



TO THE COURSE:

TECHNOLOGY OF TEXTILE PREPARATION AND FINISHING

(TXL-241)

Singeing

Protruding fibres on the surface of a fabric

- Create a fuzz which might obscure sharpness of a print or a colored strip on the garment
- Can attract soil
- May aggravate pilling



Singeing: Objective

Many cotton materials are valued for their smooth appearance, e.g. lustrous sateen and satin weaves.

Hence, it is desirable to remove these surface fibres.

One of the most common methods to do this is just **burn off these fibres! (Singeing)**

Now a days, it is also done using **enzymes for cellulosic** fibre fabrics.

Fabric appearance after Singeing



Singeing Process:

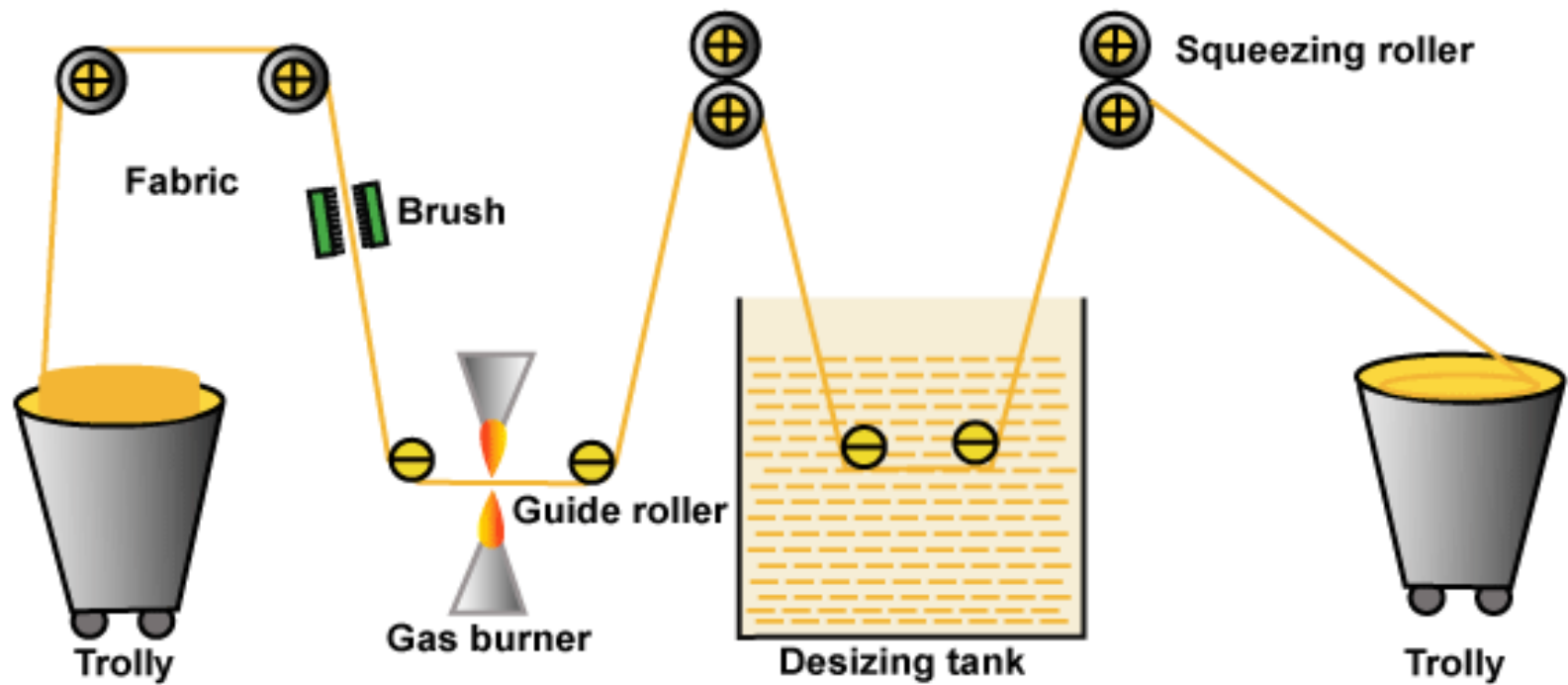
Singeing usually involves passing/exposing one or both sides of a fabric over a gas flame to burn off the protruding fibers

- Other methods of singeing include infra-red singeing and heat singeing for thermoplastic fibers
 - Singeing of yarns is called “gassing”
 - Cellulosic fibers such as cotton are easily singed because the protruding fibers burn to a light trace ash which is easily removed
 - Thermoplastic fibres are harder to singe because they melt and form hard residues on the fabric surface
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A gas burner used for singeing of textile materials



Typical singeing arrangement





Brushing



Beating



Brushing and Beating



Slot Burner

SINGEING PROCESS

COTTON & OTHER CELLULOSE FIBERS

- ❑ In Grey State (Economical) - As one dry step is avoided**
 - ❑ Slight yellowing occurs - Removed on bleaching**
 - ❑ Singed with maximum burner intensity**
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POLYTESTER

Melts at 260-280 °C, but burns at 500 °C.

- ❑ Normal flame forms fused polymer at fabric surface
 - ❑ So, powerful flame for quick burning
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Singeing Parameters

- **Machine Speed**
 - **Flame Intensity**
 - **Burner Position**
 - **Flame Distance from Fabric Surface**
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SINGEING SYSTEMS

SYSTEMS

DIRECT

- ✓ Hot Plate
- ✓ Rotary Cylinder
- ✓ Gas

INDIRECT

Radiation Singeing

- ✓ No Flame Contact
 - ✓ Uniform Singeing
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PLATE SINGEING

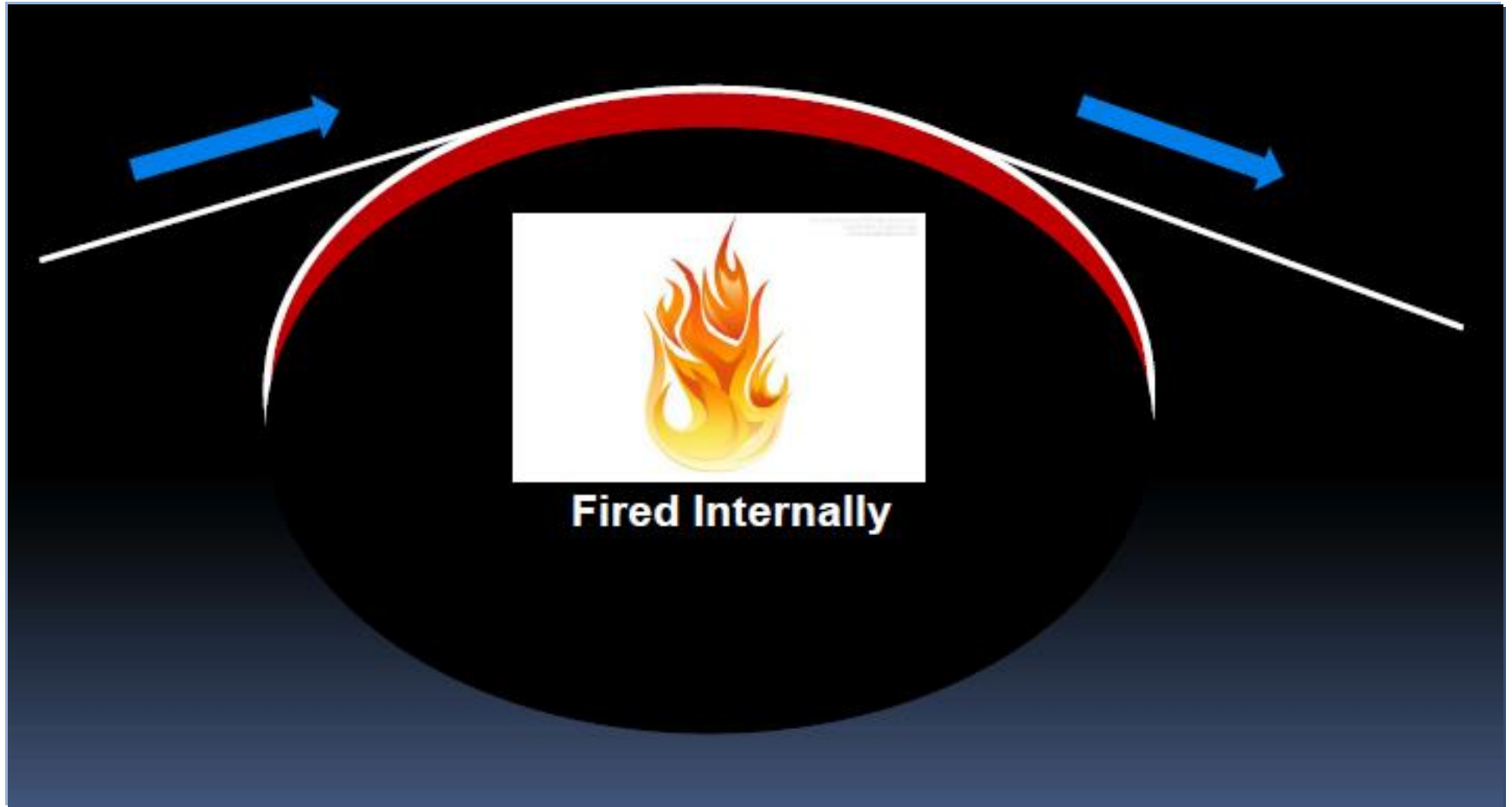
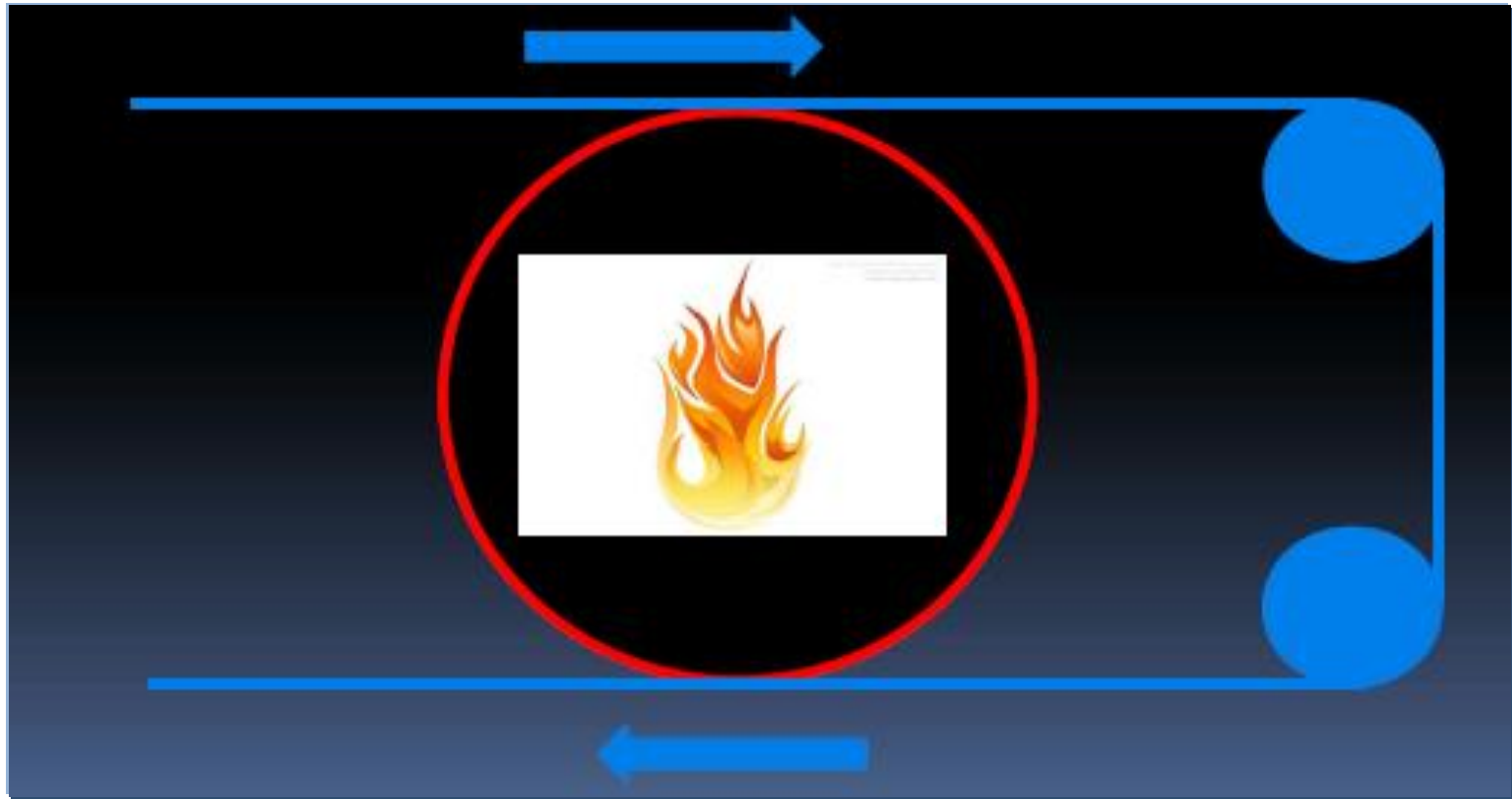


PLATE SINGEING

- Curved copper plate of 1-2 inch thickness
 - Heated to bright red from opposite side
 - Heavy petroleum oil is burnt
 - Cloth is dried and passed over the plates
 - Speed up to 200 yard/min
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Rotary cylinder



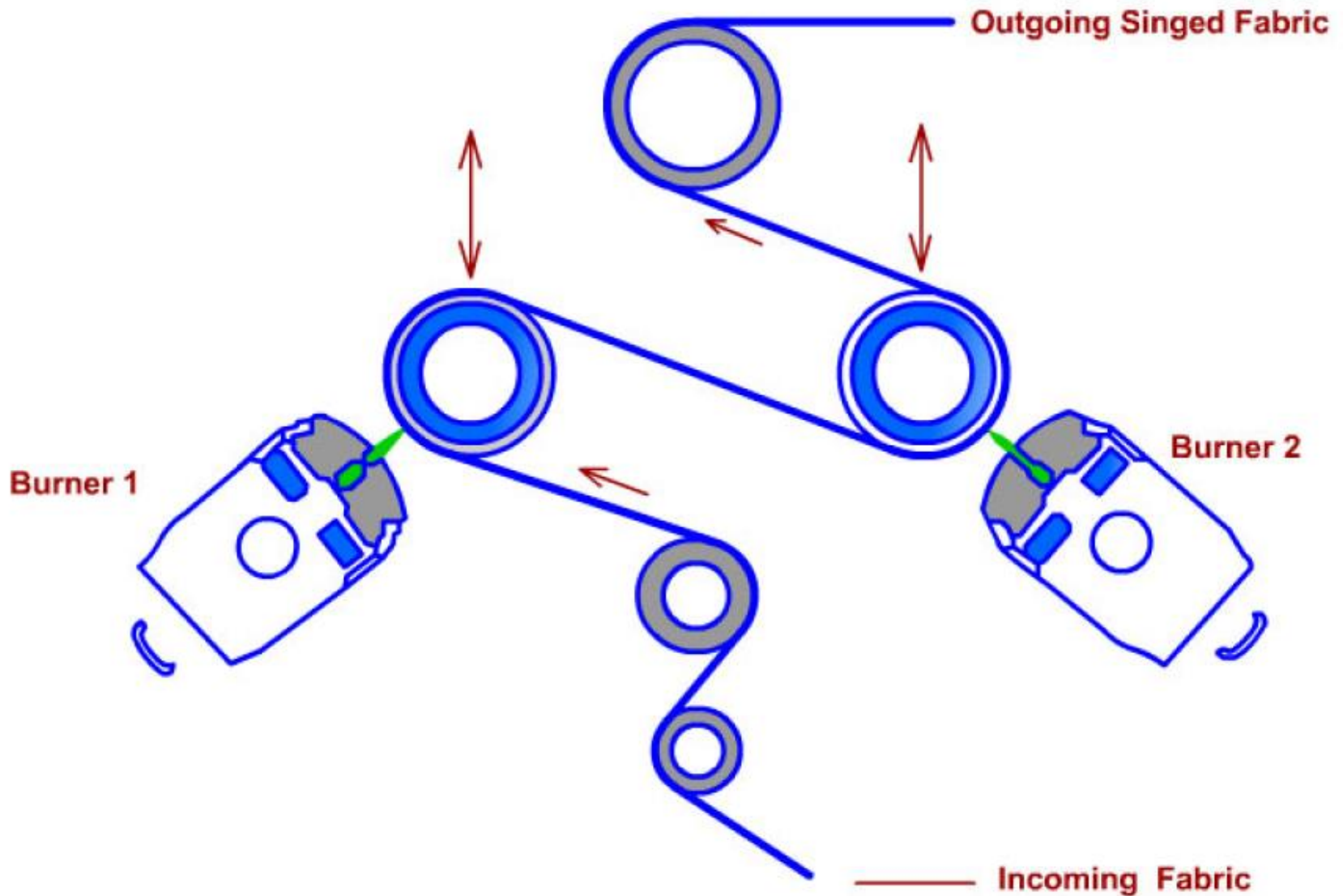
- Hollow cylinder rotates slowly in opposite direction
- Fired internally

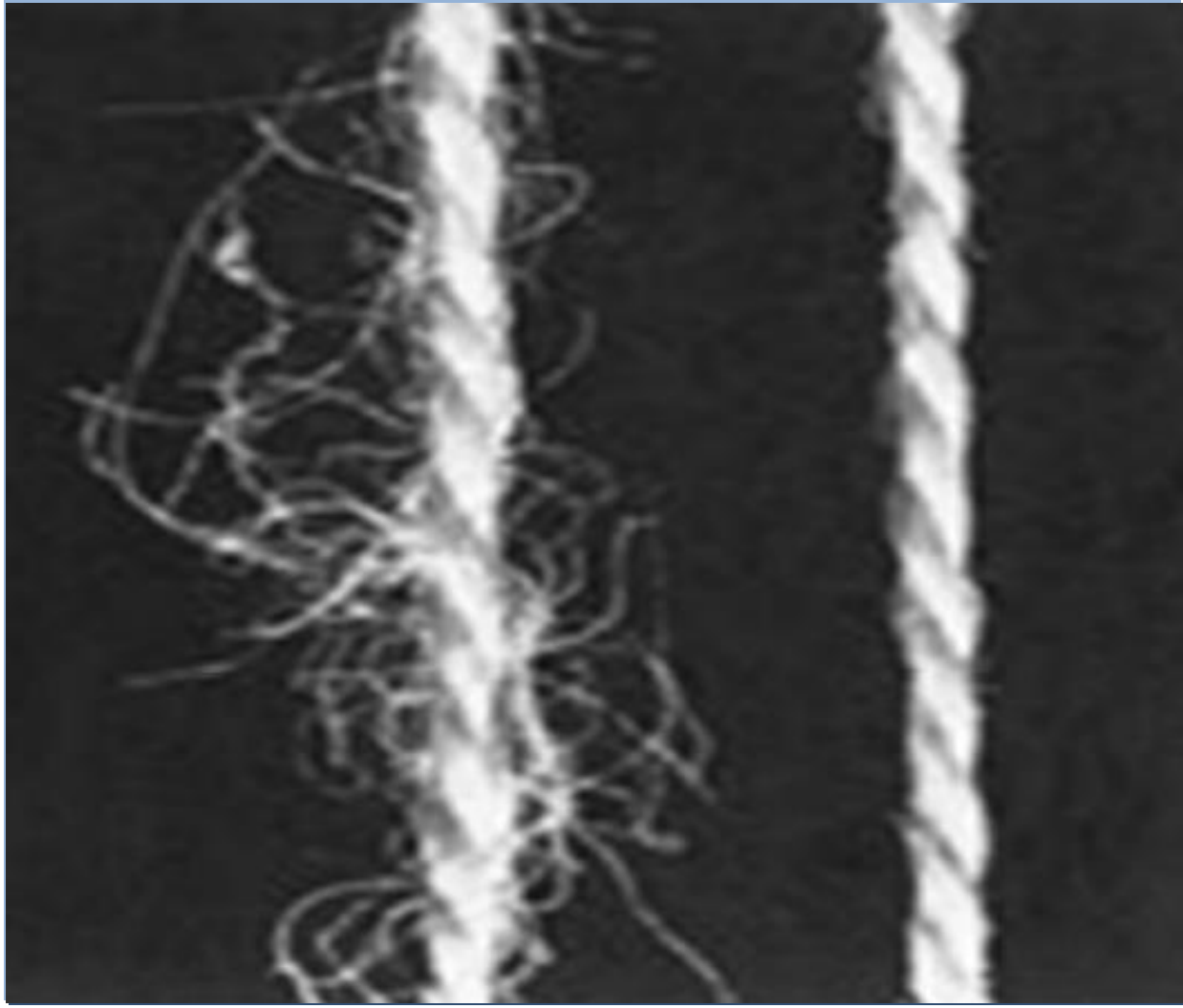
Gas Singeing

Gas singeing

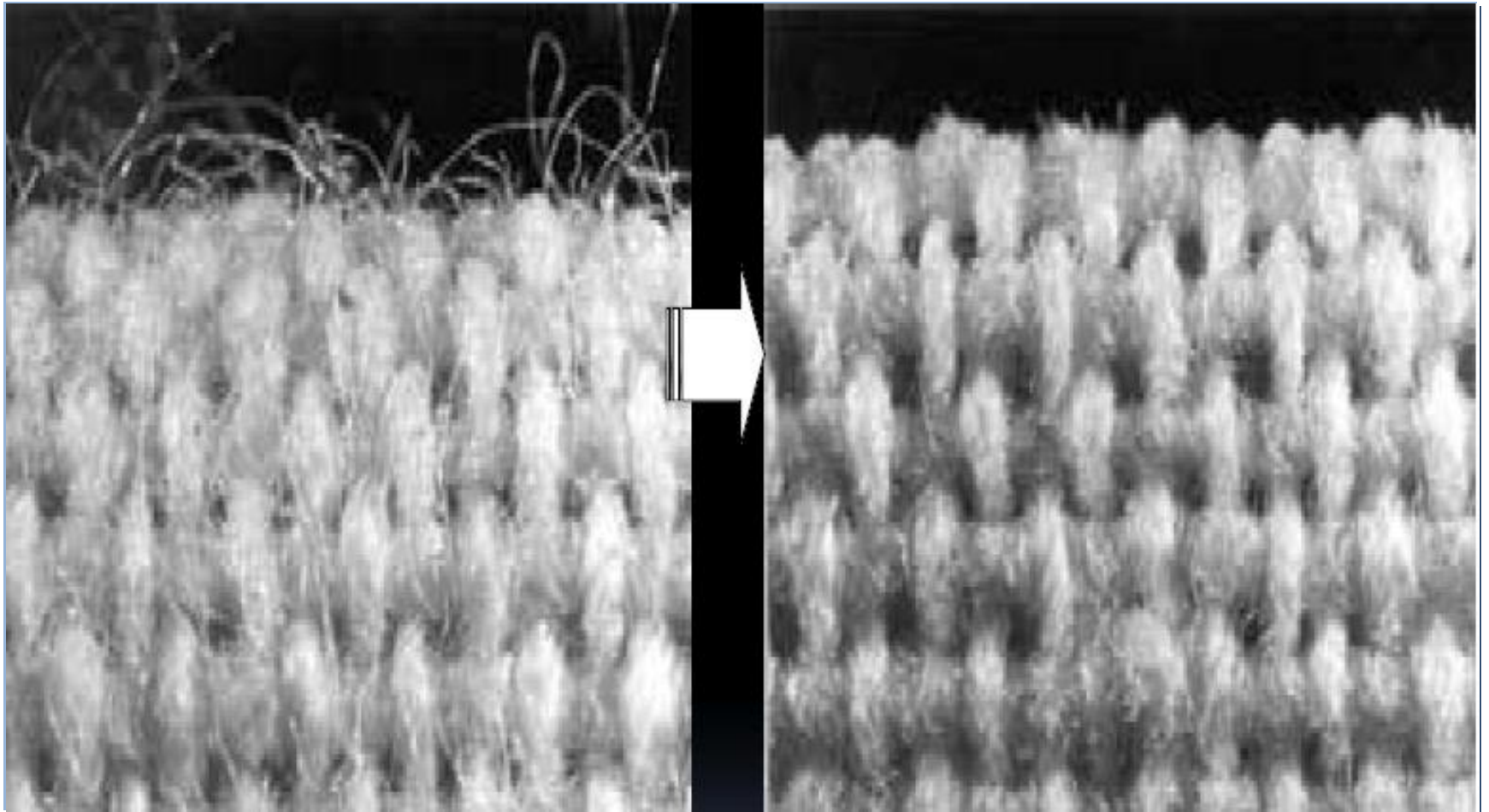
- Flame has high thermal and mechanical energy
 - Can loosen the fibre ends
 - Flame temp: 1300° Celsius (approx.)
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Schematic of Gas Singeing

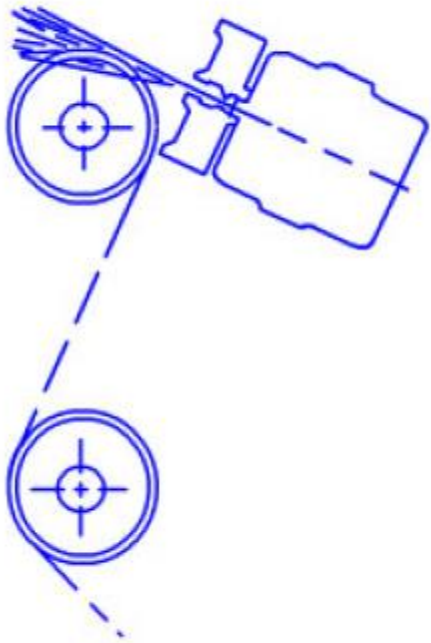




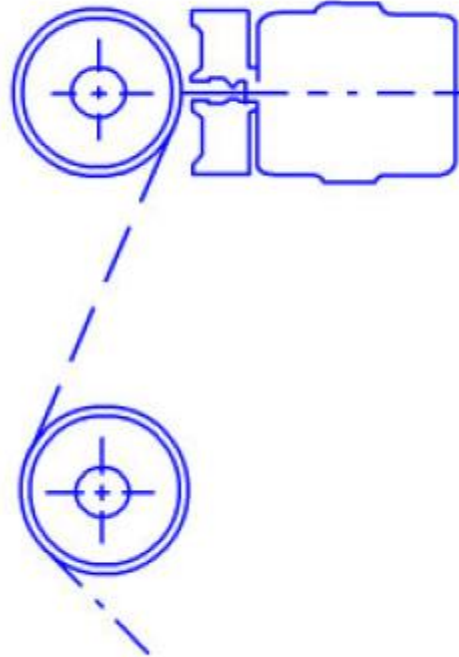
Fabric Appearance: Before & After Singeing



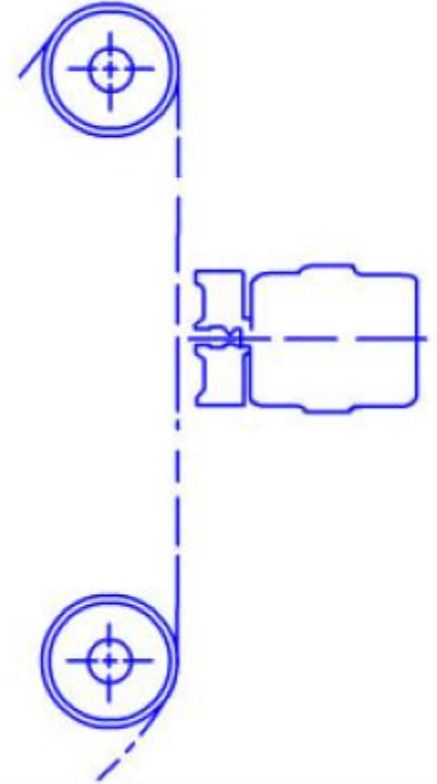
POSITION OF BURNER



**Tangential
Singing**



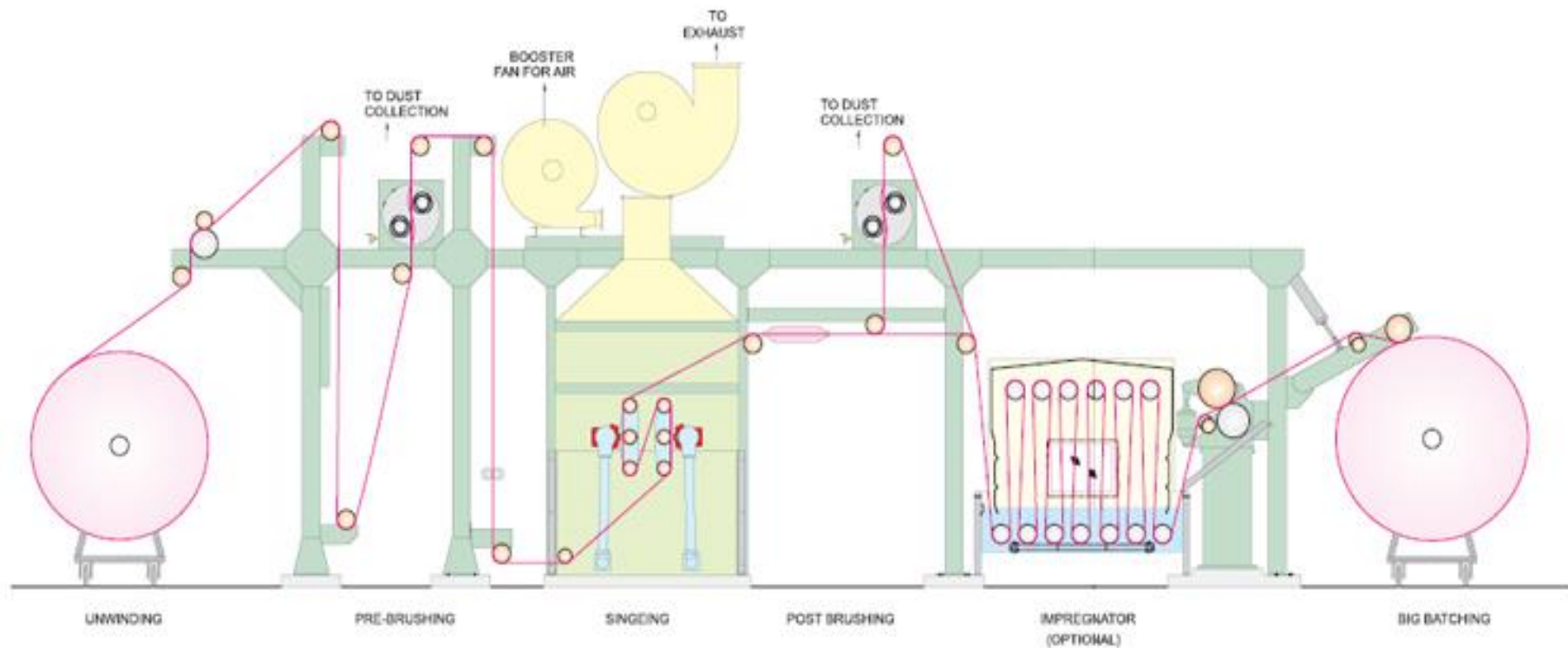
**Singing onto a
water cooled roller**

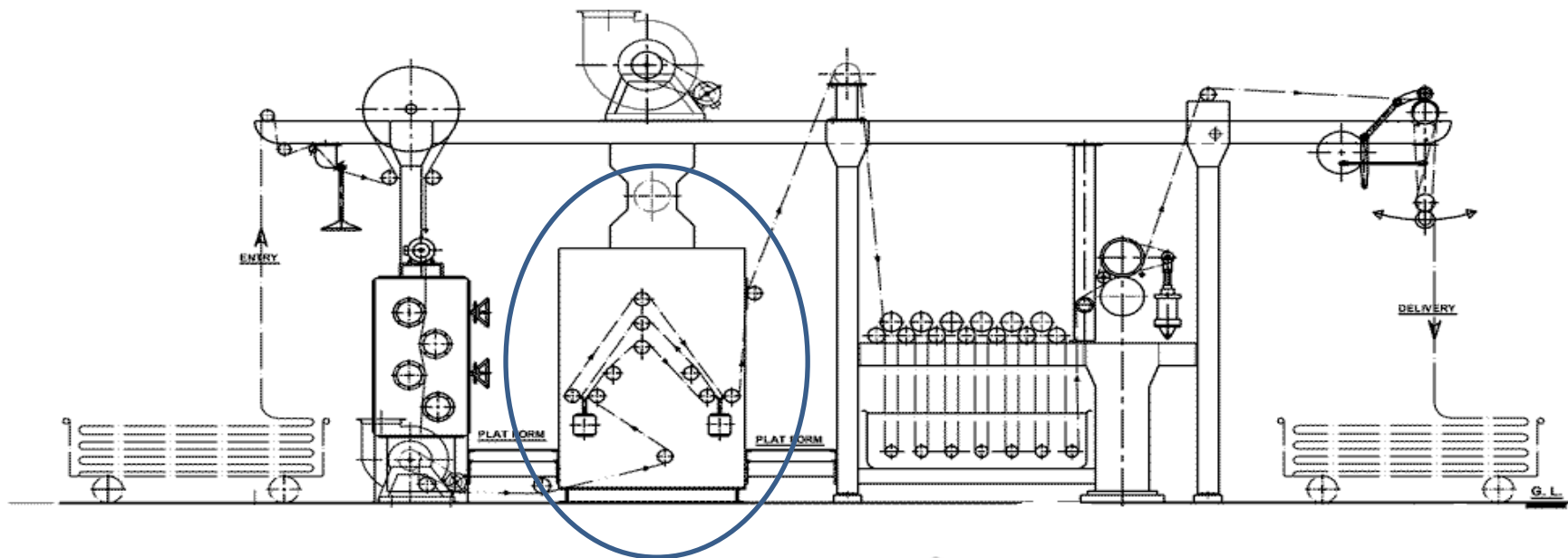


**Singing into the
fabric**

POSITION OF BURNER

- Flame position tangential to fabric for the fabrics which cannot tolerate direct exposure to flame (delicate, light weight & heat sensitive fibre).
 - Flame at right angle to fabric for temperature sensitive fibers, open weave structures, synthetic & blends with $\text{gsm} < 125 \text{ g/m}^2$
 - Flame at right angle to the fabric freely guided between two rollers- for natural fibres and blends with $\text{gsm} > 125 \text{ g/m}^2$ (heavy technical fabric of blends)
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GENERAL ASSEMBLY OF SINGEING M/C.
(FIX BURNER) WITH DESIZING TANK.

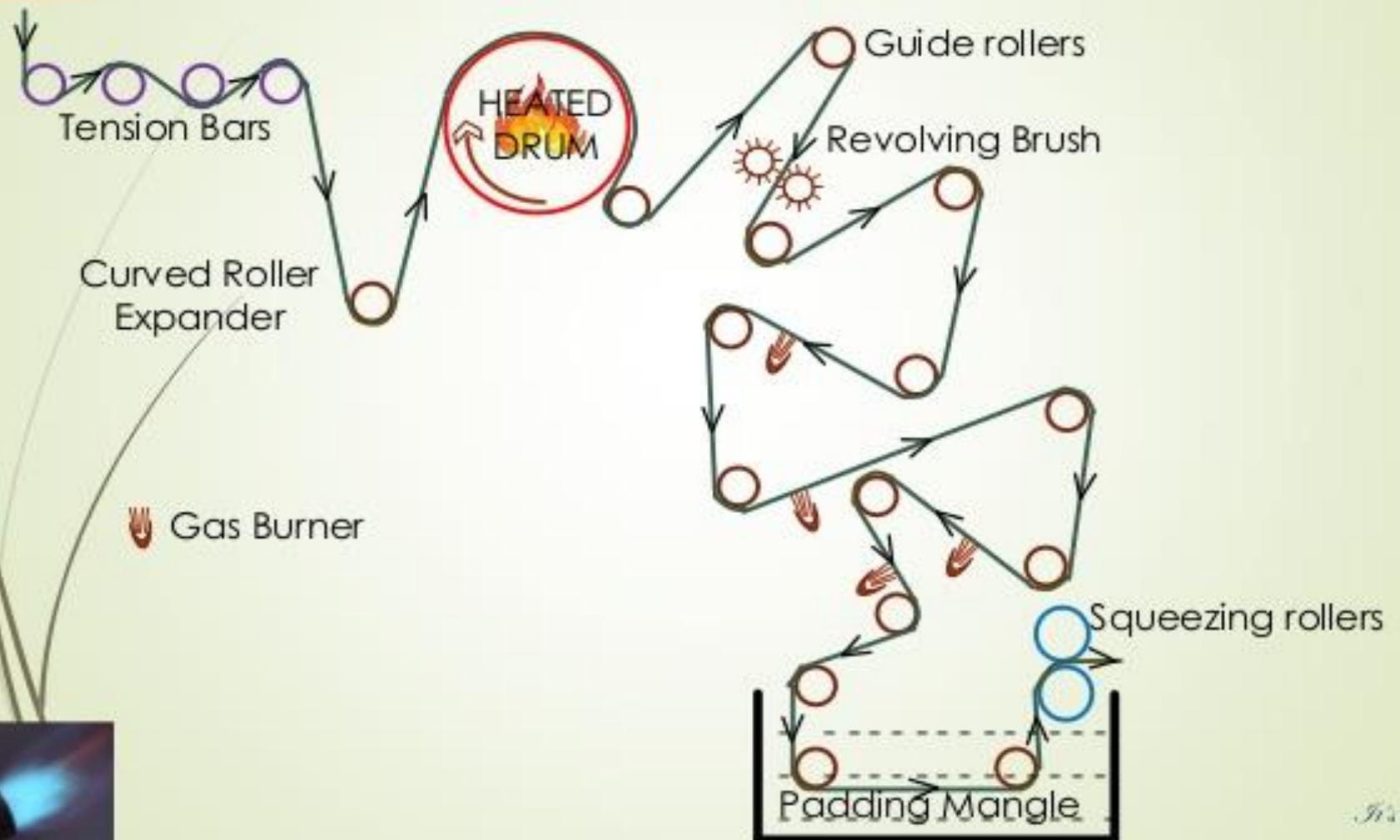


PROBLEMS

- ☐ Uneven singeing (dyeing streaks)
- ☐ Thermal damage (due to high flame temperature)
- ☐ Stop Offs (whenever the machine stops, excessive localized heating may result in Heat Bars)
- ☐ Creasing (dyeing streaks)

Size hardening --- Difficulty in desizing

A Typical Schematic Diagram of Gas Singeing





**Yarn Singeing
Machine**

