Cotton Brazil
Knowledge Hub

# Spinning Brazilian Cotton

Case Study - 1

## About Company

The company has an installed capacity of ~125,000 spindles and 2,200 rotors, producing ~33 KTPA of ring-spun yarn and 9 KTPA of open-end yarn. Its product portfolio includes carded, combed, and open-end yarns made from cotton and cotton blends, covering a count range from Ne 6s to 40s.

*Table 1: Key Technical Parameters*

| Particular | Details |
|---|---|
| Trial Quantity | 200 tons, 100% Brazilian Cotton |
| Regular Quality | 100% Indian Cotton |
| Yarn Counts | 16s CCW, 20s CCH, 24s CCH, 30s CCH, 34s CCH |
| Fiber Parameters | Mic: 4.42; Length: 29.19 mm; Strength: 30.65 gtex; Trash: 2.87% |

## Process-wise Issues and Interventions

### Carding

*Figure 1: Higher Kitti & Fly Deposition*

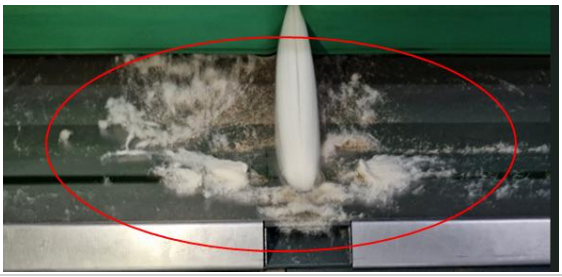
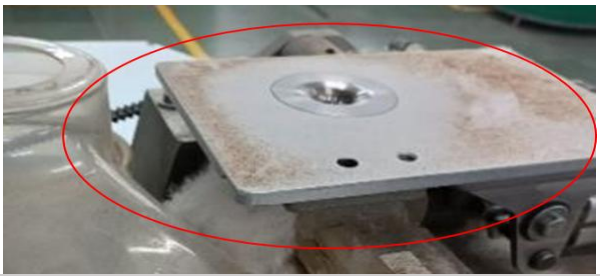


*Figure 2: Fiber Choking at Coiler Calendar Roll*



| | |
|---|---|
| Issues | • Excessive kitti and fly deposition on carding web plates<br>• Fiber choking at the coiler calendar roll with kitti build-up |
| Reasons | • Lower waste removal at CLP (pre-cleaner)<br>• Higher fiber rupture in CLU (universal cleaner)<br>• Lower suction pressure in hoods/licker-in<br>• Stickiness in fiber and kitti deposition |
| Interventions | • RH reduced to 45% & temperature increased to 35–36°C<br>• Grid bar setting in CLP changed from 1.50/2.0 to 2.5/3.0<br>• Feed roller to beater setting in CLU changed from 1.5 to 3.5<br>• Beater speed of CLU changed from 600 to 515 rpm<br>• Suction pressure in card changed from 750 to 850 bars<br>• Cleaning frequency increased from one time/shift to four times/shift in carding |
| Results | • CLP waste increased from 0.46% to 1.10% |

| | |
|---|---|
| | • CLU waste decreased from 1.10% to 0.60%<br>• Card breakages optimized to 12-13/card/day against 5-6/card/day in Indian cotton |

## Comber

*Figure 3: Higher Fleece Cuts*

*Figure 4: Higher Fly Accumulation in Omega Lap Draw Box*

| | |
|---|---|
| Issues | • Fleece cuts observed at comber<br>• Slightly increased fiber accumulation at the Draw Box in the Omega Lap |
| Reasons | • Lower detaching roller diameter and high pressure<br>• Stickiness in fiber and kitti |
| Interventions | • RH reduced to 45% and temperature increased to 35-36° C<br>• Detaching roller pressure decreased from 5 bar to 4 bar<br>• Detaching roller diameter maintained <24 mm from initial 24.1-24.5 mm<br>• Liquimix coated detaching rollers were used<br>• Noil index changed from 8.0 to 7.7<br>• Strippers were removed from the detaching roller<br>• Cleaning frequency increased from once/shift to four times/shift |
| Results | • Fleece cuts were optimized, final breakages/comber/hour maintained at 3-3.5 against 2-2.3 in Indian Cotton<br>• Noil% in 100% Brazilian Cotton is 14.75%, 13.5% lower as compared to 17.05% in Indian Cotton |

## Speed Frame

*Figure 5: Random Lapping on Bottom Rolls*

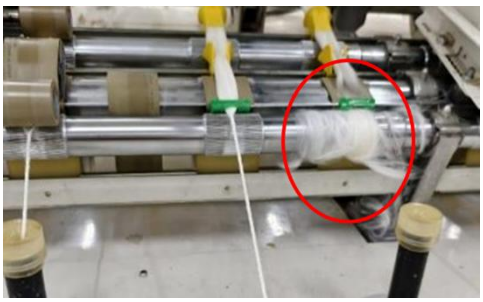
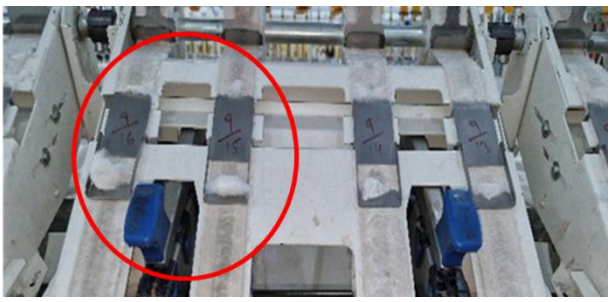


*Figure 6: Fly Accumulation on Top Clearer*



| | |
|---|---|
| Issues | • Random lapping on the bottom rolls in speed frame<br>• Higher fly accumulation at top clearer at speed frame |
| Reasons | • Stickiness in fiber |
| Interventions | • TM increased from 1.32 to 1.36<br>• RH reduced to 45% and temperature increased to 35-36°C<br>• Cleaning frequency of drafting zone increased |
| Results | • Reduction in fly accumulation due to increase in cleaning frequency<br>• Optimization of speed frame breakages while ensuring no undrafted issue occur in ring frame |

## Ring Frame & Winding

*Figure 7: Fly and Sticky Deposition on Top Back & Front Cots*

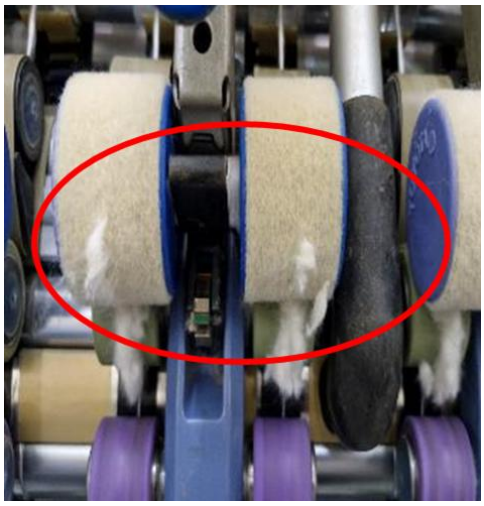
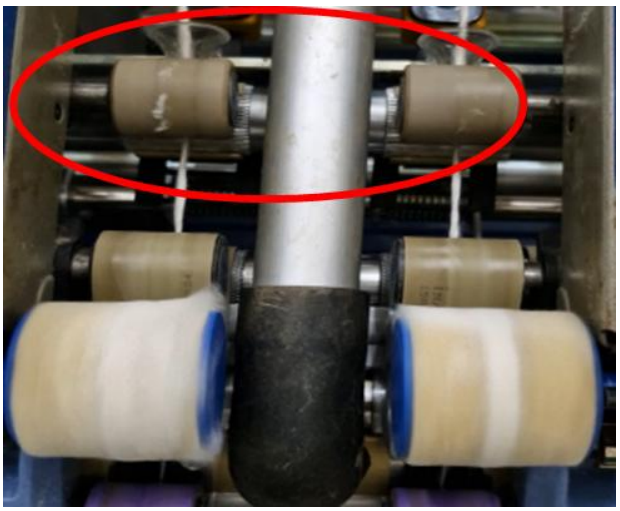


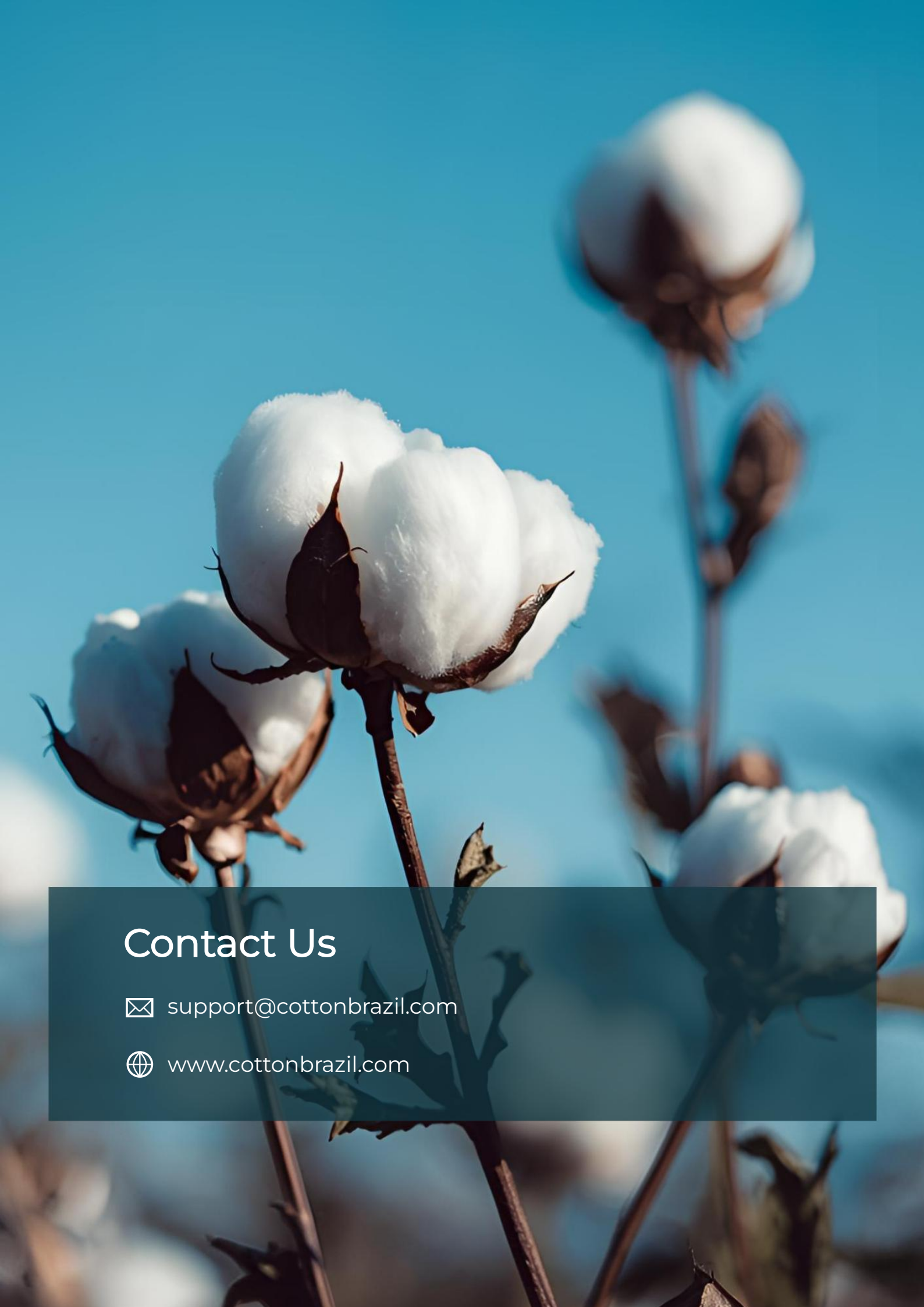
*Figure 8: Sticky Deposition on Rolls*



| | |
|---|---|
| Issues | • Excessive fly and sticky deposits observed in the drafting zone of the ring frame, particularly on the top back and front cots, even when top clearers were in use with Brazilian cotton.<br>• Higher FD & PP cuts in winding<br>• Higher alarm bobbins |
| Reasons | • Stickiness in fiber |
| Interventions | • RH was reduced to 45% & temperature increased to 35-36° C<br>• Cleaning frequency increased for bottom roll & drafting zone<br>• FD setting changed from closed to open |
| Results | • Reduction in fly deposition in ring frame<br>• FD and PP cuts observed at 60-65/100 km, ~30% higher compared to 45-50/ 100 km in Indian cotton<br>• Alarm bobbin optimized to 60-90/day/RF, higher by ~50% compared to 25-50/day/RF in Indian cotton |

## Results Achieved

- 255 GPSS for 30s CCH yarn was achieved, with a 4% improvement over the previous 245 GPSS in Indian Cotton.
- The process consistency reached +/-76.5%, which is a 4.5 percentage point improvement over the previous +/-72.0%.
- Overall performance was found to be comparable with the running mixing.
- The resulting fabric was contamination-free, unlike the fabric from the running mixing, which was found to have contamination.



## Contact Us

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