Nipco™ HT
High Tech Calender

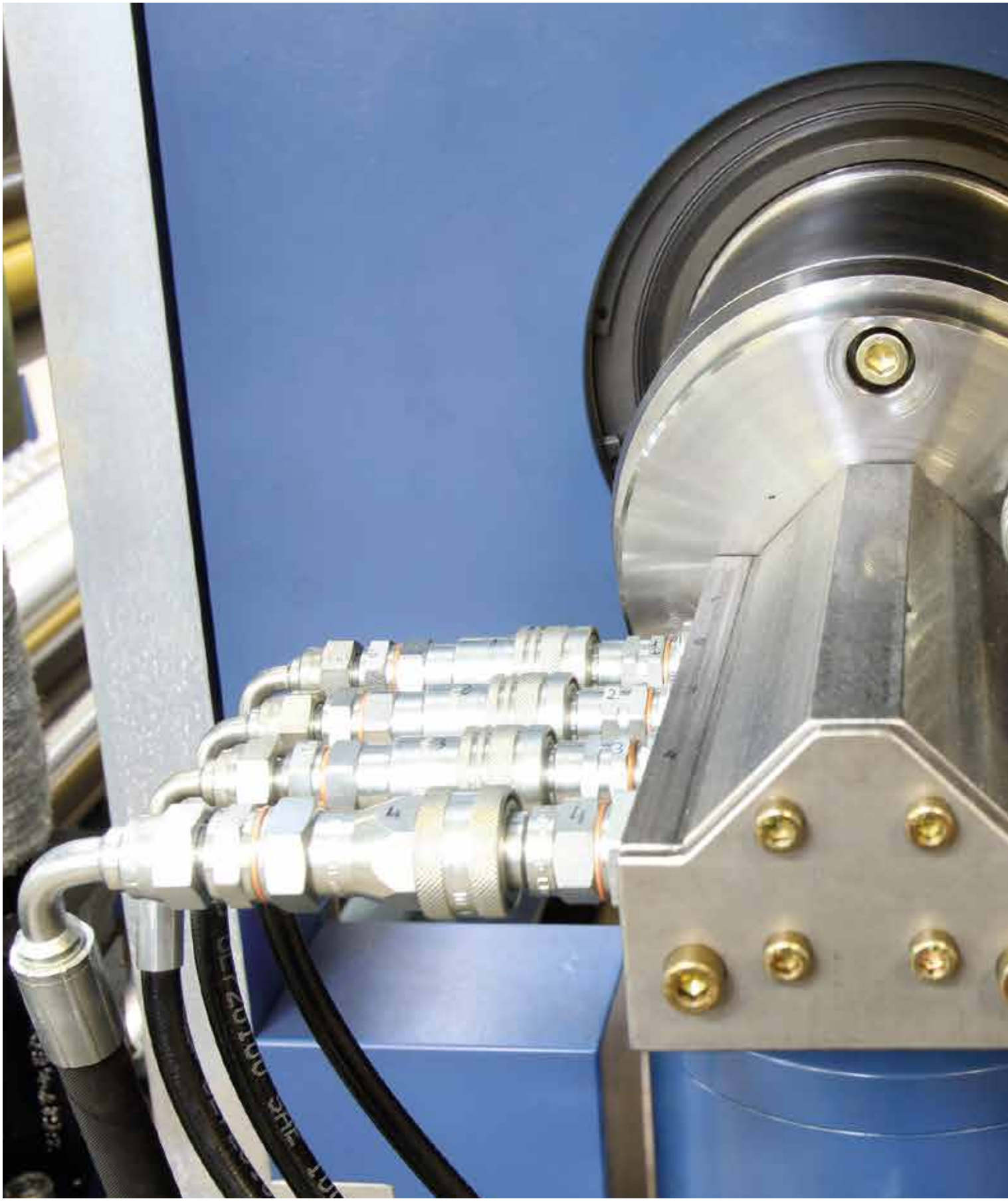
The first calender with flexible zone controlled pressure setting across the width

Nipco™ HT 5.200 mm roller width

Guarneri Technology™

in cooperation with VOITH

The Nipco™ HT Calender Technology
Headstart in calender design through continu



Guarneri Technology™

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ous development

Our latest and most important development over the last years: the **Nipco**™ **HT**; **HIGH TECH CALENDER**, a **Nipco**™ bowl with flexible pressure setting across the width, for finishing of technical textiles.

The Challenge

The industry of Technical Textiles is growing all over the world.
Day by day we recognise, that customers' demand is not only growing in quantity and areas of application, but also in terms of technical demands. Enlarged weaving width, for instance, has several upcoming challenges to face: Problems regarding the evenness across the width, the side to side unlevelness, slack edges, bulbous center areas. All these require a calender technology, which is able to compensate those problems.

Our Answer

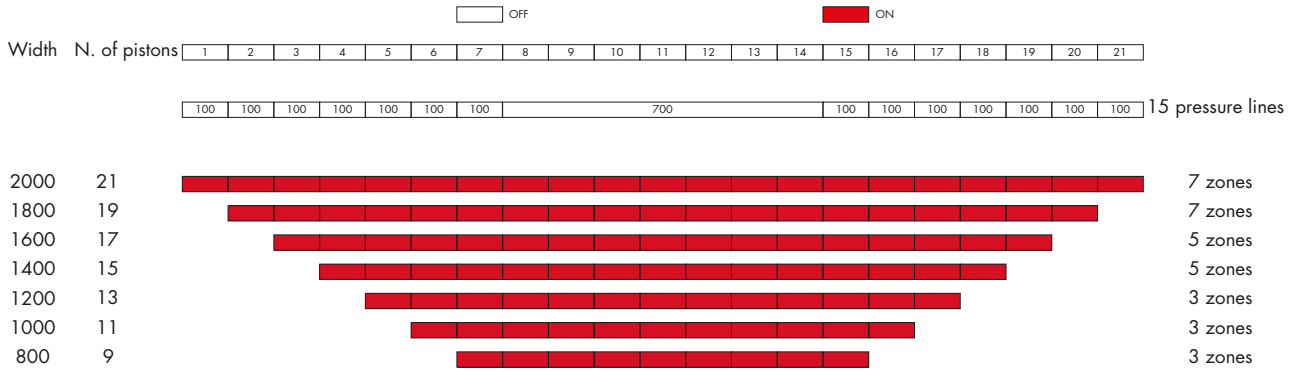
Area controlled pressure setting across the width, individually adjusted to customers' demands, based on our famous **Nipco**™ technology executed in more than 1000 calenders sold worldwide.

Zone controlled pressure setting

The Nipco™ HT Calender Technology
The basis of our success

Since first delivery of a **Nipco**™ technology based textile calender in 1981 our customers are used to select the active pressure line by synchronised width adjustments. Pressure is given in an even and precise load according to material width. Our philosophy: press where load is required but never outside the working width!

Disconnection of pressure areas with working width reduction



With this technology we protect the sides of the turning sleeve, which are not covered by material, against any damage like overheating or marking by woven selvedge. Our philosophy behind: pressure setting where pressure is required!

Nipco™ HT in 3 bowled version

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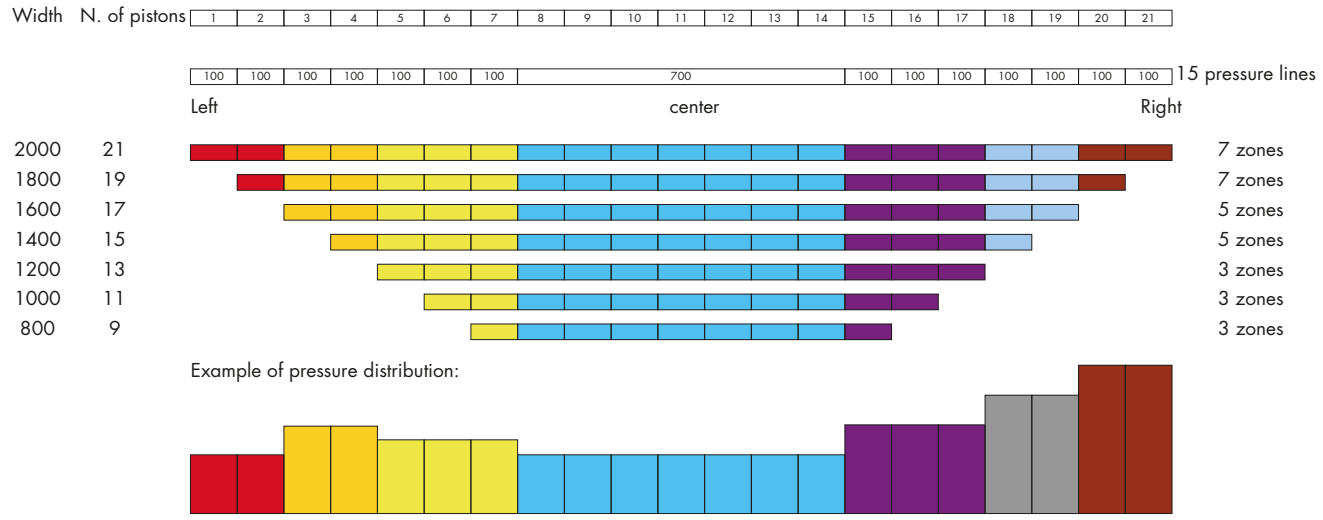
OUR LATEST DEVELOPMENT

Individual pressure setting across the working width directly related to the demands of our customers' materials!

Example of individual pressure setting showing one possible selection of zone arrangements according to customers' demands - piston by piston to be controlled individually, if requested!

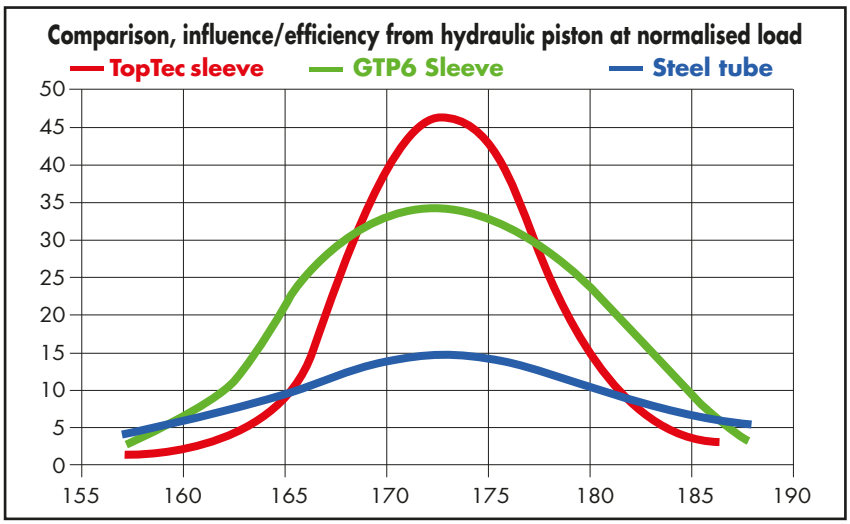


Since many years there are only two technical solutions on the markets to face the problem of the deflection of rolls under pressure:
First, a system with only one single pressure chamber - either modified in trying to compensate zone related by using inner counter pressure loads or not. This technology is known as S-Roll system. Second, our famous, revolutionary **Nipco**™ system consisting of many pressure pistons across the width.

The characteristics of the S-Roll system are a steel tube which rotates around a fixed axle. The annular gap is separated by seals into two semicircular chambers. The chamber facing the nip is pressured by hydraulic oil. Thus an oil pressure is generated, that stands in a linear ratio to the outer production required hydraulic cylinder forces. This means that there is always an external hydraulic system required for the requested line pressure and with the inner semicircular chamber deflection is compensated by a second hydraulic pressure system.
Each variation of outer pressure setting requires a deflection compensating force setting inside the semicircular chamber.
So this system always needs a steel tube closing the deflection compensating system. All covers available whether Thermoplast or Duroplast have to be shrinked on this steel tube respectively coated directly to this steel tube!

In comparison, the **Nipco**™ system is a self loading system. Whenever a flexible tube is turned around like **GTP6** sleeve **TopTec3** sleeve or paper/cotton sleeve the pressure line is activated by pressure loading of the vertical moving **Nipco**™ pistons, piston by piston across the total width.

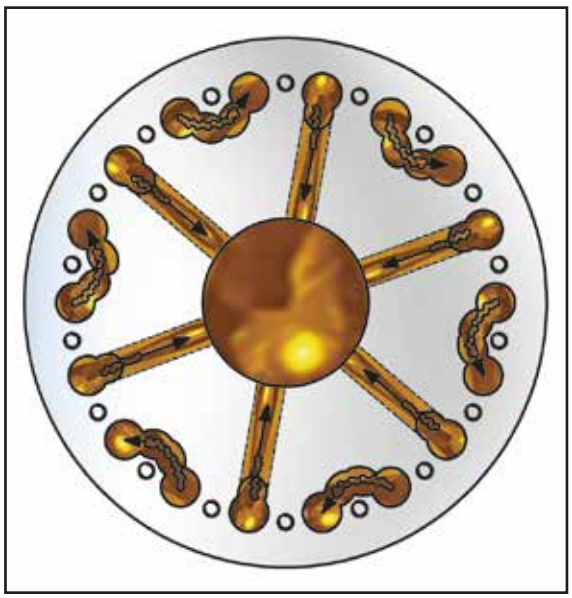
The **Nipco**™ **HT** system bowl is based on this fundamental difference: a flexible sleeve is turned around and a steel tube closing the pressure chamber is not required. Comparing the e-modul of a steel tube as in the S-Roll system and the e-modul of a flexible sleeve like **TopTec3** or **GTP6** in our selfloading **Nipco**™ system it is obvious that flexibility up to factor 5 in a **Nipco**™ bowl system makes the difference, allowing zone controlled setting.



The development of zone controlled pressure setting is our experienced answer to market demands.
Thus **Guarneri Technology™** is again setting standards in calender technology.

The Nipco™ HT Calender Technology
Calenders developed to your satisfaction

One high tech component does not make a satisfactory machine. At **Guarneri Technology™** we combine the innovation of zone controlled pressure setting with experienced, sophisticated solutions around.



In Technical Textiles a periphery drilled steel bowl is a must and this independently from line speeds. Immediate reaction on decreased fall of temperature is guaranteed.

Motorised horizontal and vertical move of the so called 3-roll in feed device is according to our customers' experience the indisputable technical solution to touch the heated up steel roll in a defined angle prior to the nip entry.

Displayed on 10,5" touch screen, all individual settings have to be retrievable in a qualified recipe management. Therefore all our calenders are equipped with Siemens S7 computer systems for recipe control, maintenance announcements, service requirements etc.

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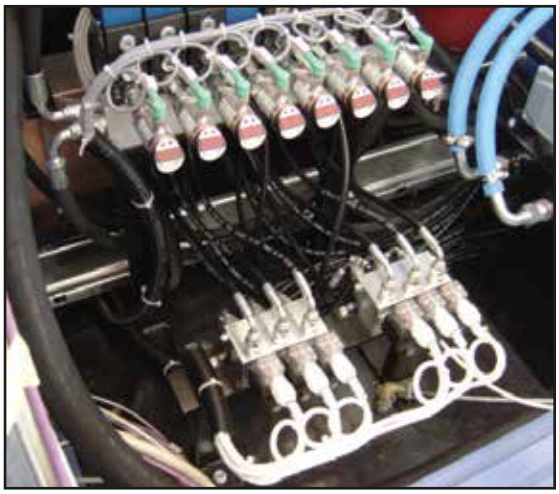
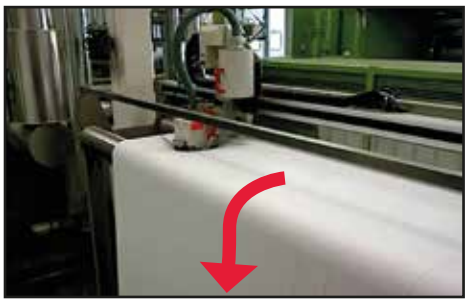
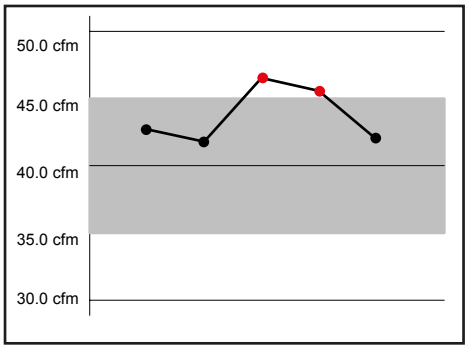
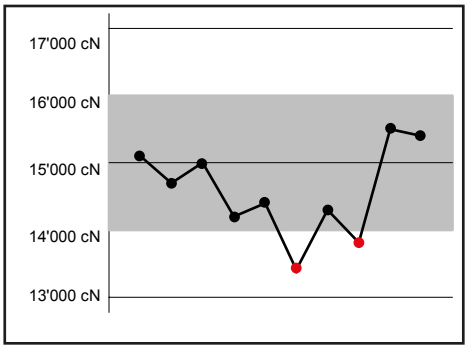
How to control the air permeability

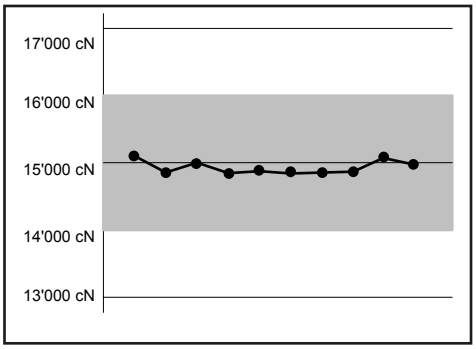


Our **Nipco™ HT** hydraulic unit is based on two separated control sections: The first one is related to the independent zone controlled pressure setting. The second section is dedicated to the movement of the **Nipco™** roll from ground to working position. In first section, we integrated a zone controlled pressure setting from 5 to 15 zones, selectable on customers' demand. All pressure setting in this control group is done by proportional valves. We connected two pumps to the main hydraulic motor. The first pump activates the outline cooling circulation. The second pump activates the counter, i.e. the so-called retraction pistons. The second power group is responsible for lifting up the **Nipco™** system bowl in working position, synchronising left and right sides. This second unit is required, if heavy material has to be finished and a prior gap setting is not recommendable. Both hydraulic groups have been executed with electronic proportional valves. Those valves are activated via the integrated Siemens S7 with digital control from 4 to 20mA, corresponding to a range of 50-400N/mm. All proportional valves are equipped with a pressure transductor and a relevant display showing the pressure of each zone under control in bar.









During calender finishing of technical textiles, one frequently occuring target is the defined adjusting of air permeability values. Therefore, a measurement instrument should be installed in the calender exit.
Whenever a measured value is not within the defined range of allowed variation, this will be shown on the touch screen. Based on this information the operator will then react in correcting the pressure setting in this area, via the **Guarneri Technology™** zone controlled

Once again **Guarneri Technology™** is setting standards in calender technology.
Constant development, based on customers' demands, is our daily business.
The satisfaction of our clients' needs is our prior target.

The Nlipco™ HT I - S Calender
More flexibility with Paper/Cotton Sleeve

In some textile and technical textile applications is still requested the finishing obtained by the traditional cover made by cotton or wollenpaper. This is synonymous of conventional rollers with camber profile.
Guarneri Technology™ in cooperation with **VOITH**, created another step ahead, the **Nipco™ I HT - S** covered by cotton or paper.

The traditional cover integrated in the **Nipco™** Technology grants the requested finishing without the limitation of the pressure setting.

We combined this development with general increase of line load up to 400 N/mm.

As all our **Nipco™** rollers can be equipped with **GPT6** sleeve, **TopTec3**, Steel sleeve and now also with cotton or paper sleeves.

Nipco™ bowl with paper sleeve and Nipco™ zone controlled pressure setting bowl with TopTec3 sleeve

Drive side

Guarneri Technology™

in cooperation with VOITH

Frontal view

Steel sleeve covered by paper

Independent zone controlled pressure setting

The Nipco™ HT Calender

Nipco™ HT I back View

Nipco™ HT I frontal View

Nipco™ HT I 2 bowled version roller width 3.600 mm.

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Nipco™ HT I in line with Nipco™ HT Double I

Nipco™ HT Double I
lateral view

Drive side

Movable satellite operation panel

Nipco™ HT Double I rollers view

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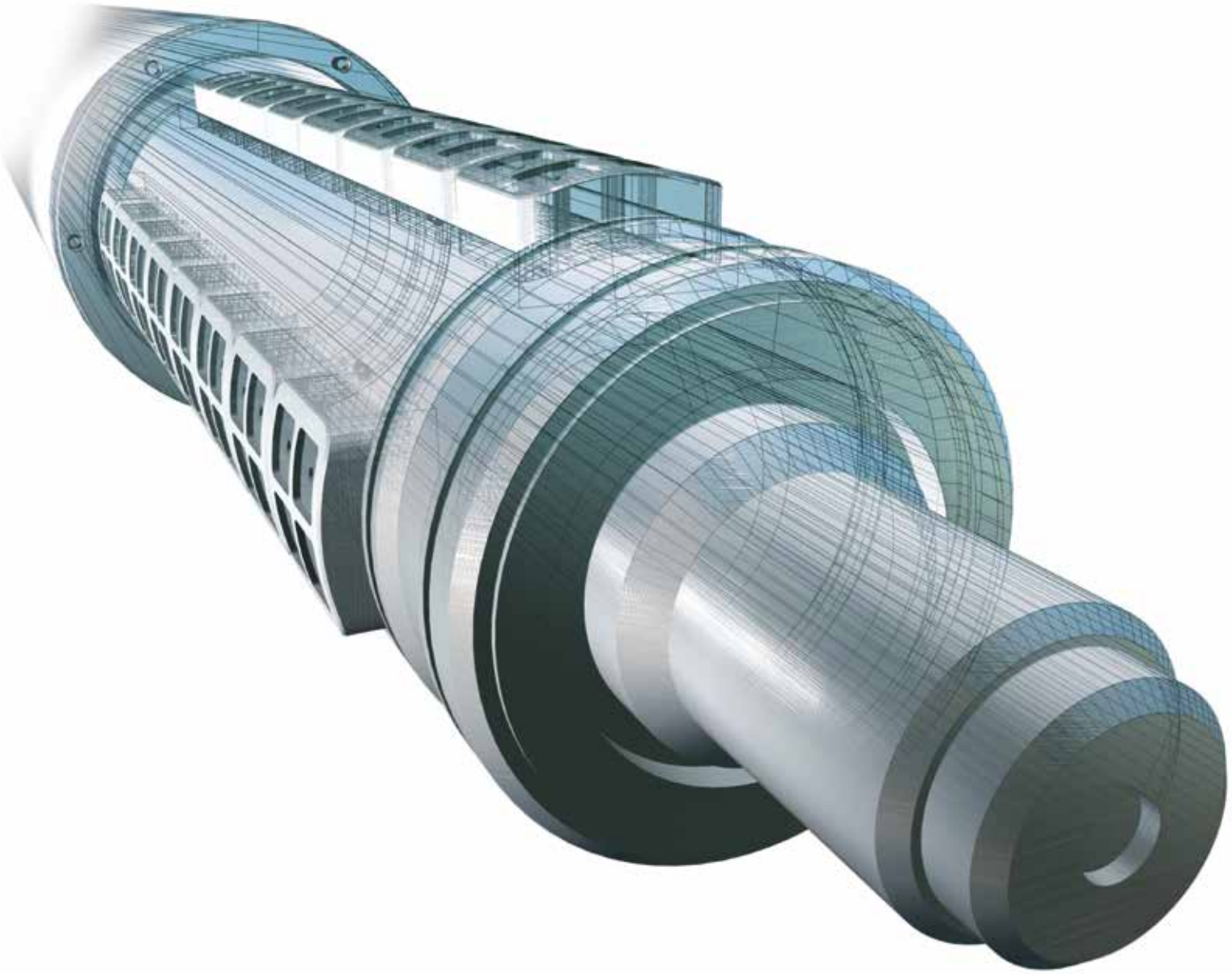

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