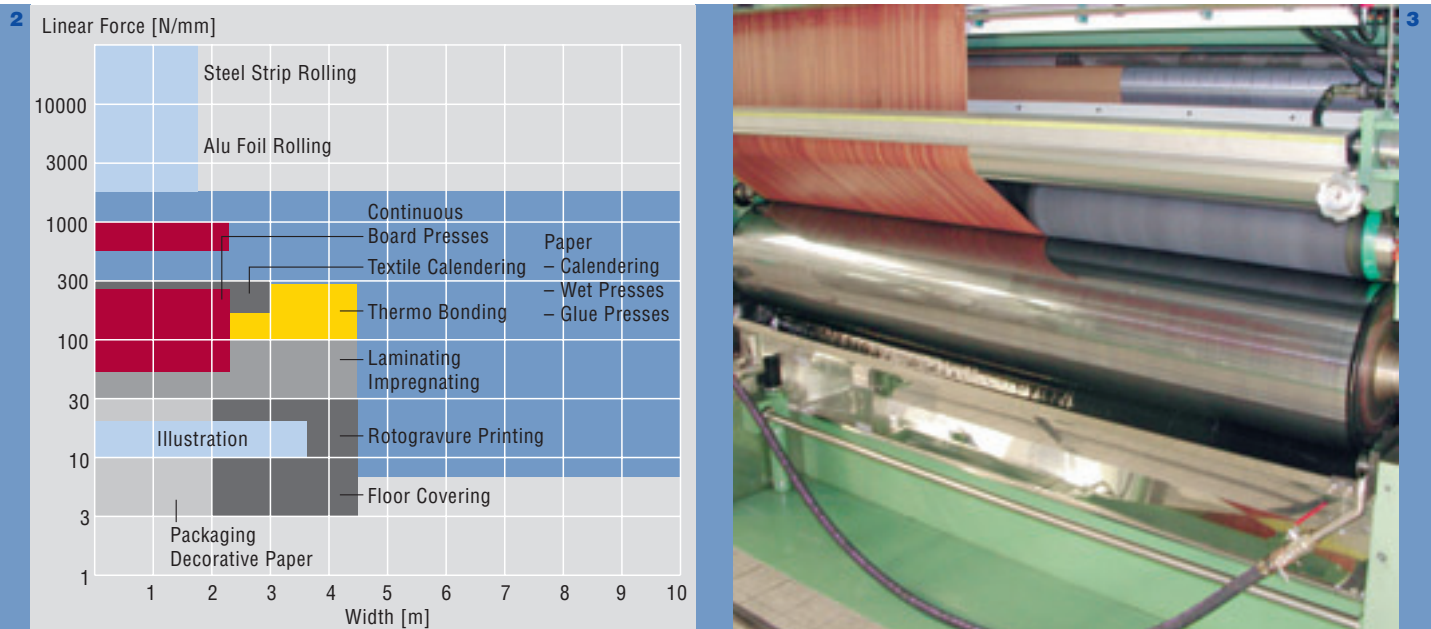
Rolls are of key importance in the paper industry. This particularly applies to the Nipco roll, which is rightly regarded as the heart of modern press technology, calenders and embossing systems.

Not so well known is the fact that Nipco rolls are also used in many other fields. The reader may be surprised that no fewer than 130 other applications apart from the paper industry have been found for the Nipco roll – ranging from chocolate refining to steel panel rolling for automobile bodywork. Out of these, ten applications have been implemented so far. Nipco rolls are used for example in the printing and textile industries, for fiber and chip board and nonwovens production (Fig. 2), and the experience gained in those applications has naturally helped toward the ongoing perfecting of this roll type.

Fig. 1: The first Nipco roll.

Fig. 2: Nipco roll application fields.

Fig. 3: NipcoPrint D96.



Returning to Nipco in the paper industry, it is notable that paper comes into contact with Nipco rolls several times both during production and during further processing. Here are two examples of this:

Decor papers

These papers not only pass between the Nipco rolls in the press section of the paper machine and in the Janus calender, but are also printed on a high-tech NipcoPrint D96 system (Fig. 3).

The **NipcoPrint D96** system is equipped with width adjustment, edge separation and a conductive polyurethane or rubber

position (which can also be asymmetrical), force is only applied directly to the web. And thanks to the gap immediately next to the web, there is no chance of ink reaching the highly flexible press roll sleeve. This interesting version of the Nipco roll has now been on the market for eight years.

Rotogravure printing papers

These papers place heavy demands on printability, and are, therefore, processed on a DuoCentri-NipcoFlex press with several Nipco rolls. The final finish is given with a Janus MK 2 calender incorporating a Nipco upper roll and a Nipcorect bottom roll with up to 60 zones. And to en-

sure really perfect printing results without any missing dots, a NipcoPrint G96 system with Electrostatic Assist (ESA) core-charging is used (Fig. 4).

The **NipcoPrint G96** has a flexible sleeve system to ensure that the paper is pressed uniformly over its entire width. The conductive sleeve surface is charged from within via the NipcoPrint press roll, which is electrically insulated from the rest of the machine. This enables perfect printing without missing dots at the very highest speeds and at all line forces. More than 600 NipcoPrint pressing rolls are in service worldwide over the last 25 years.

As mentioned above, the experience

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“The thickness profile results of the Monroll Nipcorect system on our 2-roll EcoSoft modular calender in PM 8 at Papeteries des Vosges are even better than we specified. Our cross-profile 2-sigma deviations are less than 0.50.”

Fig. 4: NipcoPrint G96.

Fig. 5: NipcoTex L.

Fig. 6: Monroll.

gained with Nipco technology in diverse application fields has steadily helped to improve papermaking applications as well. One of the best examples of this is the Monroll.

The Monroll

This latest Nipco roll developed for the paper industry derives some important features from the NipcoTex roll (Fig. 5), which has been used for several years in the textile industry for calendering fabric webs – not only the magazines we read have been in touch with Nipco rolls, but in many cases also the material our shirts are made of. This is best described as a kind of industrial ironing.

The **NipcoTex L** has a highly flexible roll sleeve which can simultaneously press against two counter-rolls arranged at 90°. It is likewise equipped with width

adjustment and edge separation, thus protecting the plastic sleeve from contact with the hot counter-roll outside the web width. Two processing steps at once, and fast web width changeover times, are extremely convincing arguments for the NipcoTex system. Together with the single nip version, more than 550 of these rolls are in service worldwide.

A particularly attractive feature of the NipcoTex roll is its plug-in bearing units. And precisely these have been adopted for the Monroll concept – although that required a lot of detailed adjustments. The result is an innovative Nipco roll with compact modular design, whose narrow support elements are so close together that the extremely sensitive cross-profile control required in the paper industry is easily attained. Depending on technological requirements, the Monroll either has a hardened steel sleeve (for hard-nip applications), a non-hardened steel sleeve with

plastic cover or a plastic sleeve for soft-nip applications (Fig. 6). The thickness cross-profiles attainable with this combination have exceeded all expectations.

Summary

The Nipco concept has made its mark worldwide in various industries. For many years Voith Paper has systematically exploited the synergies between these different application fields, thus providing the market with powerful, dependable systems perfectly tailored to specific needs. The Nipcorect roll with its high-precision line force application sets benchmarks for calendering smoothness, gloss and cross-profile control. The widest soft or hard calenders and Janus calenders have used this technology for years.

Nipco – fit for the next thirty years.

