University of Management and Technology
A Project of ILM Trust

School of Science and Technology

BS (H) TXE

CAPSTONE PROJECT II

"The study of 30 single combed yarns with special reference to different noil percentage effect on the properties of the yarn"

SUBMITTED TO:

Dr. Sarwar Rana

SUBMITTED BY:

Ashfaq Ahmad (040420021)

Ahmad Raza (040420035)

Dedication

We dedicate our project to our

“HOLY PROPHET (P.B.U.H.)”

And to our parents and respected teachers especially

Dr. Sarwar Rana

& all the faculty of textile department

AKNOWLEDGEMENT

We always pray to **God Almighty** for His blessing and guidance and our deepest gratitude are to Him for opening new horizons in our pursuit for knowledge. Undertaking project, which was not explored before and that too in textile setup which was relatively new, appeared a bit difficult initially. But with Allah's benevolence that apparently difficult task started becoming easy step by step and finally we have been able to formulate this study project**.**

The task would never have been accomplished that easily without teaching and direction of our learned teachers, Dr. Sarwar Rana.

Though every body at chakwal Spinning Mills Ltd did his best to help us in making this project in really, we are especially indebted to **Mr. Akhtar Hussain Ch...** (T.D chakwal spinning Mill) whose sincere efforts made it possible for us to start our project. Practical aspects of the study became easy to understand through a perfect technical guidance by **Mr. Mohammad Humayyun**. (Mill Manager), **Mr.Yaqoob** (Lab.Incharge). Their kind and considerable approach always kept our spirits high and our problems graph low.

And finally our hearts felt gratitude to our respected teachers, our seniors & staff of our university for the encouragement and help they extended to us during the project.

By:

Ashfaq Ahmad

Ahmad Raza

TABLE OF CONTENT

(A1). *INTRODUCTION OF Chakwal spinning mill Ltd.*

Chakwal Spinning Mills Limited produces spun yarn, and carded/combed for knitting and weaving purposes. The company engages in textile spinning, knitting, fabrics processing, and garment stitching operations. It primarily offers 100% cotton yarn, polyester and cotton blended yarn, polyester and viscose blended yarn, and acrylic yarn, as well as mélange yarn. The company was incorporated in 1988 and is based in Lahore, Pakistan. Chakwal Spinning Mills Limited is a part of Chakwal Group

This Spinning Unit, which was in production in August'2008 (i.e. ready for export yarn), it has the state of art all European machinery with an overall investment of US$ 22 million. Production capacity of 27.5 tons/day.

COUNT RANGES:

- $6^S/1 \sim 40^S/1$ Denim (Carded)
- $6^S/1 \sim 40^S/1$ Denim (Combed)
- $6^S/1 \sim 40^S/1$ Hosiery (Combed)
- Latest innovations » Multi Count / Multi Twist, Slub Yarn & Lycra core yarn options available.

Special emphasis on cotton contamination extraction provided at three different phases:

- Manual hand picking of contamination at cotton bale opening stage.
- Rieter Vision Shield (auto extraction of contamination).
-
- Uster Quantum FFD (for foreign fiber extraction) & PP-Channel (for white polypropylene extraction) on Auto Cone (yarn winding stage).

(B1). Salient features of our machines:

- Auto Doffing at Ring Section (Yarn bobbins are changed automatically).
- Auto Doffing at Auto Cone (Finished cones are transported automatically).

- Bigger Cans & auto-changers at Cards & Drawings (Ensuring better efficiency & quality).

- State of the art Lab. with fully equipped Uster – Zellweger product range. Other auxiliary Lab. equipments from Zweigle - Germany.

- Pressurized Yarn Conditioning in Vacuum Heat Setting Machine for improved yarn quality in terms of strength, low snarling, & better efficiency.

- Availability of Corrugated Boxes export packing, as well as pallet packing as per Euro & ISO standard.

BLOW ROOM

1.1 Basic Operations In The Blow Room

1.1.1 Opening

Opening is the first operation required carried out to the stage of flocks in the blow room and the stage of individual fibers in the card. Flock weight can be reduced to about 0.1mg in the blow room.

1.1.2 Cleaning

The blow room cannot eliminate all, of the foreign matter in the raw material. The blow room installation removes approximately 60-70 % of the impurities. The result in depended on the raw material, on the machine and on the environmental condition. Dependence on the raw material in this case, the level of impurities is illustrated by the diagram of Trutzschler.

The cleaning effect cannot and should not be the same for all impurities levels. Since a lot of dirt can be removed easily than a little. The cleaning effect of each blow room machine can certainly be increased by appropriate adjustments. However, improved cleaning must be purchased at the cost of high fiber loss, in addition to the stressing of the fibers, because every elimination of foreign matter is accompanied by a simultaneous elimination of good fibers.

Since the proportion of fibers in waste differs from one machine to another and can strongly be influenced, the fiber loss at each machine should be known. It can be expresses as a percentage of total material eliminated, in cleaning efficiency.

1.1.3 Dust removal

Almost all the manufacturers of blow room machinery now offer dust removing machines or equipment in addition to opening and cleaning machine. However, dust removal is not an easy operation, since the dust partials are enclosed in the flocks and hence are held back during suction.

1.1.4 Blending

Blending of fiber material is an essential preliminary in the production of yarn. Fibers can be blended at various stages of the process. These possibilities should always be carefully exploited, for example by transverse doubling. However the starts of the process is one of the most important stages for blending, since the components are still separate and therefore can be metered exactly and without depend upon random effects. A well-assembled bale layout and even (as far as possible simultaneous) extraction of fibers from all bales is therefore of the utmost importance.

Simultaneous extraction from all bales, which used to be normal in the conventional blending batteries, can now be no longer obtained. Accordingly intensive

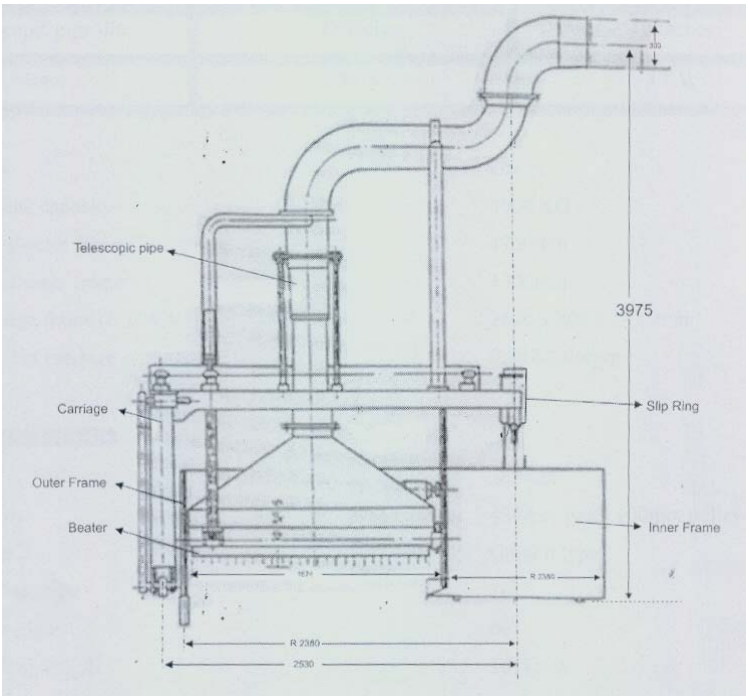
blending in a suitable blending must be carried out after separate flock extraction from individual bales of the layout. This blending operation must collect the sequentially arriving bunches of fibers from individual bales and mix them thoroughly.

1.1.5 Even Feed Of the Material to Card

Finally, the blow room must ensure that raw material evenly delivered to the cards. Previously, this was carried out be means of precisely weighed laps from a scutcher, but now automatic flock feeding installation are increasingly been used.

1.2. Auto Plucker

This machine is used to pluck the cotton lumps and delivered them to next machine



General view of Auto Plucker

1.2.1 Specifications of Auto Plucker

Model	FA002
Manufacturer	Jintan Jinyang Textile Machinery cd; ltd
No of machines	4
No of motors	3
Main motor (for beater)	3kw
Motor for carriage movement	0.55kw
Motor for moving beater up and down	0.55kw
Speed of beater	740 rpm
Output	800kg/hr
Outer dia	4760 mm
Inner pin-wall dia	1300 mm
Speed of carriage	0.41, 1, 2.16rpm

Beater

Dia of beater	385 mm
Type of blade	saw teeth
Plucking angle	10˚
Wedge angle	60˚
Thickness	4mm
Arrangement	blades are divided into three groups
	IST group 9 blades per blade
	2nd group 12 blades per blade
	3rd group 15 blades per blade
Working length	1618 mm
Length of blade extended from ribs	2.5-7.5 mm
Highest position of beater	1110 mm
Lowering distance in one stoke	1-6mm
Continuous rising rate	1080mm
Time for rising	3 min 40sec

Location of blades	**no of circles**	**spikes per piece**	**pieces per circle**
At outside	10	5	3
At middle	9	3	4
At inside	12	3	4

1.3 Condenser

It is used to transport the material from one machine to another machine and it extracts dust from material.

1.3.1 Specification of condenser

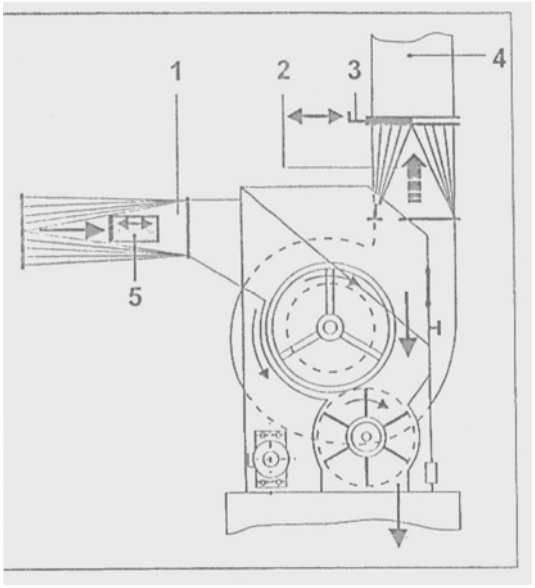
Manufacturer	Chenyang Textile Machinary Ltd.China
No of machines	4
No of motors	2
Working width	1000 m
Exhaust air	up to 1200 kg/h
Production	up to 1200 kg/hr

1.3.2 Setting

The position of the built-in slide (3) affects the air speed and/or air flow for the material transport (1)

The filter unit must be able to cope easily with the out coming air (2). The partial vacuum in the exhaust air duct (4) should be approximately 0 to -50pa (0 to -5 water col).

Watch the direction of rotation.



MIXING

2. Mixing of cotton: