



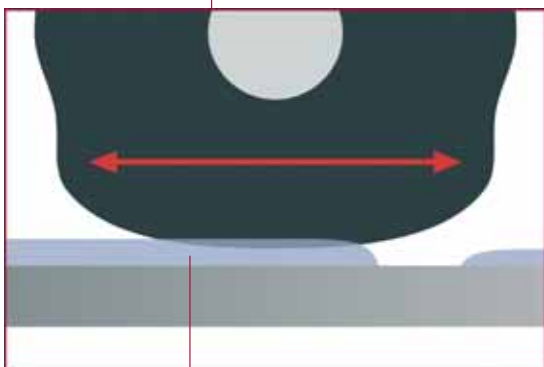
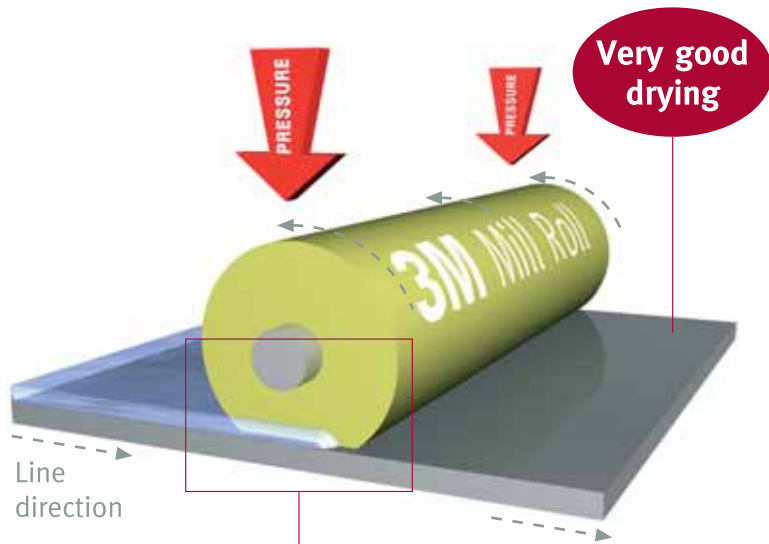
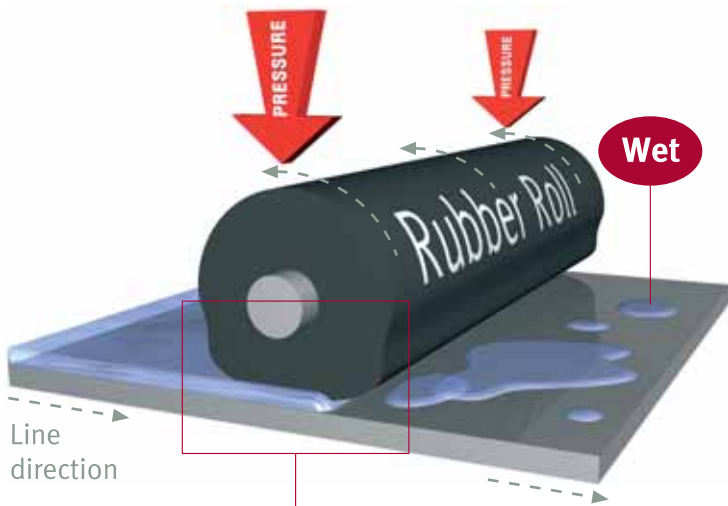
# 3M Mill Rolls - Unique construction offers savings and performance advantages over conventional rolls



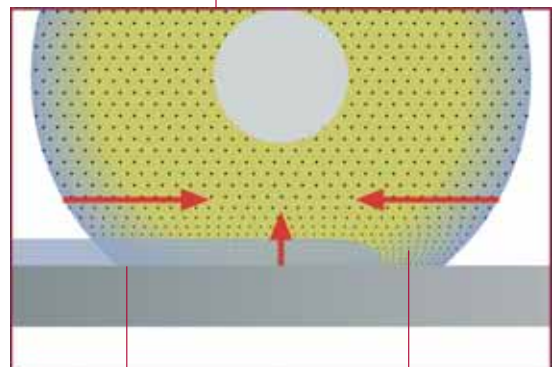
## ▼ 3M Mill Rolls

Produced with synthetic non-woven fabric discs compacted together with a very flexible adhesive that provide the following product advantages:

1. Self healing- Longer operating duration without routine maintenance
2. Fluid Control - Removing or applying processing fluids
3. Friction - Resists slipping on the strip's surface which equates to control, reduced costs, and higher quality
4. Non-Marking - "Void Volume" absorbs oxides that mark, and friction capability combined with soft fibre and resin prevent scratches.



Not adherence with the strip:  
**AQUA-PLANING**  
and **MARKING!**



Contact with the strip:  
**EXCELLENT GRIP!**

**COMPRESSIBLE:**  
Better cut and gauge resistance



### ▼ Fluid Control System

1. Porous roll absorbs solution to relieve hydraulic pressure while maintaining tight contact with the metallic strip.
2. Roll is compressed to near zero at the nip center creating a seal which is restored with each revolution of the roll.
3. The porous surface reopens as compression decreases. The sponge-like action removes residual liquid from the strip.
4. When the roll is compressed again after one revolution in the contact zone, the absorbed solution in the third step is returned to the strip in the wringing zone.

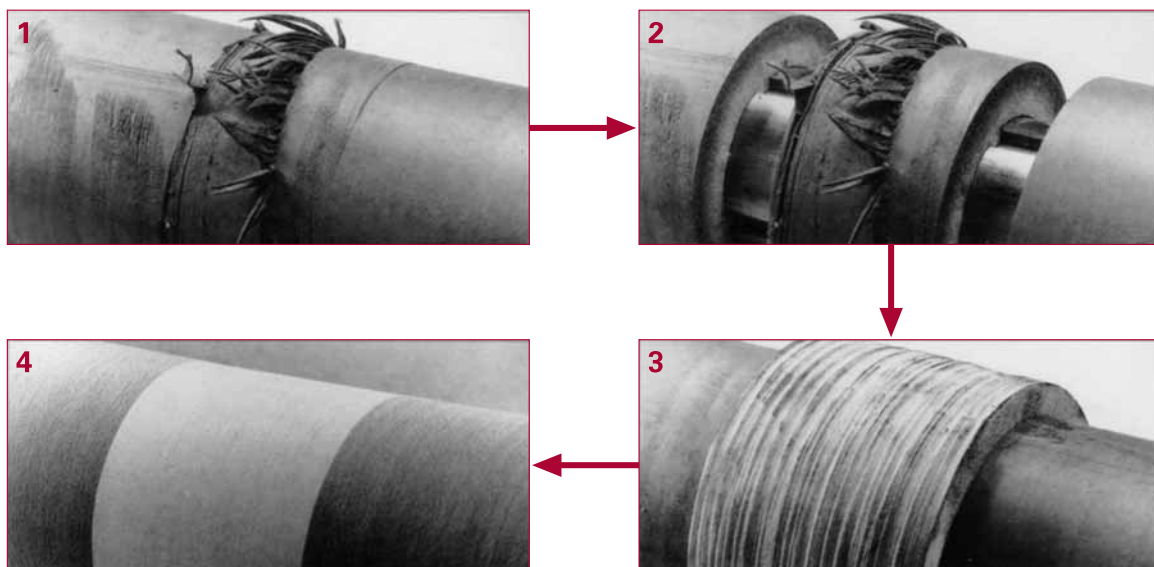
### ▼ Friction Coefficient

| Material Condition | 3M Mill Roll | Rubber Roll |
|--------------------|--------------|-------------|
| Dry Steel          | 0,52         | 0,36        |
| Oiled Steel        | 0,36         | 0,01        |
| Dry Aluminium      | 0,52         | 0,36        |
| Oiled Aluminium    | 0,23         | 0,01        |

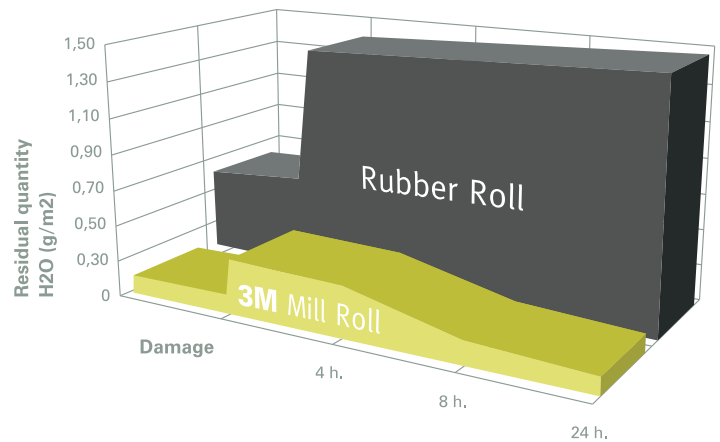
Due to the unique 3M material characteristics, in dry conditions 3M materials shows better friction coefficient performances than rubber rolls. This difference increases dramatically with the presence of water solutions or an oil medium. The porosity surface of 3M Mill rolls allow perfect adherence to the surface.

### ▼ Easy to Repair and Reuse

They are the only ones that can be repaired in the case of an accident.



### ▼ Water Wringing: Rubber Vs. 3M

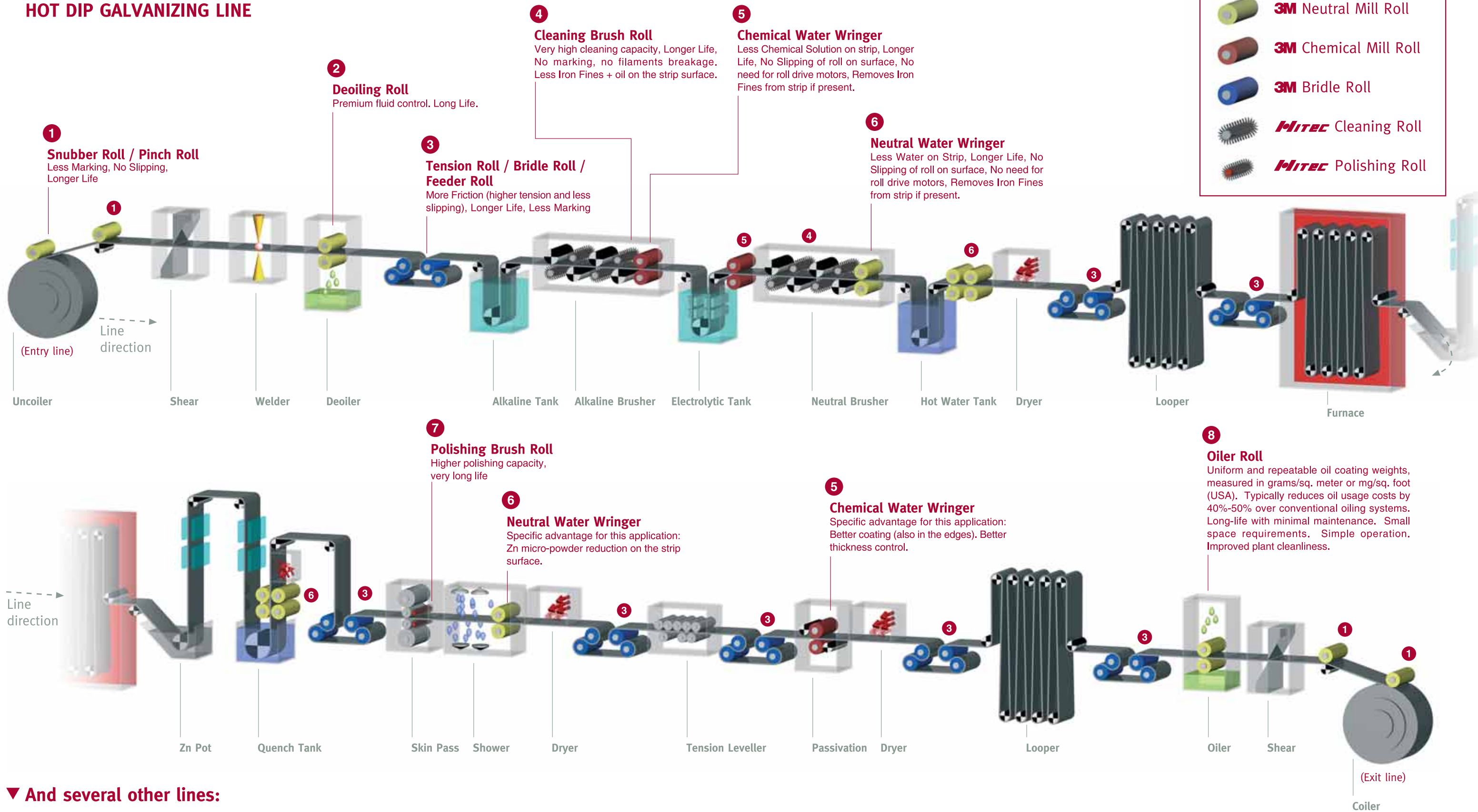


Under the same working conditions, the 3M Mill Rolls have shown better initial wringing performances. In case of damage, the 3M Mill Roll self-heals and tends to recover the initial wringing performances while the rubber rolls become more damaged.

### ▼ Longer Life and Self Healing Characteristics

3M Mill Rolls with their void Volume and non-woven porosity are slightly compressible. Under pressure, the roll increases in density at the nip. As the density increases, the material compresses inwardly, causing the roll to resist cuts and gouges. This compressive stress allows cuts to heal themselves as the compressing forces push the sides of the cut closed.

▼ Nosàs Rolls: Applications in a HOT DIP GALVANIZING LINE



▼ And several other lines:

- Pickling Lines
- Annealing lines
- Electrolytic Degreasing Lines
- Slitting and Cut To Length Lines
- Blanking Lines
- Cold Rolling Mill Lines
- Tin Plating Lines
- Organic Coating Lines
- Press Lines
- etc...



## ▼ HITEC Brush Rolls

HITEC Brush Rolls are produced by mounting together several Cassette Brushes on a shaft. Each cassette is composed of compressed and glued disks with special high quality multifilament bristles. This provide the product with the following advantages:

1. Life – Longer operating duration due to the high density and multi-bristle quality.
2. Cleaning effect – Better cleaning effect (2 to 4 times higher than conventional ones) can improve productivity and save on costs. By using Hitec brush rolls, some customers can increase line speed, use half the conventional brushes or switch off the electrolytic panels in their cleaning section (with consequent energy saving costs).
3. Cassette system = Maintenance efficiency and cost savings.

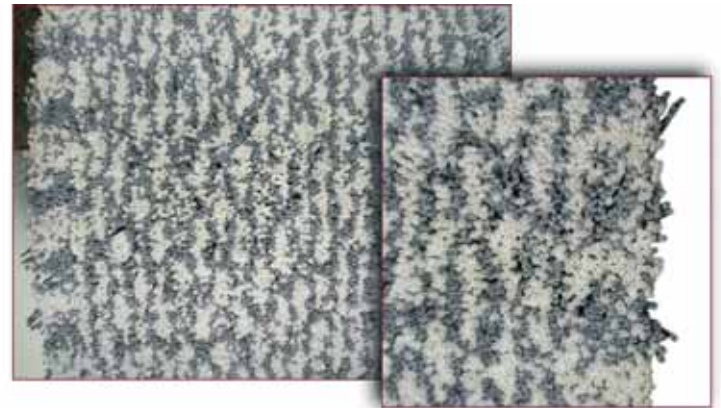
## ▼ Highest Brush Density

Due to the metal profile width in conventional brushes, there is a lack of bristles. With the newly developed system of pressed disks, there is a large amount of space to insert more bristles. The Hitec density is up to 75% higher than spiral brushes.

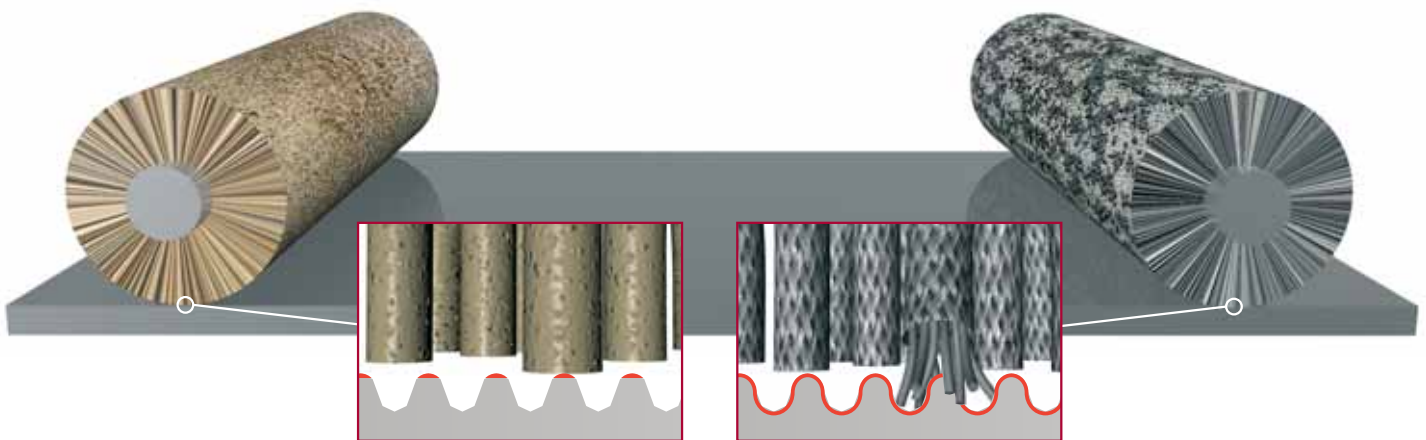
## Conventional Brush



## HITEC Brush



▼ Unique Wrapped Multifilament **HITEC**



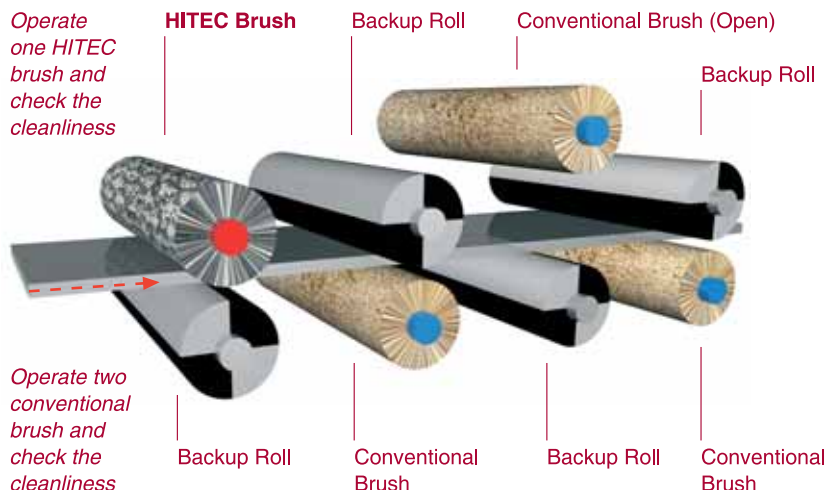
Conventional Brush:  
Monofilament: Traditional System  
Only "Macro Cleaning"

**HITEC Brush:**  
**Multifilament: Revolutionary System**  
**"Micro and Macro Cleaning" for a better cleaning**

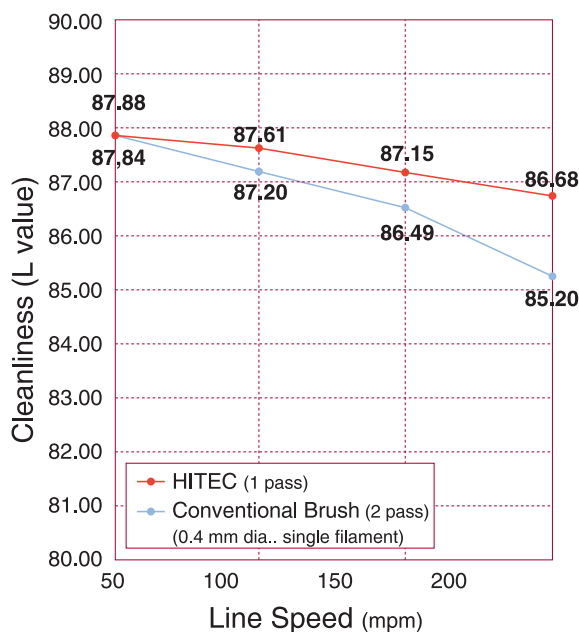


## ▼ Double Cleaning Performances

As a result of the combination of the high density of Hitec Brush Roll and the revolutionary multifilament bristles, the cleaning performances are more than the double of the conventional spiralled brush rolls.



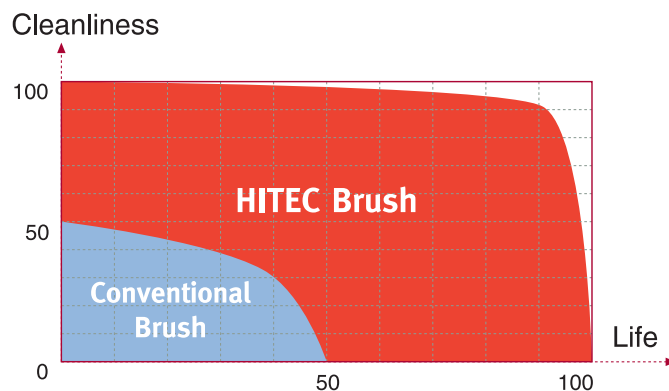
**Cleaning comparison HITEC Brush Roll vs. Conventional Brush**



Condition: Prespray + 1 pass brushing  
 Revolution: 900 rpm  
 Reduction: 3.0 mm  
 Cutting Direction: UpCut  
 NaOH 2% + AD-2000ESP 0.2% (60°C)

Spray Amount: 0.05 litre/min.mm  
 Prespray Zone: 5 m  
 Perfect Degreasing: L Value= 89.45  
 Number of Samples: 3 (average value)

## ▼ Cleaning and Life diagram: HITEC vs Conventional Brush



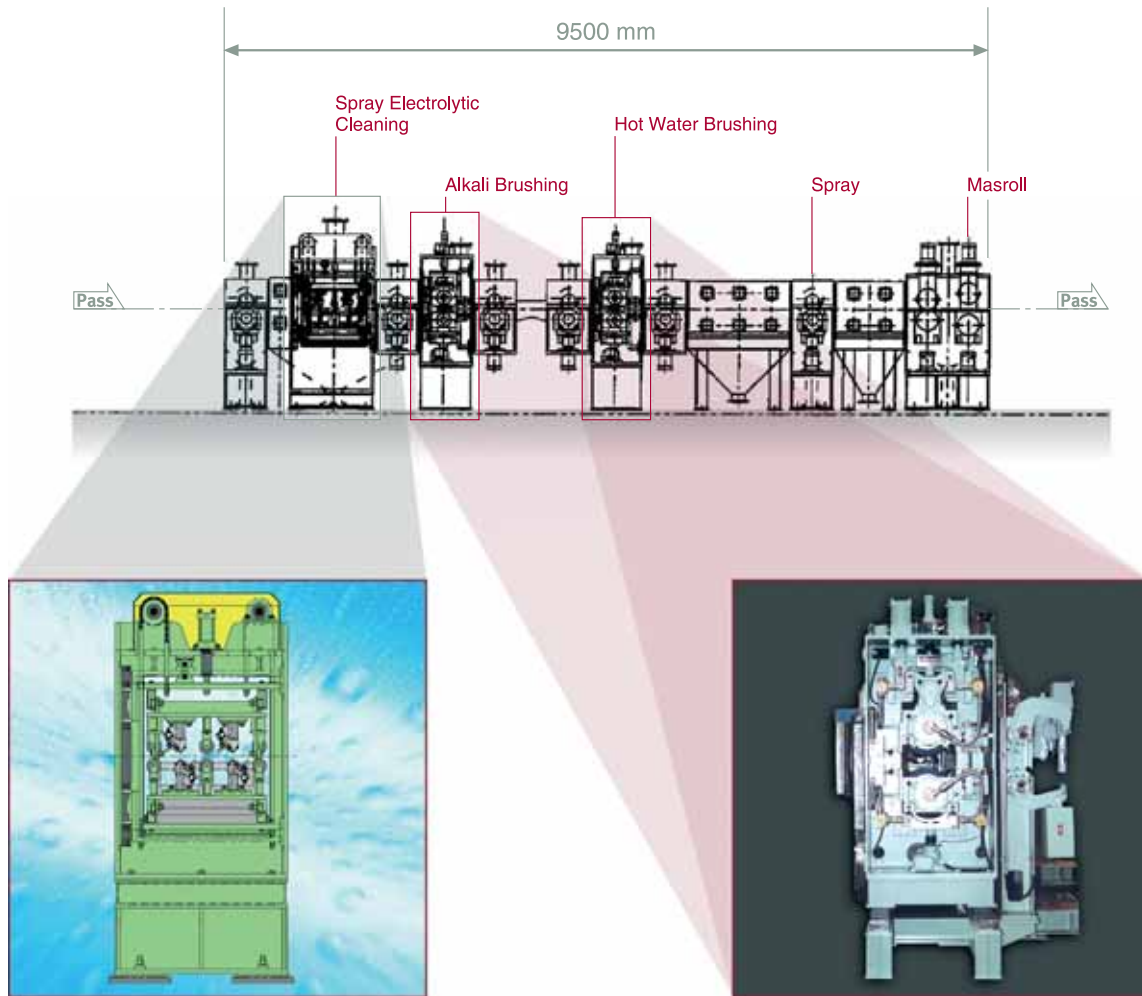
The HITEC Brush Roll has double the cleaning performances and double the lifetime of a conventional roll. The performance of the HITEC brush is at least 4 times better than the conventional roll! (minimum).

## ▼ Advantages of the Cassette System: Brush Roll Change made by hand



- Very easy to remove: 1 roll = 20 min.
- NO special tools needed
- NO dressing needed
- NO gap between shaft and brush hole
- NO dynamic balancing needed
- NO shaft transport costs
- NO need of third shaft
- Lead time dramatically reduced

## ▼ Spray Electrolytic Cleaning System



### ▼ Advantage of Spray electrolytic cleaning equipment

- 1. Excellent cleaning performance:**  
Cleaning performance is dramatically improved by maximum utilization of brushing.
- 2. Space and cost savings:**  
Response time for reducing adhesive force of oil is less than 0.001 seconds. Oil with low adhesive force is easily removed by minimal brushing equipment so that space and installation costs are greatly saved.
- 3. Energy savings:**  
Function electrolysis is limited only for reducing the adhesive force of oil. Accordingly electric power required is only 30V and 30A., which is 1/1500 of the conventional electrolytic equipment. So that running cost is also greatly saved.

### ▼ Advantage of Brushing Equipment

Hotani brushing equipment adopts brush Vs brush type, which eliminates back-up rolls.

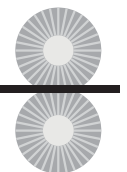
Brush Vs. Brush (Hotani), advantages:

- 1. Small Space** (requires half the normal space)
- 2. Low Cost** (installation and maintenance)
- 3. To prevent** chatter mark because of low vibration

#### Optional devices:

- **Oscillation System:** to increase performance and brush life.
- **C-Camber Correction Device:** for better brushing and final quality.

HITEC Brush

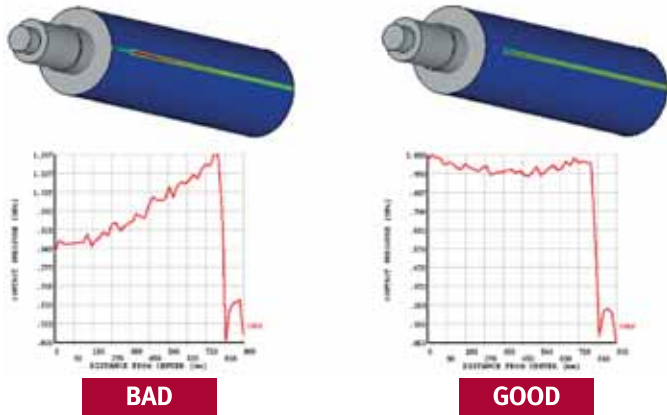


HITEC Brush

## ▼ Nosàs as your partner

Since the foundation of Nosàs in 1928, we have developed a solid experience as a brush and technical rolls producer. Almost 80 years in the market has prepared us in giving the best technical support and providing solutions to specific problems.

### Contact Pressure Diagram

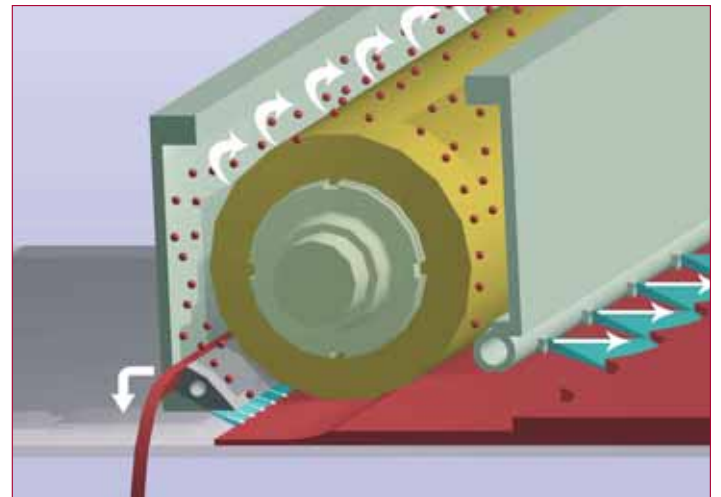


## ▼ Customized application calculation

For the correct performance of the rolls, it is important to consider very carefully all the parameters. By using the Mill Roll Structural Analysis Tool (mr. SAT), created by 3M USA, it is possible to simulate and reproduce how the roll will contact with the strip considering the shaft dimensions, the type of material used and the working parameters. This will allow to the customer to improve the roll's lifetime and wringing performances.

## ▼ Specific solutions for specific applications: Airbox System Deoiling unit: 3M Wiper Rolls + Air Knife

The “Air Box System by NOSAS” is a hi-tech device that combines three very effective tools in order to get high fluid control. These are Oil flow, 3M Mill Roll and Air knife. Originally designed to substitute the Pollastrelly System, AMCO ROLLS or Rubber wiper rolls in High speed Z-mill. It has proved to provide the best performances for the BA coils, because it guarantees the reduction of defects on the strip and confers the correct and homogeneous emulsion residual layer on the strip. The equipment is supplied complete and can be adapted to whatever deoiling position in any kind of continuous processing lines.



## ▼ Production and Maintenance: 100% Nosas, 100% Guarantee

Furthermore, all our rolls are produced with 100% quality, in our workshops in Badalona – Spain. We are equipped with the best machinery to guarantee 100% quality and service.

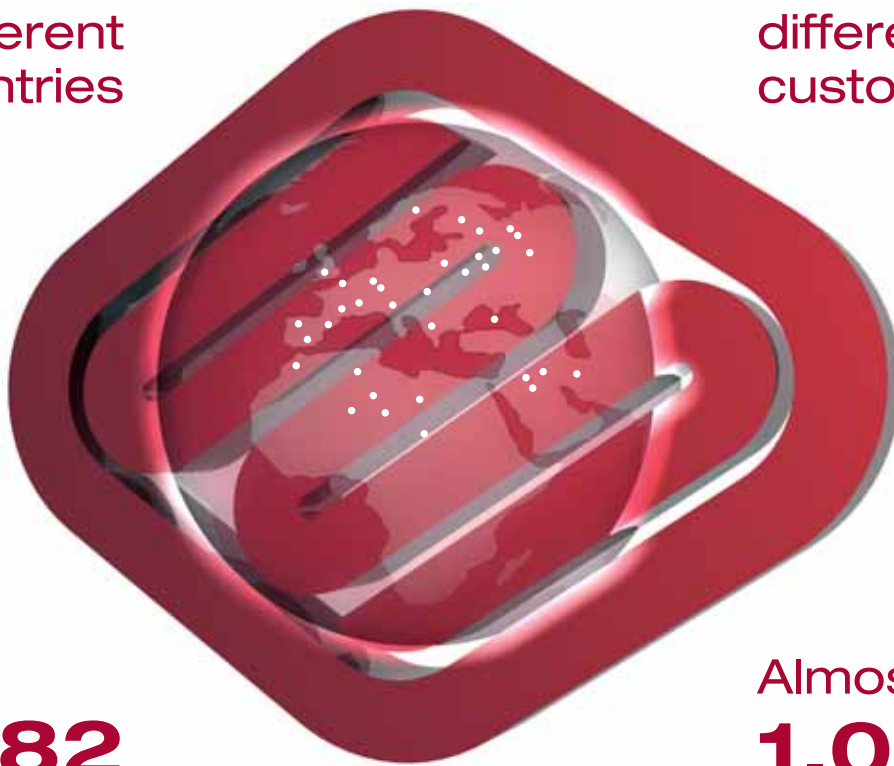




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