



PAP-TECH

ENGINEERS & ASSOCIATES



ONE STOP SOLUTION

Crown Controlled Soft Nip Calender
Crown Controlled Hard Nip Calender
Nippcoflex Calenders From China

Introduction of Soft-Nip Calender

Our soft nip calender is located after drying section before winding mainly to improve the smoothness and luster. Hence to improve the result of the printing and writing. It can improve 40% of the smoothness and reduced the roughness while the bulk only reduced less than 2%. The smoothness can reach 50-60s or better in our Chinese customers' place for writing and printing paper and can reach 100s or better in white coated duplex board paper, etc. as you know that different technical procedure will lead to different smoothness and roughness of the paper.

Brief Function of Soft Nip Calender (Crown Controlled)

Calendering is, after paper web goes out of dry section, the repeat function process between smooth roll surface and coarse web surface, soft calendering effect is to get paper's smoothness by heat and pressure function. Soft calender, which replaces common calendars and super calendars, replaces repeated linear pressure of multi-roll through increasing the surface temperature of rolls and width of nip, to reach the calendering effect.

The larger the surface hardness of hard roll is, the lower the surface coarseness is; when pressurizing, elastic deformation of soft roll makes both roll surface contact; width of soft calender is 10-25mm, which is 15 times than that of mechanical hard calender, its unitary linear pressure is generally 20 40N/mm, even if the linear pressure of calender is higher, it is just $\frac{1}{2}$ - $\frac{1}{4}$ of that of mechanical hard calender, because of the wider nip, the sheet stays more time in the nip, its energy consumption changes into form of heating, and pass to sheet, to make sheet fiber plastify; the softening fiber is easier to calender, increasing smoothness. The material resistance of soft roll makes roll face suit any bad evenness of sheet and base weight change, so it has more even smoothness than common calendars. The thinner section of sheet contacts well with heating roll, meanwhile for thick section, the thickness will not lessen greatly, so smoothness can be improved greatly, another advantage of soft calender is, under the condition of paper being pressed black and basic elimination of color spots, sheet can be in motion in the condition of higher moisture, which not only conduce to sheet's calendering, but makes moisture of batch roll keep in higher level. The temperature, nip pressure, width and number of soft calender all have effect on calendering results.



Our Nipco type hard nip calender is specially designed for the coated duplex board paper and cultural for the caliper control before coating. Modern calender technology needs high temperature and high pressure. Our hard nip calender can reach 150 Deg C and pressure reach 220KN/m. After passing our hard nip calender, the caliper difference can reduced to 15-20 micron and the surface of the paper can be very smooth like plastic effect. So it can save 20-30% of the coating material on the paper.

Advantages of Hard Nip Calender(Crown Controlled)

1. Our machine is same as Voith made. Because they are excellent in quality and reasonable in price (30% of Voith made), they are widely used in our Chinese paper mill.
2. The max pressure we can reach 200KN/M for the soft calender
3. We are using the forging steel rollers as heating roll. The advantage comparing with chilled cast Iron roll is also very obvious. See attached pictures.
4. The hot roll adopts super finish machining, circles approaching roll surface are uniformly distributed with several holes, feeding conduction oil to heat roll surface rapidly and uniformly, so it has very less temperature differences on the surface.
5. The roll surface adopts hot-grinding technology, eliminating hot deformation quantity of roll surface.
6. The speed of the jacking piston cylinder can be rapid speed and slow speed, controlled by oil flow valve of the hydraulic system. This can prevent soft roll surface from being destroyed, reducing the chance of paper break.
7. We supply the hot oil furnace; the heating temperature can reach 150 Deg C as Max.
8. Main electrical parts and important mechanical parts are made by worldwide famous company.



1. Function description

The machine is 2 rolls on-line Soft Nip Calender. Multi-zone crown Controllable roll can be used to regulate the CD variation finely, high emp. Calender can be used to achieve a better effect. This crown controllable Roll and loading system is adopted PLC system. Precise synchronized Control is used for nip closing. As the calendering roll material is forged steel, and the oil heating and temp. Control, key elements and bearing sealing are adopted top international brand, which makes the equipment reach international advanced level.

The soft roll is crown control able roll. The roll surface is divided into 7 zones to control the crown. Roll material: high grade forged steel.

Surface cover. Cover layer: 13.5mm. Hardness: 91SHD \pm 2.

Thermal roll consist of roll body and journals at two ends. The material of roll body: forged steel, surface hardening treatment. Hardened layer: =10mm. Surface hardness: 700HV \pm 10; roughness : Ra0.063. The roll body is drilled surround, oil heating.

Thermal roll heating and control system

Thermal roll is equipped with electrical heating and oil temp. Linear control system. The power is 100kW. Thermal rolls temp rising and working speed is under linear control to guarantee the safe operation of the equipment.

The key components of the oil heating system, such as the hot oil pumps, electrical heating elements, frequency power regulator, linear temp regulator, bellows zero leak valve and soon are all world famous brands products, both the configuration and the performance has reached the international advanced level.

Nip close and loading and nip open control system

The top calender roll is fixed. The closing, pressing and disengaging of the calender roll is controlled by the hydraulic cylinder under the bottom roll. Paper web is threaded during the disengaging stage, and then the roll closing pressurized area is controlled by the high precision hydraulic synchronization to perform the press work. The nip line pressure can be continuously adjusted on the operation platform and can be digitally displayed. The two bottom cylinders can perform the bias operation reasonably. When paper breaks, the two calender rolls will automatically separate.

Hydraulic Control System

The crown is adjusted with automatic tracking according to the set line pressure by programmable control system. Meanwhile, the crown of a certain section can be individually adjusted according to the press situation to achieve a satisfactory calendering effect. The oil pressure of the bottom cylinder and the crown controlled roll can be adjusted with continuous automatic tracking according to the set line pressure. It can be sub controlled and the lateral index of the paper can be controlled conveniently and precisely.

The hydraulic system is equipped with backup pumps, motors, oil filters and uses efficient energy-saving design, which lowers power consumption, lengthens service life and improves reliability. The hydraulic station is equipped with oil temp automatic control system and electrical heating.



Drive System For Calender Rolls

Drive system consists of variable frequency motor, coupling, gear reducer, synchronization belt device, base, universal shaft, etc. Each calender roll is equipped with one set of drive system.

Thermal roll motor power : 22kW

Crown control roll motor power : 30kW

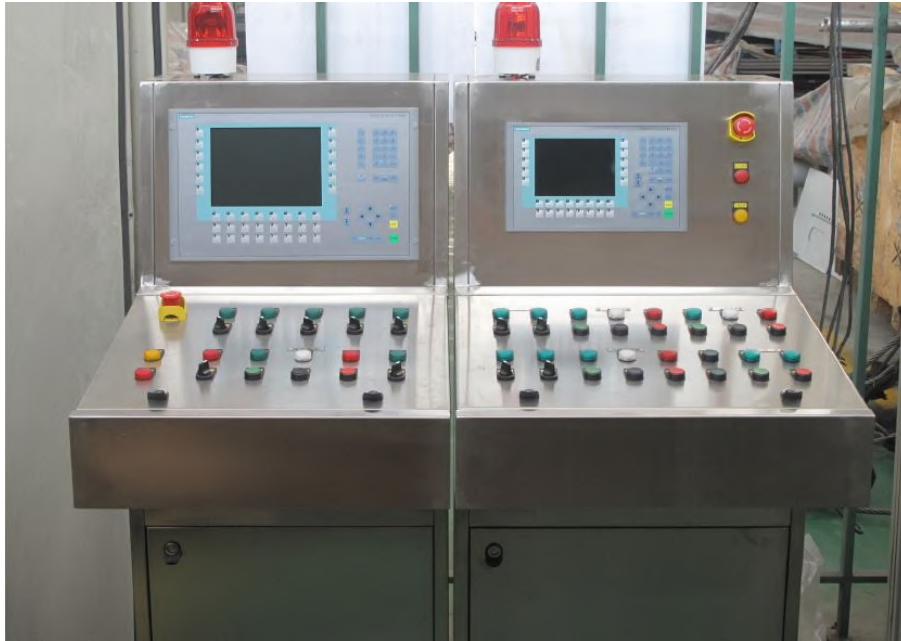
The drive motor control is configured by PM electrical control

Control System

All of the calender operations are carried out on the electrical-control operation platform and engineer station. The operation platform is with color button screen, as well as other relevant instruments, buttons, switches, indicator lights, etc., and the hard wire interface related to the paper machine control is reserved.



Operating Platform



Thermal oil system





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Our Key Customers

Crown Controlled Soft Nip Calender

1. Dev Priya Papers Limited - Meerut, (Uttar Pradesh)
2. Dev Product Limited - Meerut, (Uttar Pradesh)
3. Sidharth Papers Limited -Unit-2, Kashipur, (Uttarakhand)
4. Millenium Papers LLP - Morbi,(Gujarat)
5. Bahl Papers Limited - Kashipur, (Uttarakhand)

Crown Controlled Hard Nip Calender

1. Sidharth Papers Limited Unit-2 , Kashipur, (Uttarakhand)
2. Edicon Papers LLP - Morbi, (Gujarat)
3. Bahl Papers Limited - Kashipur, (Uttarakhand)



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