WASTE REMOVAL SYSTEM IN SPINNING MILL AND ITS EFFECTS ON OPTIMUM QUALITY AND PRODUCTION

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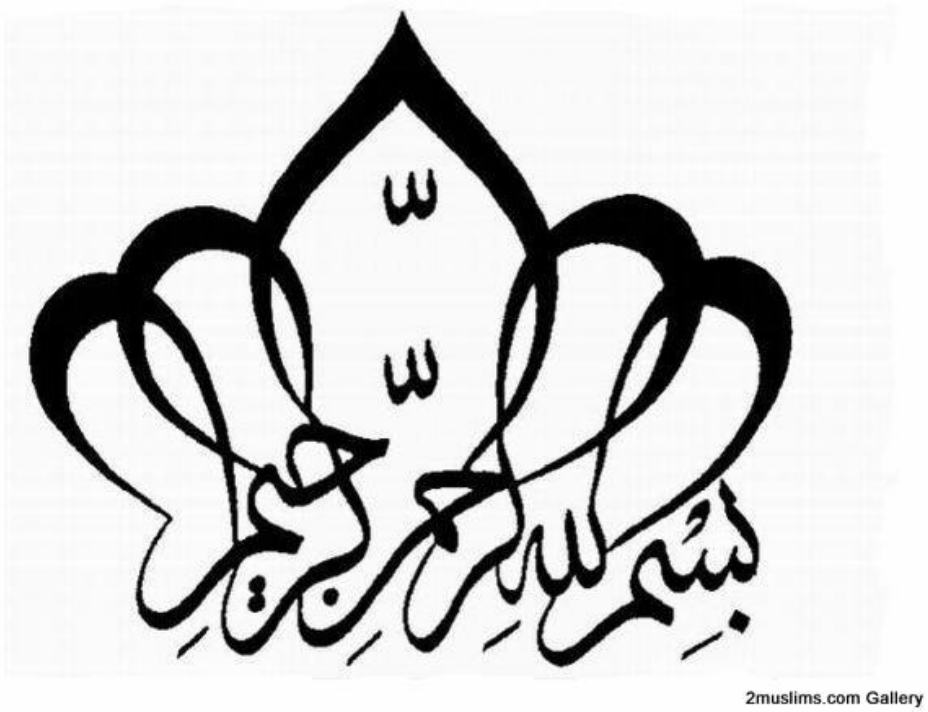

And He has subjected to you, as from Him, all that is in the heavens and on earth: Behold! in that are signs indeed for those who reflect.

(Al- Jathiya: 13)

WASTE REMOVAL SYSTEM IN SPINNING MILL AND ITS EFFECTS ON OPTIMUM QUALITY AND PRODUCTION

By

Hamidullah

A thesis submitted in partial fulfillment of the requirements for the degree of

BACHELOR OF SCIENCES (BS)

In

TEXTILE ENGINEERING

We Accept This Thesis as Conforming to the Required Standards.

Mr. Almas Anwar (supervisor)

External Examiner/ Chairman Department of Textile Engineering

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(Signed)

Hamidullah **091320-084**

Date
July 16 2012

DEDICATION

We dedicate this thesis to our Beloved Parents for all their love & attention which has made it possible for us to make it up to this point.

Words are very few to express enormous humble obligations to our affectionate Parents for their prayers and strong determination to enabling us to achieve this job.

References:

www.umergroup.com
www.toyota-industries.com
www.reiter.com
www.uster.com
Google web search
Google image search
Klein Werner-1998- raw material-manual of textile-1-2, 3, 4, 5.
Technology handbookfor service engineers by Rieter 2004
Rieter operating manual A-11
Rieter operating manual B-11
Rieter operating manual B-70
Rieter operating manual B-34
Rieter operating manual B-51
Rieter operating manual A-21
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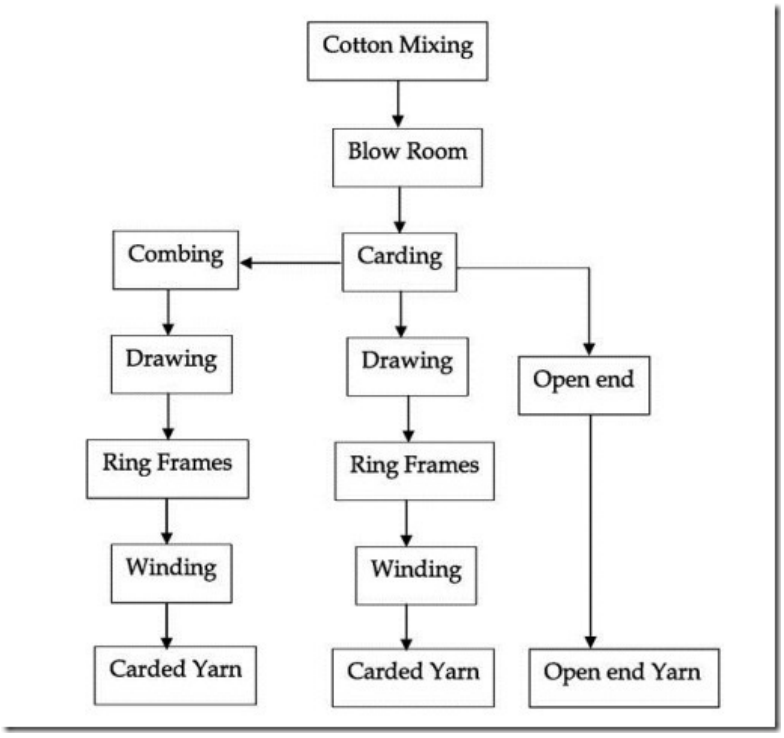
Chapter 01

Introduction



1.1 Overview of the textile industry

A textile or cloth is a flexible woven material consisting of a network of natural or artificial fibers often referred to as thread or yarn. Yarn is produced by spinning raw fibers of wool, flax, cotton, or other material to produce long strands. Textiles are formed by weaving, knitting, crocheting, knotting, or pressing fibers together. Textiles have an assortment of uses, the most common of which are for clothing and containers such as bags and baskets. In the household, they are used in carpeting, upholstered furnishings, window shades, towels, covering for tables, beds, and other flat surfaces, and in art. In the workplace, they are used in industrial and scientific processes such as filtering. Miscellaneous uses include flags, backpacks, tents, nets, cleaning devices such as handkerchiefs and rags, transportation devices such as balloons, kites, sails, and parachutes, in addition to strengthening in composite materials such as fiberglass and industrial geotextiles. Children can learn using textiles to make collages, sew, quilt, and toys. Textiles used for industrial purposes, and chosen for characteristics other than their appearance, are commonly referred to as technical textiles. Technical textiles include textile structures for automotive applications, medical textiles such as implants, geotextiles (reinforcement of embankments), agro textiles (textiles for crop protection), protective clothing (e.g. Against heat and radiation for fire fighter clothing, against molten metal for welders, stab protection, and bullet proof vests). Textiles can be made from many materials. These materials come from four main sources: animal (wool, silk), plant (cotton, flax, jute), mineral (asbestos, glass fiber), and synthetic (nylon, polyester, acrylic). In the past, all textiles were made from natural fibers, including plant, animal, and mineral sources. In the 20th century, these were supplemented by artificial fibers made from petroleum. The textile industry is primarily concerned with the production of yarn, and cloth and the subsequent design or manufacture of clothing and their distribution. The textile sector of Pakistan is considered to play a central role in the economy of the country. Increase in the cotton production and expansion of textile industry has been impressive in Pakistan since 1947. Cotton – bales increase from 1.1 million bales in 1947 to 10 million bales by 2000. Number of mills increased from 3 to 600 and spindles from about 177,000 to 805 million similarly looms and finishing units increased. The textile industry in Pakistan can be broadly categorized in two divisions, a large scale organized sector and a fairly small-scale sector.

1.2 Introduction to Naveena spinning unit

Naveena Group is country's one of the major export oriented group of companies which mainly deals with the apparel. Management at Naveena believes on the quality philosophy that's why from yarn to the fabric manufacturing and from textile to the garment, in each step quality assurance department is there to verify the quality perhaps this is one of the major reasons of success of the Naveena in textile sector. Currently it has more than 6000employees which are currently working in different units of Naveena and helping the organization to achieve its mission. Naveena took its start in 1965 from the small knitting unit having worth of 1,400,000 PKR and now from the figures of year 2007 the company has the worth of 5,000,000,000 PKR.

Naveena Group comprises of Dyeing, Knitting, Stitching, Woven & Denim units as well as V-Track, a hi-tech Fleet Management & Vehicle Security system. Evolution of the Naveena started four decade back and there are several factors involved behind the success story in which the top most is the upper management philosophy particularly visionary leadership of Mr. Masood Riaz Tata who develop this business empire in this age of high competition. Beside this its latest production system, quality philosophy, niche marketing are all there to make it distinct from rest of the other textile manufacturer.

Corporate value of Naveena includes Integrity, constant self-improvement through continuous learning, Leadership, Teamwork and Social Responsibility. Naveena Focuses on four major corporate pillars.

1. Customers
2. Suppliers
3. Employees
4. Quality

There are two internal props that are employees and quality through which Naveena is able to gain and retain the customers' satisfaction as well as the suppliers' commitments.
It is the company which is highly committed to continuously providing superior customer value, worker dignity, shareholder satisfaction and society welfare by following the guiding principles like fulfillment of customer need, communication with vendors, Strict compliance with quality control system, on time deliveries and Career development opportunities for employees.

1.3 Raw material

Raw material has an important impact on yarn quality and production. Let's see how it effects on yarn production? There are many parameters through which we can easily assess the properties of cotton; first one is the fiber length which is the most important characteristic of cotton and is measured in terms of staple length, span length and effective length. If fibers have good staple length it results in the form of high production because less twist per inch is required to give enough strength. Second one is the short fibers percentage; higher percentage of short fibers will result in the form of production losses due to more end breakage and higher twist per inch. Third one is the fiber maturity, in case of immature fibers it results in the form of production loss because the yarn made from these types of fibers have poor strength and also it produces breakage in spinning department. Fourth one is the fiber strength which is the dominating feature of fiber. When fiber strength is higher it outcomes in the form of high production due to less twist multiplier. I think while choosing cotton we have to keep in mind all these factors otherwise it results in the form of great loss.

1.3.1 Staple Length

Staple length, a property of staple fibers, is a term referring to the average length of a group of fibers of any composition. Staple length depends on the origin of the fibres

Cotton which are purchase from different regions of Pakistan are as below.

- Layyah
- Jalalpur
- Khan pur
- Uch sharif
- Khannewal

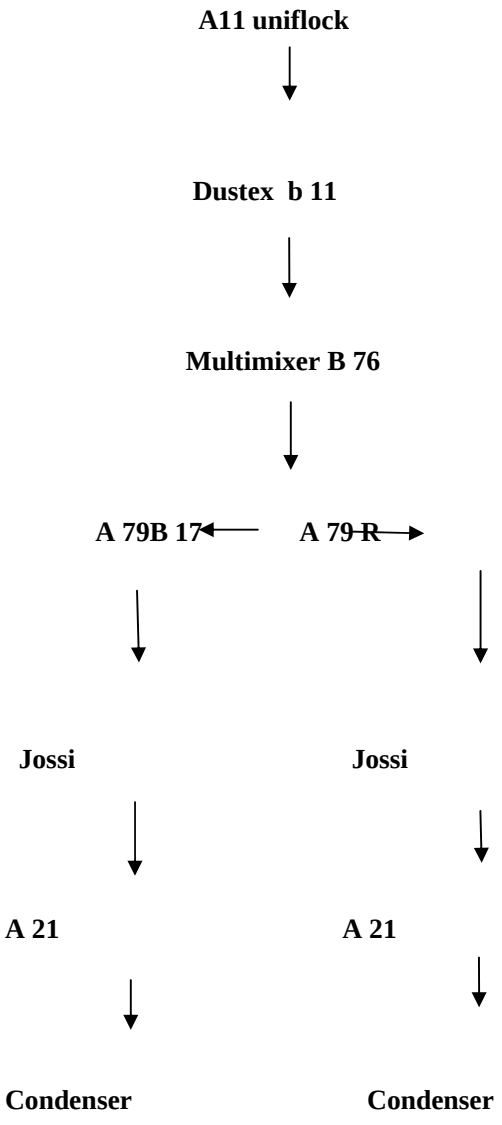
- Pir mehal
- Muzaffar garh

1.4 Machinery Setup

1.4.1 Blow room setup

Blow room setup is contains all rieter machinery.

Flow chart of these machines is below.



1.4.2 Card C 60 REITER

Total number of machine is 11 which all are Reiter Company modal 2010 latest.

1.4.3 Drawing breaker

There are 7 machines.

REITER SB-D-11 modal 2010

1.4.4 Drawing finisher

There are 7 machines.

REITER SB-D-11 modal 2010

1.4.5 Simplex

Total number of machine 5

Company toyata FL 200

1.4.6 Ring

There are 16 machines.

Company toyata Miami Osaka japan 2010.

Total number of spindles 19200

1.4.7 Auto cone

There are 8 machines

Company murata 2010

1.4.8 Machine settings

Settings of blow room for removal of waste

B-12

Cleanning intensity : 0.5%

Waste rate(grid setting) : 05%

B-17

Cleanning intensity : 0.5%

Waste rate(grid setting) : 04%

A-79R

Cleanning intensity : 0.5%

Waste rate(grid setting) : 04%

Settings of card for removal of waste

Taker in setting (mote knives) : 0.2mm gauge

Flates and cylinder setting : 3.5mm

1.5 Introduction to Project

1.5.1 Project Title

Waste Removal Systems In a Spinning Mill and Its Effects On Optimum Quality and Production

1.5.2 Objectives of Project

- Removing waste from Raw Material
- Improve Quality And Production
- Reduce waste percentage
- Reduce cost
- Achieve better Quality
- Achieve customer Satisfaction

1.5.3 Scope

Continuous waste collection system has become an important part of the spinning mills especially in the preparatory section at the expense of additional electricity. It is observed in a majority of the spinning mills that the power spent on this system varies from 4% to 10% on the total energy consumption considering all waste collection systems serving blow room, carding, combing, spinning and winding.

Most of the systems working in the spinning mills are basically similar in construction, installation type, operation and performance. A study was conducted on carding waste collection system (WCS) of a spinning mill to reveal facts specifically in terms of energy saving. The selected mill is a modernised mill and a full-fledged waste collection system is in place for each section. The present study focused only on the carding section WCS

1.5.4 Types of waste in cotton spinning mill

A spinning mill produces the following waste, some in significant quantities:

- directly reusable waste
- dirty waste
- dust and fly

In spinning mill waste are removing in different department such as Blow room, Card and Airfilter.