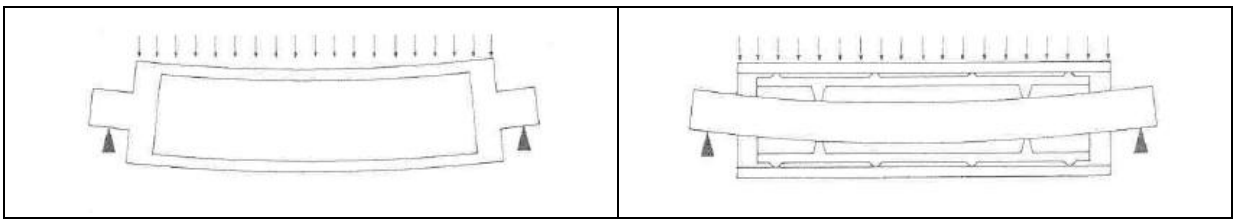
BETA PATENTED ROLLS FOR CALENDERS



OLD TRADITIONAL ROLLS

BETA PATENTED EQUIPRESSURE ROLLS

The old traditional roll construction is obtained by a tube with two welded supporting pins at its tips: the external contact pressure acts directly on the tube surface. In this way the roll bends under this load, the deflection is high and the resulting distribution of contact pressure is not even along the roll span and this leads to bad and not uniform final effects of treatment.

In order to avoid these problems, the ideal solution consists in keeping the pressure distribution as uniform as possible along all the roll's sections and this can be achieved by minimizing the deflections due to bending loads.

With this important target, BETA has recently developed a new international Patent concerning the calender rolls: this Patent covers both the working pressure and the temperature distributions, by making them regular and perfectly even and uniform along the whole roll span.

The BETA Patented equipressure roll consists in a simple mechanical system, unlike complicated systems produced by other manufacturers, and requires very low maintenance, thus drastically reducing machine's operating costs.

The BETA Patented roll consists in an assembly of three main items:

- the axle
- the internal tube
- the external tube.

The axle is supported by two oscillating bearings at its ends, where the squeezing load from the pneumatic actuators is applied.
The internal tube is supported by other two oscillating bearings placed on the axle and has four sliding races on which the external tube is supported.

Officina Meccanica BETA
Via Edison, 1/3 – 20025 Legnano (MI) – Italy
Tel. 0331-595300 Fax 0331-547491 E-mail info@betaspa.com Website www.betaspa.com

The bending is therefore reacted mostly by the axle and in part by the internal tube: the residual deflection of the external tube (which works on the fabric) is absolutely negligible and the final pressure distribution is even and constant along the whole roll span thus leading to the best results in the uniformity of treatment.

The BETA Patented equipressure roll allows to reduce the deflection to negligible figures with respect to the traditional construction and this is an essential requirement for calenders in order to achieve a perfectly uniform treatment on all the fabric width.

Some manufacturers adopting traditional rolls have to produce crown rolls (larger diameter at the centreline and smaller diameter towards tips) in order to partially compensate for the bending. In this way, the calender works correctly only at the design pressure where the deflections are compensated: but at different pressure values the deflection is not compensated anymore and the problem remains unchanged because the pressure distribution is not even.

Instead, the equipressure rolls of BETA calenders are all parallel ground (same diameter for any section) and this is obviously a great contribute to achieve a perfectly even load distribution at any working pressure value (from zero to the maximum).
The use of BETA calenders is therefore much more flexible compared to calenders with traditional and crown rolls because it allows to face each treatment and each working pressure while maintaining the best precision and uniformity of pressure distribution with the best final results on fabrics.
BETA rolls for calenders can work from zero to max load (up to 300N/mm) always maintaining a negligible deflection on the centreline.

When heat treatment is required by production needs, BETA calender can be equipped with one or more rolls suited to this use. The steel BETA Patented rolls for calenders can be heated by passage of diathermic oil (250°C max): oil flows from an end to the other end of the roll inside an interspace between the internal and the external tube.
The new BETA Patent for calender's rolls also covers technical aspects in order to assure a perfectly even temperature distribution: the steel heated rolls have an internal layout (in terms of design of oil path and minimal flow resistances) such as to uniformly spread the heat along the whole roll span and roll surface.
Temperature deviation between the two roll's ends results to be no more than ±1°C.