Case Study

Drafting up-gradation on roving frame and ring frame for improved roving and yarn quality

Background

One of India's leading textile mills, which is more than 50 years old and supplies all types of high quality yarns to major brands in more than 50 countries across the world, was looking at process improvements to improve the roving and yarn quality. The mill approached TeraSpin to study its roving frames as well as ring frames and suggest changes for improving the roving and yarn quality.

TeraSpin carried out a complete machine audit and recommended customised drafting up-gradation kits for the existing roving frames as well as the ring frames which were all running with pneumatic drafting.

Based on TeraSpin's recommendation, the mill went ahead with a drafting up-gradation project for its roving frames as well as ring frames. The results achieved by the mills post upgradation are as follows:

ROVING FRAME

Raw material: 100% cotton

Drafting

Technical details	Before up-gradation	After up-gradation
Drafting type	Pneumatic	TeraSpin PK 1500-0962604
Cradle	Short	OH 514-1275261

Process parameters

Machine setting	Before up-gradation	After up-gradation
B.R. setting	48/70	48/70
T.R. setting	54/68	56/68
Break draft	1.2	1.2
Distance clip	Existing (6.5 mm)	Green (6.5mm)
Top roller loading	Existing	Green on all top rollers

Roving quality parameters for roving hank Ne 0.9

Yarn quality parameters	Existing pneumatic drafting	TeraSpin drafting	% improvement
U%	5	3.6	28%
CVm (1%)	4	1.77	55.75%

RING FRAME

Raw material: Polyester/Viscose

Drafting

Technical details	Before up-gradation	After up-gradation
Drafting type	Pneumatic	TeraSpin PK 2035
Cradle	Medium	OH 131-1275264

Process parameters

Drafting	Pneumatic	PK 2035
Bottom roller setting	51.5/70	51.5/70
Top roller setting	Existing	59/59
Spacer	White (3 mm)	Grey (4.1mm)
Front top roller loading	Existing	Green (14 kg)

Yarn quality parameters for yarn count Ne 36

Yarn quality parameters	Existing pneumatic drafting	TeraSpin drafting	% improvement
U%	11.2	10.71	4.38%
-30%	1790	1425	20.39%
-40%	224	158	29.46%
-50%	11	6	45.45%
-60%	0	0	
+35%	219	164	25.11%
+50%	19	10	47.37%
+70%	1	0	
+100%	1	0	
+140%	309	178	42.39%
+200%	58	34	41.38%
+280%	13	7	46.15%
+400%	3	1	
Total IPI	88	50	43.18%
Micro IPI	2560	1933	24.49%

Key benefits after drafting up-gradation on roving frame

- **28%** improvement in U%
- **55.75%** improvement in CV (1m)

Key benefits after drafting up-gradation on ring frame

- **4.38%** improvement in U%
- **43.18%** improvement in IPI
- **24.49%** improvement in Micro IPI

Conclusion

The TeraSpin spring loaded drafting systems give better and more consistent roving and yarn quality as compared to pneumatic drafting systems. In addition, they save power as they do not require compressed air, and are zero maintenance as well.

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CS 7, Dec 2018