Major Problems Faced by Power-loom Industry & Their Probable Solutions

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Abstract— India is an agricultural country which is the largest provider of employment. After agriculture comes the textile industry which is the second largest provider of employment in India. It employs around 25 million workers all over India as per the 2015 annual report released by the Textile Industry. Decentralized power looms and knitting constitute the largest components of textile in India, contributing to 2% of country's overall GDP. In Maharashtra there are about 1.1 million power looms which is one of the largest power loom hubs in the country. Power loom is the largest industry in Malegaon, directly employing more than 20% of Malegaon's 3,86,000. Malegaon has about total 4 lakhs looms. The Indian textile industry is challenged by falling exports, low productivity and rising prices, India Spend reported in July 2016.

Key words: Agricultural, Textile Industry, Decentralized Power Looms, Knitting

I. INTRODUCTION

The Indian textile industry acquires an important existence in the Indian economy since its inception. It is one of the largest in the world with a massive raw material and textiles manufacturing base. It contributes to about 4% to the GDP and 17% to the country's export earnings. Almost 35 million people work in the textile related activities. The Indian Textile Industry consists of three segments namely mill sector, handloom sector and decentralized power loom sector. Power loom sector is the traditional part of Indian textile and it provides employment opportunities to millions of people in the rural and urban parts of our country. This paper provides a study to understand the various problems of power loom sector in India and their probable solution. The problems are invention of new technology (power loom), capitalist control, drop off in wages, increased price of yarn, dyeing problems, washing bleaching problems, and so on. The present study is descriptive in nature. The data have been collected through talking with various people and from internet.

Figure 1 shows the market share of textile and apparel in India's market in USD billion. We can easily see that the textile industry contributes to 31% of the Indian market share which is a huge share in its own.

Figure 2 shows the graphical representation of past and expected CAGR (Compound Annual Growth Rate) of India's textile market in INR billion from 2009 till 2023 in future. As per the graph the expected CAGR till 2023 is about Rs. 14.625 billion, which will contribute to a larger extent in India's GDP and economic growth.

Textile industry has become the largest creator of Indian formal-sector jobs, with over 5 lakh jobs added over the last three years, reported by India Spend in July 2016. There is close intervention that the export of Indian textile market will create large amount of jobs and will lead to wage and income growth in all over the country.

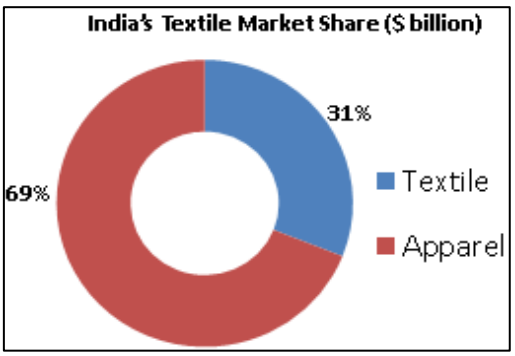

Fig. 1: Shows India's Textile Market Share

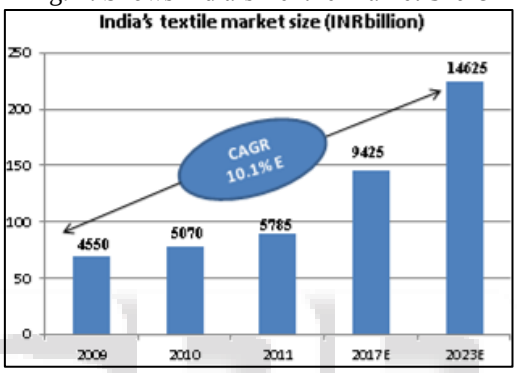

Fig. 2: India's Textile Market Size

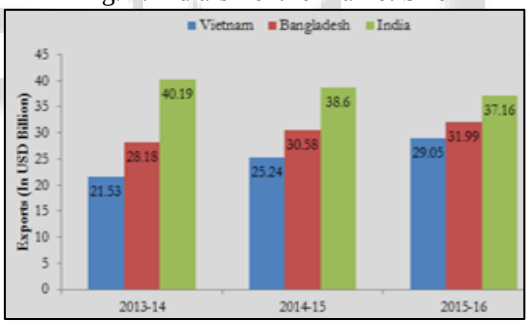

Fig. 3: Export Comparison with Other Countries

Figure 3 shows the export comparison of textile materials of India with that of Vietnam and Bangladesh, the other two big countries of textile sector. The graph shows that the export of our country is getting less year by year as compared to other two countries. To make this sector running we have to increase the export of materials in other countries as much as possible

II. LITERATURE REVIEW

In "International Journal of Trade, Economics and Finance, Vol. 2, No. 3, June 2011", it is shown that the textile industry is made-up of two sectors, namely well-organized mill sector and un-organized sector.

The paper named "DS – a. Bhagalpur, b. Beawar, c. Amritsar, d. Erode, e. Kishangarh, f. Mau, g. Nagari, h. Bhavani, i. Bhilwara, j. Burhanpur, k. Jaipur, l. Ichalkaranji, n. Kanpur, n. Malegaon, o. Meerat" tells about the decentralized power loom sector is the lifeline of Indian

Textile Industry. India is having approximately 19.42 lakhs of power looms weaving almost 19,000 million meters of fabric, and provides employment to more than 7 million workers over 430,000 units. The sector accounts for 63% of the total cloth production in the country. Indian textiles, handlooms and handicrafts are exported to more than 100 countries, with the US being the largest buyer. Readymade garments (RMG) are the largest export segment, accounting for almost 41 per cent of total textile exports.

The paper named "Growth and Prospects of Handloom Sector in India, by Dr. M. Soundarapandian" shows the studies related to Handloom Sector in following ways: To review the origin and growth of handloom industry in India since pre-independence period; to study the growth of handloom sector during the post-independence period; to analyze the performance of the handloom sector after implementation of New Economic Policy in India; to study the impact of Multi Fibre Agreement On Indian textile sector; to review the problems and hindrances Of the dex/isiopment of handloom sector in India; and to suggest concrete measures for the growth of handloom sector in India.

III. MAJOR PROBLEMS IDENTIFIED

The major problems identified in current power loom sector of India are as follows:

1) Availability of yarns and exploitation by yarn merchants,
2) Policy of government,
3) Abolition of Octroi,
4) Scouring, Bleaching and Washing Processes, and
5) Dyeing System.

Here, we have our main focus are problem numbers 4 and 5. All the above problems are explained below in brief:

1) Availability of yarns and exploitation by yarn merchants

The power loom owners had one to four power looms in the beginning. According to the growth and development of power loom industry, the requirement and consumption also increased. But the production and supply of yarn was not increased accordingly. Due to non-availability and short supply of yarn, the power loom industry suffered a lot. Generally the power loom owners are dependent on yarn brokers and yarn merchants, who are usually Gujrat & Marvadee traders. They fix the price of yarn at their own will. In other words, it can be said that the power loom owners are like puppets in the hands of these traders. They exploit the power loom owners and earn a good profit. The power loom industry faces the exploitation from the yarn merchants. The composite mills produce and supply the yarn to the power loom weavers. For the distribution of yarn, a circle has been formed by them. The traders do not pay the sales tax to the government, in this way the Union Government loses crores of rupees. This malpractice is going on since the yarn is produced.

2) Policy of Government

There is no clear cut policy of the government, as far as the textile industry is concerned in general and for the power loom industry in particular. In the words of Ashok Mehta committee report, "It does not appear that the Government had at any time, laid down a clear cut policy in regards to power loom". (Ashok Mehta Committee Report P. No. 31). Despite the important function played by power loom industries, it is not receiving even normal encouragement from the Government.

3) Abolition of Octroi

The Government of Maharashtra Shasan Patra Kramank Nagar Vikas Vibhag abolished the octroi in the State by its notification no. GEN 1099/Letter No. 70/99/ No. 14 dated 26-03-1999. Almost all the weavers and businessmen of Malegaon appreciated the decision of the Government. The weavers were comforted by the abolition of the octroi. Due to this step time, money and energy are saved. Somehow the cloth of Malegaon shall be cheaper than the other centres and it shall compete with them.

4) Scouring, Bleaching and Washing Processes

All these processes are done one after the other in a conventional method. They require large amount of water, space, pollutes environment due to presence of chemicals, etc. They also take lots of time to complete the entire process. The disadvantages of the conventional scouring, bleaching and washing processes are as follows:

- Large amount of water is used, about 1000 litres for 1 kg of cloth,
- All three processes taka large amount of time for about 3 to 4 hours to complete all three processes,
- Chemicals that are used for bleaching are harmful to environments and if released unattended can cause serious water related problems and other things,
- All three processes are mostly done at a single place and they require a large amount of space,
- Solvents are expensive so they must be recovered and purified by distillation requiring special equipment, etc.

5) Dyeing System

The conventional dyeing system requires large amount of water and dyeing materials contain chemical materials. These dyeing materials after mixing with water and letting them in soil and water cause soil erosion and water pollution. The disadvantages of conventional dyeing system are as follows:

- Water consumption is about 80 to 100 liters per kg of cloth,
- The complete dyeing process takes about 7 to 8 hours to complete,
- The dyeing material contains unsafe chemicals,
- To reuse the wasted water we need effluent plants to treat it properly,
- It consumes large amount of water,
- The entire process is little costly.

IV. PROBABLE SOLUTIONS

Here, my main focus is on two major problems that of dyeing system and scouring, bleaching, washing system. The best solution identified for both the problems are as follows:

A. One Step De-Sizing, Scouring & Bleaching Process

This is the solution to the conventional method of scouring, washing and bleaching system. This is the process in which all three methods are being done in a single step by using Sodium Perborate (SPB, $NaBO_34H_2O$). The chemical equation of this process is as follows:

$$NaBO_34H_2O = H_2O_2 + Na^+ + BO_2 + 3H_2O$$

The advantages of this method are as follows:

- It is cost effective,

- It has no additives,
- It has better stability,
- It breaks down easily,
- It is non-toxic in nature,
- It requires less time of about 1 hour as compared to 2-3 hours taken by conventional method,
- It gives higher whither index to clothes,
- It requires less temperature to operate of about 50° to 60° C,
- It requires less space.

B. Waterless Dyeing Process

Due to various drawbacks of conventional dyeing process, the alternate method for dyeing that we can used is Dry Dyeing Process using CO2 as a dyeing medium.

The technology uses reclaimed CO_2 as the dyeing medium in a closed loop process. When pressurized, CO_2 becomes supercritical, a phase between a liquid and a gas. In this state CO_2 has a very high solvent power, allowing the dye to dissolve easily. Due to the high permeability, the dyes are transported easily and deeply into fibers, creating vibrant colors.

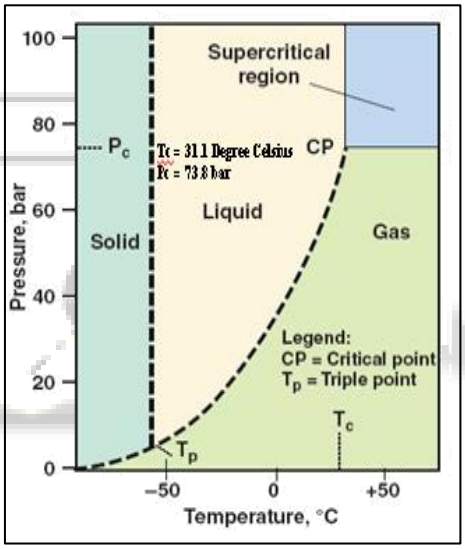

Fig. 4: P-T Diagram Representation of CO_2

Various processes and stages of carbon dioxide that passes through in SFC technology are explained in Figure 4. The observations from the P-T diagram are as follows:

- Above 31°C and under 74 bar CO2becomes supercritical-a state of matter that can be seen as an expanded liquid or a heavily compressed gas,
- Unique Characteristic of Supercritical fluid is its high density that enables dissolution of compounds,
- The supercritical fluid CO2causes the polymer fiber to swell allowing the disperse dye to easily diffuse within the polymer,
- This deep penetration provides effective coloration of hydrophobic polymers,
- Dyeing and removing excess dye are processes that are done in the same vessel,
- Residue dye is minimal and extracted, can be recycled.

We can use CO2 as a dyeing medium because of its following properties:

- It is non-toxic and inflammable in comparison to other harmful dyeing materials,
- It is sustainable and recyclable,
- It is inexpensive and abundantly available,
- It is available in same quality anywhere in world,
- It has best property in its supercritical phase i.e. permeability, density and carrier.

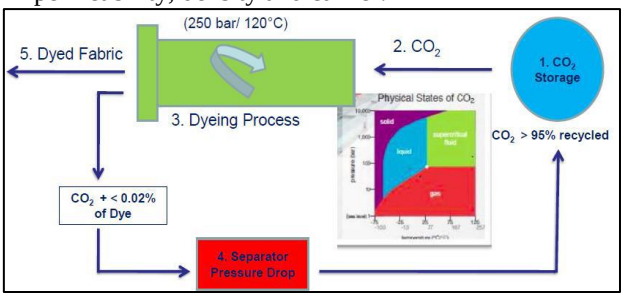

Fig. 5: SFC Dyeing Apparatus

The apparatus shown in Figure 5 used for dyeing with supercritical CO_2 consists of a temperature controller, a stainless steel dyeing vessel, a heater that surrounds the vessel, a manometer (an instrument for measuring the pressure of a fluid), a carbon dioxide pump and a cooler for cooling the head of the carbon dioxide pump. The high pressures used during dyeing (260--- 280 bar) require a special design of the textile machinery and upscaling requires a very significant investment. Furthermore pressures of 260-280 bar in contrast to a few bars in conventional dyeing may also cause mental restrictions.

The advantages of SFC dry dyeing system are as follows:

- Significant lower operational costs,
- Shorter batch time (up to 50%),
- Reduction in energy cost (about 40%),
- Zero water consumption,
- Zero waste water,
- Zero processing chemicals,
- Zero drying cost for dyed fabrics,
- 98% colour consistency,
- Significant less re-dyeing,
- Easy colour correction,
- Above 95% CO_2 is recycled.

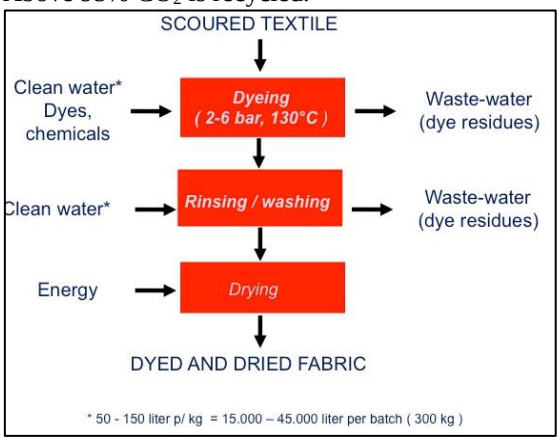

Fig. 6: Conventional Dyeing System

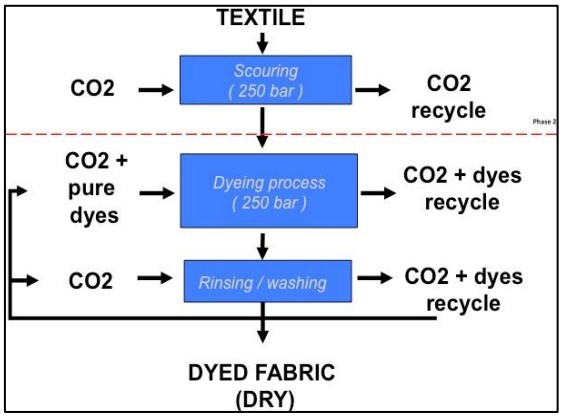

Fig. 7: SFC Dyeing System

V. CONCLUSION

From above mentioned problems and probable solutions we can conclude here that the textile sector in our country is far behind in terms of use of latest technologies, up gradation, quality, etc. as compared to other countries in spite of second largest employer of country. We have to implement many things to get out of all these problems and have to update to new technologies available in market. We must also think to use some unique ways such as to make a composite mill where we can do all processes at a single place.

REFERENCES

[1] International Journal of Trade, Economics and Finance, Vol. 2, No. 3, June 2011;
[2] Problems faced by power loom and handloom industries in India by Mamta Chaudhary, Anjali Saini, Rakhi Solanki, International Journal of Trade & Commerce, Jan-June 2015, Volume 4, No. 1;
[3] DS – a. Bhagalpur, b. Beawar, c. Amritsar, d. Erode, e. Kishangarh, f. Mau, g. Nagari, h. Bhavani, i. Bhilwara, j. Burhanpur, k. Jaipur, l. Ichalkaranji, n. Kanpur, n. Malegaon, o. Meerat;
[4] Power loom Enquiry Committee Report, 1964 Ministry of Textile and Commerce, Government of India Publication, New Delhi Page No. 31;
[5] Ibid. Page No. 89;
[6] Awami Awaz, Weekly, Malegaon dt. 16-03-1964;
[7] TEXTILE DYEING IN SUPERCRITICAL CARBON DIOXIDE, by M. Van der Kraan*a, Ö. Bayraka, M.V. Fernandez Cida, G.F. Woerleeb, W.J.T. Veugelersb and G.J. Witkampa;
[8] An Analytical Study of the Functioning and the Problems of the Powerloom Industry in Maharashtra with Special Reference to Malegaon Dist. Nashik, by Arif Anjum and D. V. Thakor.

