A STUDY ON COMPACT YARN SPINNING SYSTEM

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project report "**A STUDY ON COMPACT YARN SPINNING SYSTEM**" is the bonafide work of "**D.GOVINDARAJ**" who carried out the project work under my supervision.

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"A STUDY ON COMPACT YARN SPINNING SYSTEM"

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ABSTRACT

One of the most significant developments in recent years has been the technology to produce the compact yarn spinning system, one more value added innovation to meet the need of ever increasing demand for quality yarn.

The yarns produced from the Compact spinning system have avoided the undesirable yarn hairiness and the reduction of yarn strength. These yarns are far superior to all conventional yarns. Today, woven and knitted garments of the highest quality are produced from compact yarns.

In this project, I had procured the RoCos kit and produced the yarns in two counts such as 30^s Hy/ warp and 40^s Hy/ warp and tested them. I had analyzed and found out the following results from their experimental studies:

- Better Hairiness
- Better Elongation %
- Better Strength
- Reduction in Imperfections and Classimat faults.

The Compact yarn emphasizes the shortest route to new profit opportunities in the spinning system by the production of compact yarns in better quality.

The RoCoS is equally suitable for application in new machinery as well as for retrospect introduction in existing LR6 and LG5/1 ring spinning machines. The conversion of a standard ring spinning frame to Lakshmi RoCoS can, as a rule, be undertaken by the mill maintenance personnel without any problems. Maintenance and operating instructions for high-drafting systems as common in the industry today are equally applicable for RoCoS.

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1. INTRODUCTION

Compact yarn is produced by compacting the strand of fibre in a condensing zone- arranged after the drafting system- to such a degree so as not to allow the formation of a spinning triangle while twisting the strand of fibres into yarn.

The undesirable yarn hairiness and the reduction of yarn strength resulting there from are thus avoided. In respect, yarns are far superior to all conventional yarns. Today, woven and knitted garments of the highest quality are produced from Compact Yarns.

Until now, the Condensing of the strand of fibres is brought about by air suction. The power required to produce this suction is substantial. The pneumatic compacting devices are expensive, complicated and demands elaborate maintenance.

2.0 LITERATURE REVIEW:

2.1 Conventional Ring Spinning:

2.1.1 Reasons for Yarn Hairiness:

When a roving is drafted for a given yarn count, high draft has to be set at the ring frame, as a consequence the width of fibre flow becomes too large. The width of fibre flow at the nip of the front roller is always greater than the width of the spinning triangle (See Fig.2). Therefore, the twist can not catch all the incoming fibres originating from the edge of the spinning triangle, and some fibres are lost or not properly consolidated into the yarn. As a result, the yarn hairiness and strength deteriorate and thin places may increase.

2.1.2 The Spinning Triangle:

The turns of twist in a yarn are generated at the traveller and travel against the direction of movement to the drafting arrangement. Twist must run back as close as possible to the nip line the rollers, but it never penetrates completely to the nip because, after leaving the rollers, the fibres first have to be inwards and wrapped around each other. Accordingly, at the exit from the rollers there is always a triangular bundle of fibres without twist, the so called Spinning Triangle.

The length of the spinning triangle depends upon the spinning geometry and upon the twist level in the yarn.

- A short triangle represents a small weak point and hence fewer end breaks. But, the fibres on the edge must be strongly deflected to bind them in. This is not possible with all fibres; it results in fly or hairiness in the yarn surface.

- Long spinning triangles implies a long weak point and hence more end breaks. However, the edge fibres are better bound in to the yarn.

2.2 Compact Spinning:

Function of commercial available systems:

The following sections explain the functioning of various systems based on pneumatic and magnetic principle that are available in the market namely,

- Rieter - ComforSpin®
- Suessen - EliTe®
- Zinser - Air-Com-Tex 700®
- Toyota - RX250 NEW-EST®
- LMW- RoCos®

2.2.1 Rieter: ComforSpin:

In Rieter system, an intermediate zone is inserted between drafting and yarn formation. In this intermediate zone the drafted fibre band is condensed laterally by means of aerodynamic forces. The effect of this condensing laterally by means of aerodynamic forces is that the fibre band which is to be fed to the spinning triangle becomes so small as virtually to disappear.

In the process, all the fibres from the remaining spinning triangle are collected and fully integrated in the yarn. The fibre condensing zone immediately follows a 3/3 roller drafting system with double aprons. The delivery roller of the drafting system is replaced by a perforated drum for this purpose. A fixed suction system generating a vacuum is fitted inside this perforated drum for this purpose. A fixed suction system generating a vacuum is fitted inside of the drum. This results in a current of air flowing from the outside to the inside of the drum. The fibres supplied from the delivery nip line of the drafting system are thus held firmly on the surface of the perforated drum and move with the circumferential speed of the drum. A subsequent, second top roller also presses on the drum.

There is a non-rotating insert inside the drum with a specially shaped, diagonal slot to allow the passage of air.

The angle of the slot and the air flowing in have the combined effect that the fibres being carried on the circumference of the drum are moved sideways.

The fibre band in the condensing zone is thus condensed gently to width 'B', which is only a fraction of the width 'A' of the fibre band emerging from the drafting system. The fibre band emerging from the drafting system has virtually no strength due to the fact that the number of fibres in the cross section is small and no twist has yet been inserted. It is therefore extremely important to guide these fibres carefully through the entire length of the condensing surface of ComforSpin has a high quality surface finish with a low coefficient of friction between the fibres and the condensing surface.

2.2.1.1 Salient Features:

- Production of less hairy yarn and yarn profile is excellent.
- Completely new characteristics of Comfor yarn which are said to have softer and silkier yarn.
- This is an additional option alongside an existing ring and rotor spinning technique.
- The yarns are setting standards in downstream processing and wearing comforts, describing them as the yarns of the future.

2.2.2 Suessen: Elite Spinning Process:

In the Suessen EliTe spinning, compacting is achieved by introduction of a new condensing zone according to Suessen EliTe spinning catalogue . A tubular profile subjected to negative pressure is closely embraced by a lattice apron. Delivery top roller fitted with rubber cot presses the lattice apron against the hollow profile and drives the apron at the same time forming the delivery nipping line the tubular profile has a small slot in the direction of fibre flow, which commences at the immediate vicinity of the front roller nipping line. This creates an air current through the lattice apron via the slot towards the inside of the profile tube. The air current seizes the fibres after they leave the front roller nipping line and condense the fibre strand, which is conveyed by the lattice over a curved path and transported to the delivery nipping line.

As the slot, being under negative pressure, reaches right up to delivery nipping line, the fibre assembly remains totally closed. The spinning triangle and the serious disadvantages, in respect to yarn structure, strength and hairiness of the finished yarn disappear. The diameter of the delivery top roller is slightly bigger than the front top roller, hence a tension in the longitudinal direction during the condensing process.

The consequence of this tension is that curved fibre will be straightened and thus support the condensing effect of negative pressure acting on the fibre band in the slot area of the profile tube. When processing very short fibres like carded cotton, the suction slot is arranged at an angle to the direction of fibre flow ensuring that the fibre ends, during their transport from the front roller to the delivery nipping line are well bound into the strand of fibres.

Three measures described above condensing right up to the delivery clamping line, light tensioning of the fibre band during condensing, and rotation of fibre band around its axis during condensing, result in the fibre band reaching the delivery clamping line ideally straightened, with individual parallel and optimally condensed fibres. This creates a cross sectional force during the fibre transport, which in turn causes the fibre assembly to rotate around its own axis so that the fibre ends are closely embedded into the yarn assembly.

The delivery top roller is connected to front lop roller via a gear. This ensures that both rollers are synchronized. The tension essential for perfecting condensing of the fibre assembly, is guaranteed by a small difference in the diameters of front top roller and delivery top roller.

The effect of air current is all the more regular and the spinning results all the better, because of the smaller and closely spaced perforation of the lattice apron. In this respect it is interesting to note that a lattice apron has more than 3000 pores/ sq.cm, compared with approximately 80 openings in a perforated drum.

Most important for satisfactory and uniform spinning results over the complete length of the machine is an identical level of suction from the spinning position, as well as the possibility to adjust the suction level in accordance with yarn counts a draw material. This can easily and reliably be achieved, if separate and adjustable suction sources are available for spinning section.

2.2.2.1. Salient Features:

- Suessen EliTe system is based on existing FIOMAX ring spinning machine.
- The twist to strength ratio is said to be substantially better, allowing lower twist levels. Hence softer yams can be produced.
- They can be used for all commonly used raw materials, including blends across the entire spmning count ranges.

2.2.3. ZINSER: AIR-COM-TEX:

In this process, the fibre band emerging from the conventional 3-roller drafting system is taken from the draft nip line by the air flow and is condensed under suction on an apron surface. The aprons are perforated in a pearl-necklace fashion in the middle. Aprons run over stationary hollow bodies subjected to negative pressure. These hollow bodies are provided with straight slots in the direction of apron movement. The fibres are subjected to suction in area of perforations and are thereby condensed. The condensed fibre band thus undergoes a substantial reduction in width within the condensing zone. This is caused by the newly developed condenser element which separates the air and guides the apron nip in one single part.

Immediately after the drafting system nip line, the fibres orient themselves towards the apron perforation through the easing air flow. On the apron surface, an air stream applied from the side cause a fibre bundling above the perforations row. Through the newly developed supporting profile, the air sucked-in is selectively used as a lateral force and thus allows a larger traversing width. Thus the fixing of the fibre band on the perforation is guaranteed.

The fibre band is brought together by the air stream over the row of holes and is fixed there up to the nip line. This is affected by the favorable apron guiding in the area of the last pair of rolls. Directly after the actual condensing zone, the fibre band is fixed between perforated apron and bottom roll and is thus fed to the nip point. The yarn is formed by twisting the condensed band.

2.2.3.1. Salient Features:

- It is capable of producing long staple yarns.
- The yarns produced are less hairy and excellent profile.
- The main targets are higher raw material yield and substantial

reduction of the hairiness. The optimized yarn character can be clearly seen in the end products.

- Higher yarn yield can be achieved from the given raw material.

2.2.4. Toyota - RX240 NEW-EST:

The condensing device, consisting of suction slit and perforated apron, results in smooth collection of fleece fibres. Quality yarn with low hairiness and high evenness is produced by eliminating the spinning triangle at the delivery section of the front roller.

Compact Device Specifications:

Condensing unit:	4-spindle unit + perforated apron
Suction motor:	Synchronous motor controlled by inverter

2.2.4.1. Salient Features:

- Smooth collection of fleece fibres by suction slit and perforated apron
- Precise slip-free rotation of perforated apron due to positive drive by bottom delivery roller and Adjustable suction pressure controlled by inverter.
- Easy access to detachable condense unit and Less critical top roller maintenance due to bottom delivery roller drive of perforated apron

2.2.5. Mechanical Compacting - Commercially Available Today:

Rotorcraft has developed a magnetic mechanical compacting system in the name of RoCos and LMW in collaboration with them has started marketing Lakshmi RoCos compact yarn spinning system recently. The schematic diagram of RoCos system is given below.

The bottom roller supports the front roller and delivery roller. The condensing zone extends from clamping line A to clamping line B. The very precise magnetic compactor is pressed by permanent magnets with out clearance against cylinder. It forms together with the bottom roller an enclosed compression chamber.

2.2.5.1. Salient Features:

- No air suction.
- No extra perforated Drums or aprons.
- No extra power.
- No erectors for installation.
- Quality achieved is as same as pneumatic compactors.

2.3. Advantages of Compact yarn: Findings in a Nutshell:

The survey of literature revealed that out of the various developments the Rieter's ComforSpin and Suessen's EliTe spinning are the two successful models in the production of condensed yarn, working on the principles of pneumatic condensing. The advantages claimed on compact yarn are:

- 10-20 % increased strength and elongation.
- Softer yarn could be produced for equivalent strength at 20% less twist with gain in productivity.
- 70-80% reduction in objectionable S3 hairiness 20-25% reduction in Uster hairiness index.
- 8-10 % reduction in diameter and 15-20% increase in overall packing density of yarn.
- Yarn Appearance - shiny and bright
- Less fibre fly & fewer ends down in ring frame (50 %)
- For consistence performance of the machines, maintenance of cleanliness of air channel and ducts and timely grinding of cots are essential.

On the downstream process & application side, leading loom manufacturer- Sulzer has taken up the research to find the process advantages and various end uses of condensed yarn, which they have published through their news bulletin. Their findings are:

- High efficiency in weaving preparation- Less increase in imperfection in winding.
- Reduced clinging of warp thread and hence fewer ends down.
- Reduced application of size-30-50%.
- Less abrasion of adjacent threads, fewer ends down in weaving and increased efficiency – up to 5%.
- More attractive final fabrics appearance with lustre.
- Can be substituted for expensive singed and mercerize ply yarn.
- With reduced twist in yarn softer hand fabric produced.

- Dyed fabric appears more even, Printed Fabric- Precise printing contours and penetration.

2.4. Limitations in Pneumatic Compacting systems:

- The degree of condensing depends on the size of the holes in the apron or on the width of the opening in the hollow body. For different yarn counts it is, therefore, necessary to have aprons or hollow bodies with openings of different sizes in order to achieve an optimum condensing effect for each yarn count. Otherwise, this can cause undue fibre loss through suction system.

- In compact spinning it is possible to work with a minimum amplitude of roving traverse of approx 5 mm instead of 10-12 mm, as otherwise the fibres would leave the area of suction and increase the hairiness of yarn. This reduction in roving traverse leads to under utilization of aprons and cots.

- Manufacturing costs are higher than in conventional ring spinning due to the somewhat higher costs for maintenance, accessories, energy and depreciation for the condensing units.

- Compact spinning machines have a high air-flow rate due to air suction in the condensing zone, results in accumulation of fly and dust and also consume higher energy.

- Retrofit is not possible in some (Rieter ComforSpin, Toyota) systems.

3. OBJECTIVES

- To compare the properties of yarns such as hairiness and elongation for the existing LR 6 ring frame and the same machine fitted with the compact spinning system.

- To produce yarns in 30s Hy/ warp and 40s Hy/ warp from the Rocos compacting system and test them in their properties.

4. METHODOLOGY

4.1 Overview:

- The yarns were produced in the existing ring frame and the cops were taken for the testing

- In the same frame only 10 compact spinning systems were installed.

- The yarns were produced in the same speed, TM for the same raw material.

- The yarns were produced in different counts such as 30s Hy/ warp and 40s Hy/ warp.

4.2 Principle of Compact Yarn:

Compact Yarn as explained by Mr. Stahlecker is produced by compacting the strand of fiber in a condensing zone - arranged after the drafting system - to such a degree so as not to allow the formation of a spinning triangle while twisting the strand of fibers into yarn. The undesirable yarn hairiness and the reduction of yarn strength resulting therefrom are thus avoided.

Until now, the condensing of the strand of fibers is brought about by air suction. The power required to produce this suction is substantial, the pneumatic compacting devices are expensive, and may require elaborate maintenance. RoCoS, the Rotorcraft Compact Spinning System, works without air suction and uses magnetic mechanical principles only.

The bottom roller supports the front roller and delivery roller. The condensing zone extends from clamping line A to clamping line B.

The very precise magnetic compactor 4 is pressed by permanent magnets without clearance against cylinder 1. It forms together with the bottom roller an overall enclosed compression chamber whose bottom contour, the generated surface of cylinder 1, moves synchronously with the strand of fibers and transports this safely through the compactor.

According to Mr. Stahlecker RoCoS 1 is suitable for cotton, pure and as blends with synthetic fibres, as well as for pure synthetics with a maximum staple length of 60 mm (21/2 ").

On the other hand RoCoS 2 is suitable for wool, pure and as blends with synthetic fibres as well as for pure synthetics, having a minimum staple length of 50 mm (2").

In respect of yarn fineness and yarn twist, the standards usual in the industry are applicable. Compactors for coarse, medium and fine count yarns ensure ideal compacting.

The RoCoS device consists of cylinder 1, front roller 2, delivery roller 3, the precision-ground and with Supra-Magnets equipped ceramic compactors 4, the supporting bridge 5, the yarn RoCos from Rotorcraft

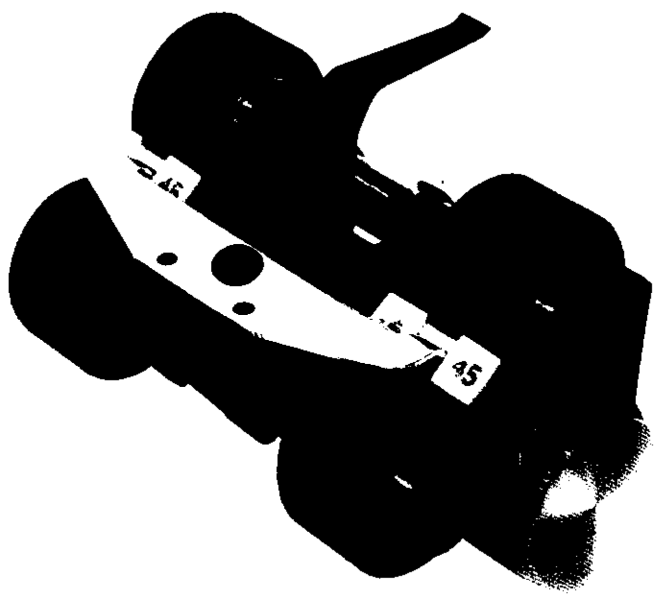
4.3 Rotorcraft Compact Spinning System:

- No air required
- No perforated aprons or drums
- No increased energy costs
- No extra maintenance
- No new machines required!!

4.4 The Design:

The bottom roller has very precise flutes and its diameter corresponds exactly to the radius of the compactor. RoCoS is equally suitable for application in new machinery as well as for retrofit introduction in existing machines. The conversion of a standard ring spinning frame to RoCoS can - as a rule - is undertaken by the mill maintenance personnel without any problems.

Fig 1 Magnetic Compacting System



Maintenance and operating instructions for high-drafting systems as common in the industry today are equally applicable for RoCoS.

According to Hans Stahlecker of Rotorcraft Maschinenfabrik, RoCoS does not require an investment in new spinning machines. The newly developed Compact Drafting System is available as a draft zone retrofit to most of today's ring spinning equipment.

Fig 2 Existing LR 6 Frame with RoCos System

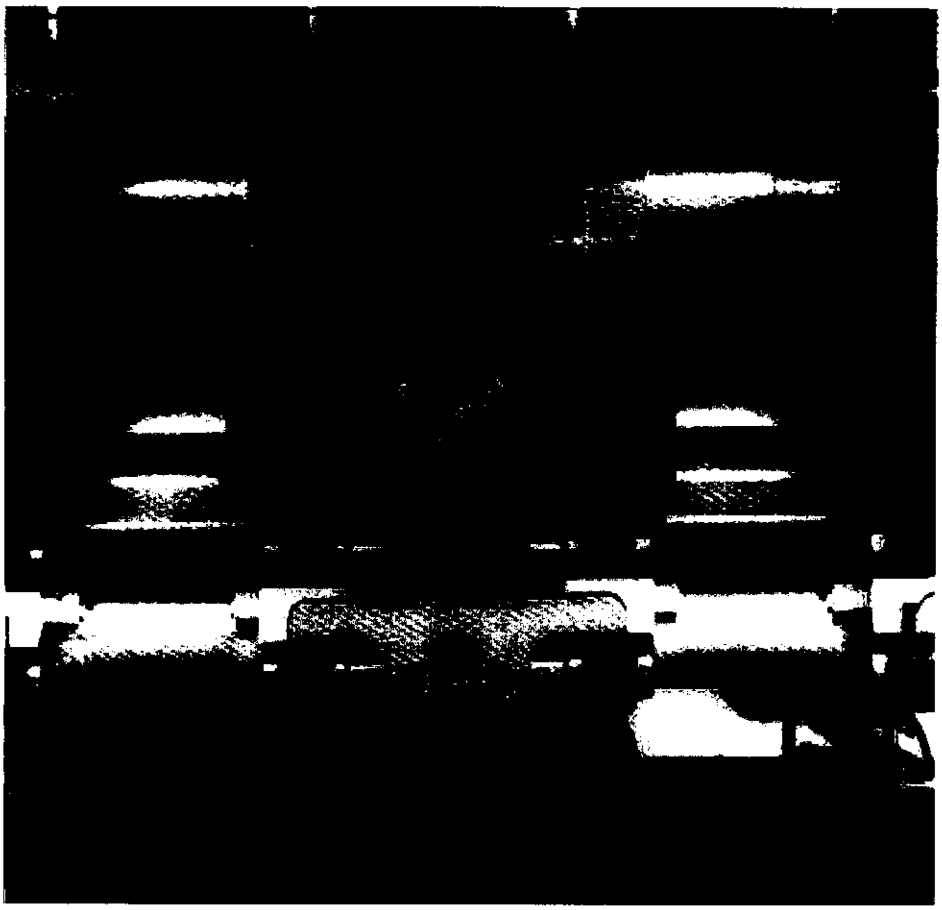
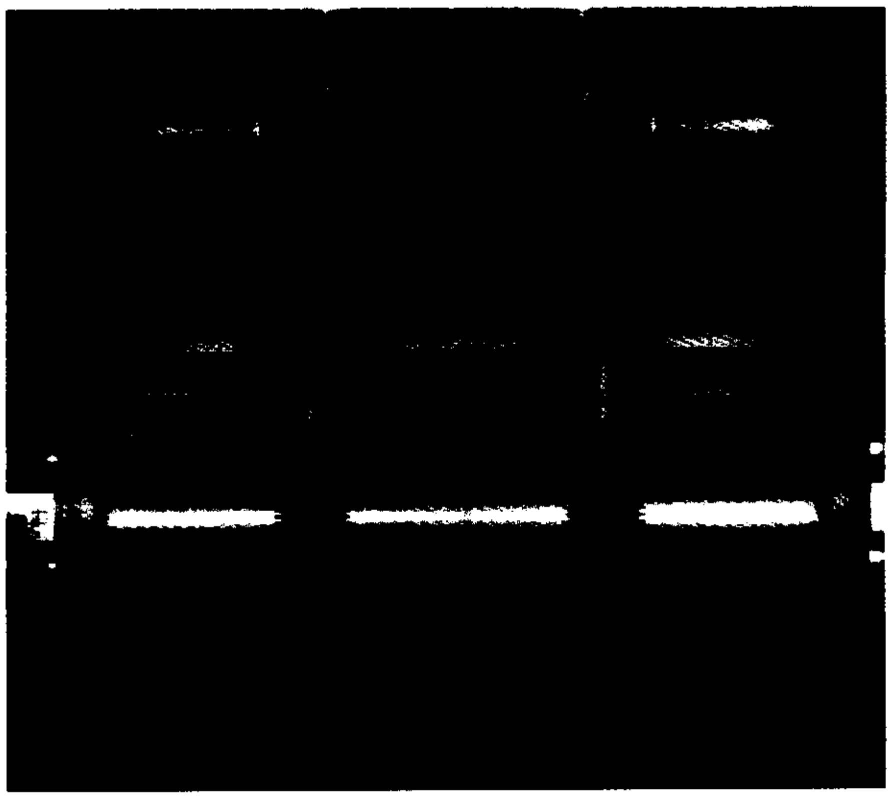
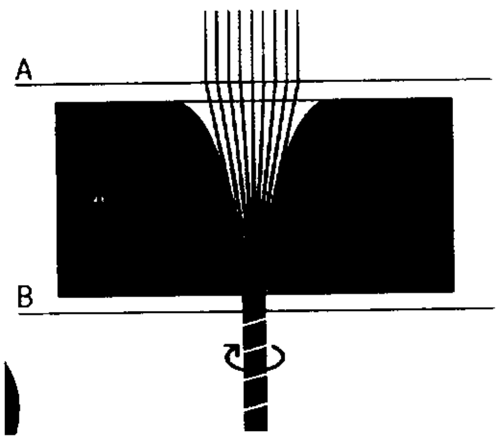


Fig 3 Existing LR 6 Frame



In compact spinning, the spinning triangle associated with conventional ring spinning is eliminated by pneumatic compaction. This happens by suction and compaction on a perforated revolving apron in front zone of the drafting system.

Fig 4 Condensing Zone



In conventional spinning a spinning triangle is formed immediately after the drafting mechanism in the Ring Frame. The spinning triangle is a weak zone due to less twist in this region. Under normal working conditions most of the breaks occur near-vicinity of the spinning triangle. The strength of the fibrous mass in the spinning triangle determines the attainable spindle speed. Hence, if the spinning triangle is avoided or its length reduced, the achievable spindle speed could be increased. It is with this objective in mind that compact spinning is being tried.

4.5 **Properties of Compact Yarn, Compared With That of Conventional Yarn**

With compact spinning yarn strength is higher by about 15% and elongation at break by about 20%. Compact Spun yarns also have better abrasion resistance of about 25%. Fabric properties in terms of breaking strength, breaking elongation and tear strength are also better with compact yarn.

5.0 ADVANTAGES:

5.1 Knitting

- ✓ Due to low hairiness, low pilling tendency ensure good wear behaviour.

- ✓ Due to low twist, absorbency of dye also increases which means less dye consumption. Body twist is also minimized, which is a common problem in ring spun yarn.

- ✓ The abrasion of yarn is also about 25% lower. This results in better running properties and improved quality. Since fiber fly and oil cannot combine to form clumps of fly, which are occasionally knitted into the fabric and can cause thread & needle breaks, the wear on guide elements, needles and sinkers is reduced as a result of the lower residual dust content of compact yarn.

5.2 Sizing

Clinging tendency of compact yarn display considerably fewer & less pronounced clinging phenomena. Due to lower clinging tendency of yarn, resulting improvement in separability of the warp. This reduces the cost of sizing and subsequent desizing, at the same time, resulting in lesser environment pollution.

5.3Weaving

Despite the lower degree of sizing, thread break rates are lower, which significantly improves efficiency, fabric appearance and a more brilliant luster.

5.4 Finishing

The higher stretch recovery is also retained in the finished fabric. This is a great advantage, especially in shirting fabrics with non-iron finish since losses in strength of up to 50% can be caused by this finishing process.

In printed fabrics due to special yarn structure of Compact Yarn, results in better dye take-up, therefore retain their attractive appearance even after frequent washing. The smoother surface structure of the yarn has a generally positive impact on the optical final appearance of the fabric. The higher color brilliance of piece- dyed articles more than Ring Spun Yarn result in an attractive final fabric appearance. The above advantages are observed practically in bulk production in Air jet weaving applications.

5.5 Twisting

The advantage in spinning also has an impact when it comes to twisting. In Compact yarn less twist is possible without any loss of strength. This results in lower manufacturing cost and the opportunity to manufacture new & softer twist yarns. Yarn in fine ply yarns offers a further advantage.

5.6 Singeing

The customary addition of weight to the yarn count, which is burned off in singeing, is no longer necessary. This amounts to raw material saving of 6 to 10%. The rewinding process which is usually necessary to remove the singeing dust from the ply / single yarn can also be dispensed with.

5.7 Compact Yarn

Other than yarn hairiness, other yarn parameters such as Strength, Elongation, IPI and Uniformity are also better than Ring Spun Yarn and these advantages can also be exploited in down stream processing.

- ❖ Strength 15 ~ 20 % better
- ❖ Uniformity 10 ~ 15 % better
- ❖ IPI 60 ~ 70 % better
- ❖ Hairiness 15 ~ 20 % better
- ❖ OPS 20 ~ 25 % better

6.0 Results and Discussions:

Count- 30^s Hy

Table 1 Yarn Quality Results- 30^s Hy

	Compact Yarn	Conventional
Actual Count	28.62	28.64
Count CV%	1.42	1.31
Strength	72	64
Strength CV%	3.1	3.6
CSP	2600	2260

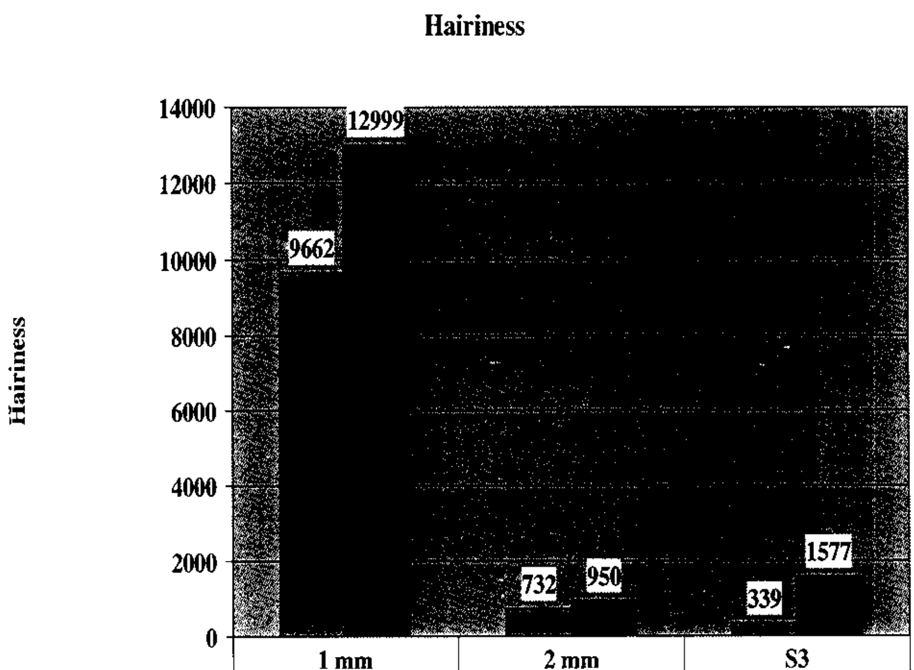
Table 2 Yarn Quality Results- Uster-30^s Hy

Uster Tester UT3		
U%	10.00	10.28
Thin Places(– 50%)	1	1
Thick Places (+50%)	34	39
Neps (+200%)	79	72
Total Imperfections / km	114	112
Thin Places (-30%)	1048	1208
Thick Places (+35%)	279	356
Neps (+140%)	231	265
Total H.Sens imp/ km	1558	1829
Hairiness index	3.29	4.52

Table 3 Yarn Quality Results- Zweigle-30^s Hy

Zweigle G566		
1 mm	9662	12999
2 mm	732	950
S3	339	1577
Uster Tensorapid UTR 3		
Single yarn strength	19.05	17.27
CV%	8.59	9.84
Elongation %	4.40	3.89
CV%	7.47	9.87

Fig 5 Yarn Hairiness



	1 mm	2 mm	S3
Lakshmi RoCoS Compact Yarn	9662	732	339
Conventional	12999	950	1577

Count- 40^s Hy

Table 4 Yarn Quality Results- 40^s Hy

	Compact Yarn	**Conventional**
Actual Count	39.93	39.95
Count CV%	1.51	1.39
Strength	70.28	61.27
Strength CV%	3.29	3.71
CSP	2806	2448

Table 5 Yarn Quality Results- Uster-40^s Hy

Uster Tester UT3		
U%	9.58	9.66
Thin Places (-50%)	2	1
Thick Places (+50%)	13	15
Neps (+200%)	45	61
Total Imperfections / km	60	77
Thin Places (-30%)	831	823
Thick Places (+35%)	164	178
Neps (+140%)	169	264
Total H.Sens imp/ km	1164	1265
Hairiness index	3.64	5.03

Table 6 Yarn Quality Results- Zweigle-40^s Hy

Zweigle G566		
1 mm	10052	13714
2 mm	954	1914
S3	266	1702
Uster Tensorapid UTR 3		
Single yarn strength	18.8	16.56
CV%	7.38	7.55
Elongation %	4.31	4.13
CV%	6.26	6.97

Fig 6 Yarn CSP

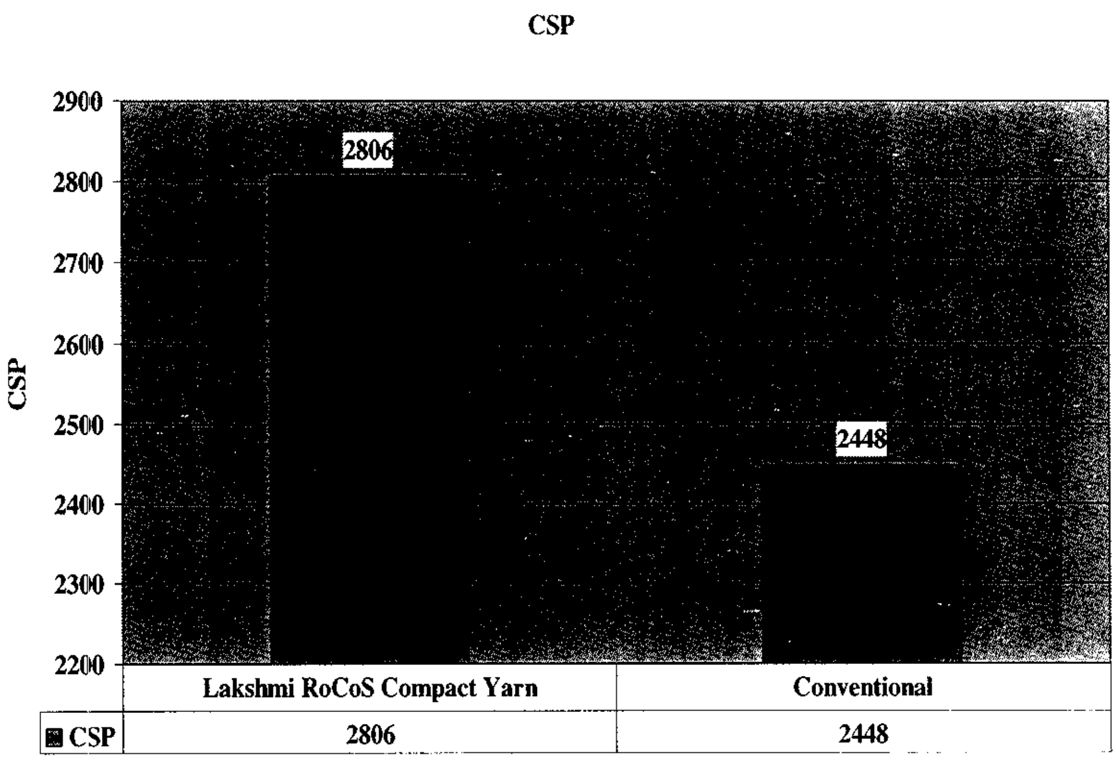
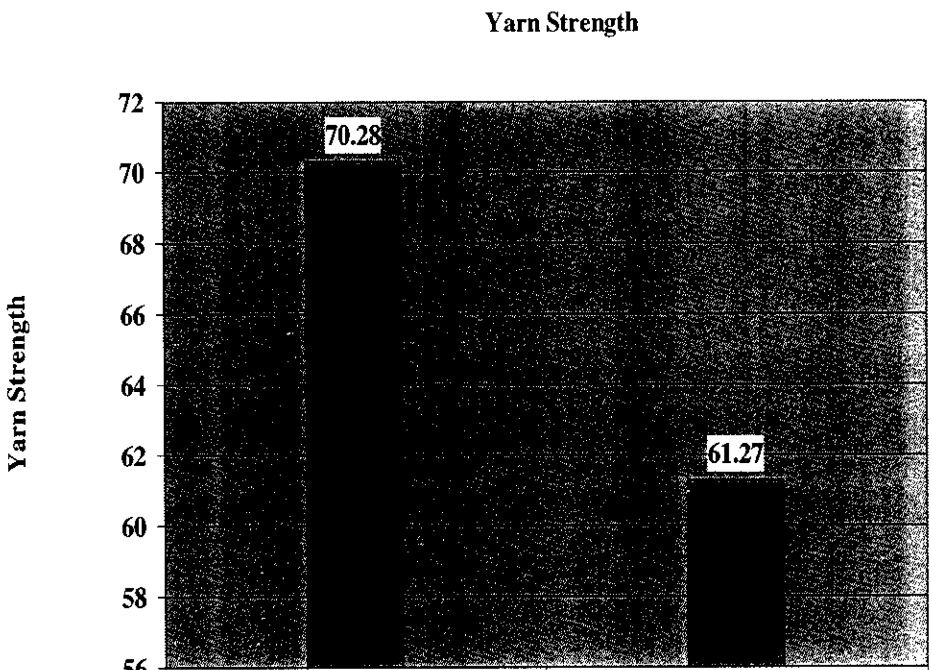
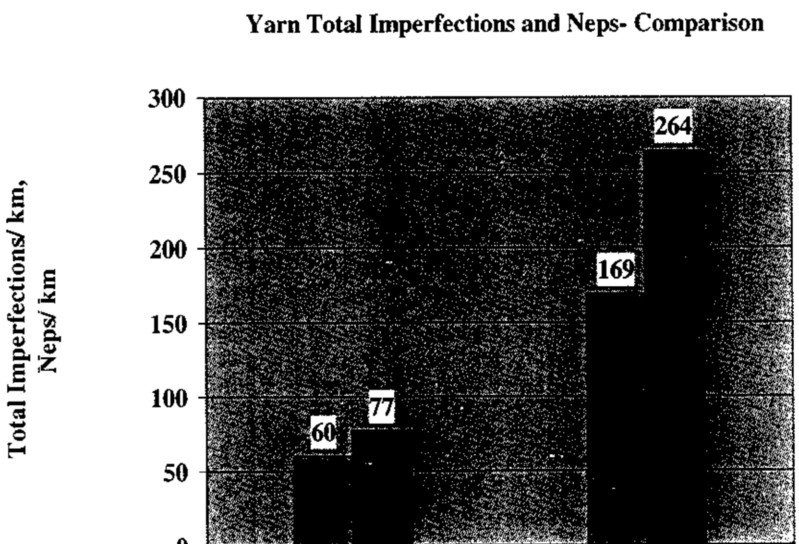


Fig 7 Yarn Strength



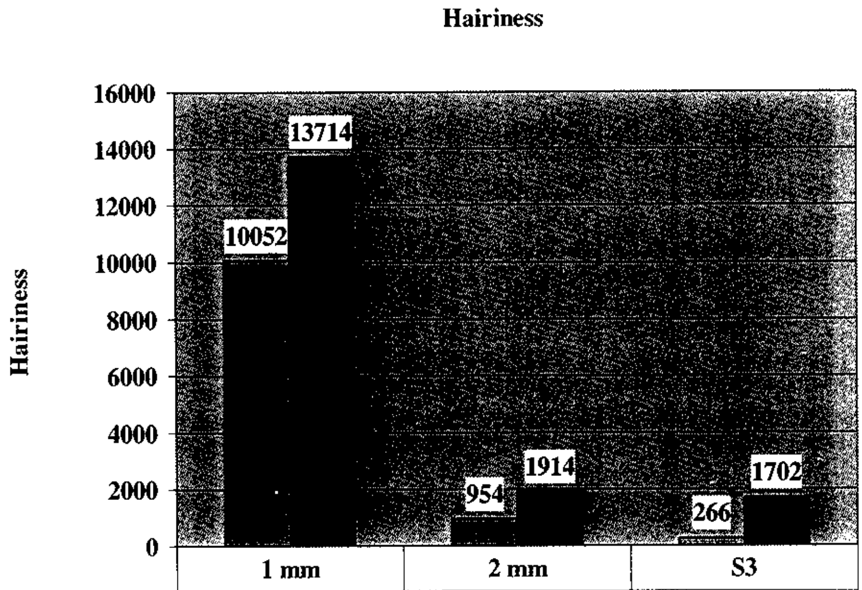
	Lakshmi RoCoS Compact Yarn	Conventional
Strength	70.28	61.27

Fig 8 Yarn Total Imperfections and Neps



	Total Imperfections / km	Neps + 140%
Lakshmi RoCoS Compact Yarn	60	169
Conventional	77	264

Fig 9 Yarn Hairiness



	1 mm	2 mm	S3
Lakshmi RoCoS Compact Yarn	10052	954	266
Conventional	13714	1914	1702

7.0 Discussions:

The RoCoS is equally suitable for application in new machinery as well as for retrospect introduction in existing LR6 and LG5/1 ring spinning machines. The conversion of a standard ring spinning frame to Lakshmi RoCoS can, as a rule, be undertaken by the mill maintenance personnel without any problems. Maintenance and operating instructions for high-drafting systems as common in the industry today are equally applicable for RoCoS.

The undesirable yarn hairiness and the reduction of yarn strength resulting there from are thus avoided. In respect, yarns are far superior to all conventional yarns. Today, woven and knitted garments of the highest quality are produced from Compact Yarns.

8.0 **Conclusion:**

The advantages of RoCos Yarns can be economically utilized in a variety of ways: It is often possible to replace classical two-ply yarns by single RoCos Yarns or conventional combed yarns by carded RoCos Yarns.

Sizing can be completely or partially dispensed with. The same can be said about singeing.

If the strength of the conventional yarn is sufficient for the intended application, using the RoCos technology will allow a reduction of twist by approximately 20%. This means a softer yarn, increased production and reduced energy consumption.

Not only in yarn manufacture and in further processing does RoCosYarn provide decisive advantages. Also the end product profits by the use of RoCosYarns.

Fabric handle becomes softer, print definition more brilliant due to better dye uptake, pilling resistance, lustre and strength increase. And, last but not least: Whenever the properties of conventional ring yarn are fully sufficient for the desired use, RoCosYarn can be spun from a less expensive raw material.

Of paramount importance for the practical mill operation is that compact spinning can be realized without any adverse effect on the operational safety standard expected of ring spinning frames. Also this stipulation is fully met with the RoCos Compact Spinning System.

The idea of Compact Spinning has been realized in an ideal manner in the RoCos Compact Set. Easy handling and operational reliability are the key features for producing ring yarns in a quality not obtainable up to now. The resulting economic benefits for Yarn Producers and Yarn Users provide a quick return on investment.

9.0 References:

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