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16990

DP/ID/SER.A/1012

25 May 1988

ENGLISH

PRIVATE TEXTILE MILLS - PRODUCTION MANAGEMENT SYSTEM

DP/BGD/84/051

BANGLADESH

Technical report: Cotton spinning in selected Bangladesh factories\*

Prepared for the Government of Bangladesh  
by the United Nations Industrial Development Organization,  
acting as executing agency for the United Nations Development Programme

Based on the work of Wilfred Alletson  
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Vienna

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ANNEX I - LIST OF DESIGNATED TEXTILE MILLS

ANNEX II - LIST OF MILLS-SURVEYS COMPLETED

This is the final report covering my term of assignment in Dhaka. Based at Dhaka in UNIDO Office engaged with Project DP/BGD/84/051 - Private Textile Industries - Production Management Systems as Spinning Expert from December 1986 until February 1988.

PROJECT RESUME:

Covering 25 textile mills in the private sector throughout Bangladesh, the project being designed to assist individual company in the Balancing, Modernisation and Rehabilitation of their textile mills.

The mills visited are in a very rundown condition in many aspects. This is obviously the result of insufficiently trained and inexperienced technical, management and supervisory staff over a long period. A concentrated effort is required to install effective supervision into the production areas' and away from being simply recorders of production figures.

Any further development of this or future project, should be aimed at training on the practical aspects of machine maintenance and control of personnel operating machinery. Quality control in the mills is minimal and quite often ineffective. This is creating problems not only in quality but also in efficiencies.

Absenteeism is often responsible for losses in production, together with unsuitably trained back up personnel.

DUTIES AS SPINNING EXPERT:

1. The first phase was to carry out surveys of the textile mills. Complete reports and recommendations to be forwarded to the managements of the requisite companies.
2. To discuss the report and recommendations with the management of the company.

3. To offer advice on improving the quality and productivity of the spinning department and spinning preparation areas.
4. To assist in preparing EMRE proposals.

FINDINGS:

The number of ring spindles in private sector in Bangladesh is 480,756 spindles. Additional spindles are being installed or on order at several mills at the present time, other mills are still in the planning stage of increasing their spindle capacity.

The spinning capacity in all mills visited exceeded the weaving capacity where looms were installed. Excess capacity was being sold out to the local hand loom/power loom section which is quite substantial.

Popular counts sold out on the local market: 20s, 30s, 32s, 40s, 60s and 80s. Other counts spun are 10s, 12s, 14s, 16s and 28s.

Raw material used in mills visited:

Cotton: Sudan	1 $\frac{1}{16}$	1 $\frac{3}{16}$	(Mostly containing Honeydew)
Pakistan	1 $\frac{1}{32}$	1 $\frac{1}{16}$	1 $\frac{3}{16}$ 1 $\frac{1}{4}$
America	1 $\frac{1}{16}$	1 $\frac{3}{16}$	
Greece	1 $\frac{3}{16}$		
Bangladesh	- Not observed		

Man-made fibres:

Viscose	38 MM (local and imported)
Polyester	38 MM (imported)

MIXINGS:

Cotton bales when issued from stores are generally issued out in small quantity of 4-8 bales per mixing. The bales irons removed and opened by hand and arranged into a stack mixing. Waste being added at this point, at times indiscriminately and in quite large quantity, especially in the lower count range up to 20s counts. Quite often due to inadequate supervision waste such

as Blowing Room droppings were being re-cycled creating problems in what would normally have been a reasonable blend. Only at one mill visited was the waste blender in the Blowing Room being utilised correctly, in several mills they stood idle. It was not normal procedure in the mills to check trash content of new growths and new stock coming into the mixings.

It was stressed to all concerned that in this first stage of the process, it is of the utmost importance that it be carried out correctly. Mixings should be made up of at least 16 bales where space is available.

The introduction of waste must be supervised, correct types and percentages of waste introduced must be strictly adhered to. This at present is very neglected in most mills. Several mills have Micronaire testing equipment but none are utilised.

All mills were using the cheaper grades of Sudanese cotton which have severe Honeydew content. Mills were encouraged to steam this cotton which helped considerably in the spinning. Pakistani cotton used tends to have a high trash content. This being broken leaf and seed, which is difficult to remove in the Blowing Room, TIDC test 9.2%. The American and Greek cottons being much cleaner.

BLOWING ROOM:

In general the Blowing Room machinery was in fair condition throughout the mills visited. The main problems could be overcome by more effective maintenance, and supervision of operators.

Lattices and beaters are allowed to run with spikes and bars missing and broken. These frequently allow large lumps of cotton through, checking the system and creating unnecessary stoppages. Whilst all mills visited had excess capacity in the Blowing Room few keep to regular maintenance schedules. Maintenance is carried out when the machines breakdown.

Only two mills had scheduled quality control checks carried out in the Blowing Room. Standards recommended to the mills were as follows:

Manual doffing	2-3	Max. CV%
Auto doffing	1.5-2	Max. CV%

Whilst all mills had lap scales to enable all laps produced to be weighed, none had the lap weights recorded to enable the management or quality control to check the number of reject laps produced daily. Spot checks carried out with mill staff on lap stocks, indicated many reject laps are being processed as correct laps.

Figures varied between 6% - 15% of reject laps found in stocks. The feeding of the Blenders tended to be very poor, lattices and reserve boxes would be seen empty quite frequently contributing to the irregularity.

Recommendations were given for the periods between checking the settings and polishing grid bars, cages and beaters to obtain optimum cleaning and opening in Blowing Room machines. 60% - 70% should be obtainable. Three bladed beaters required sharpening or turning in all mills.

Kirshner beaters in several mills were in poor condition. It was recommended, in two mills viz. Chand Textile Mills and Pahartali Textile & Hosiery Mills should arrange bye-passes or use existing bye-passes to prevent excess beating of Polyester and Viscose fibres.

Staffing in the Blowing Room areas was generally quite high. It was stressed that more effective cleaning and opening will lead to improved carding and less wear and tear on card wire.

#### CARDS:

With the exception of Eagle Star Textile Mills and Chand Textile Mills the carding machines are in very poor condition at all the mill. There are many cases where metallic card wire is over 15 years old. The performance of these machines is very bad in quality and production output.

Taker-in wire in all mills was in very poor condition, this wire is also expected to last far too long, especially on synthetic fibre and dirty cottons which dull the wire points.

All mills had a system of some type for card grinding, but do not follow up on the system by actually checking which machines are being ground. In many cases checked, the grinding rollers were set badly some not even touching

the wire. Periods between grinding the cylinder and doffer wire on metallic and flexible cards are far too long.

The mill staffs were given some introduction on card grinding and to consider relevant facts effecting the life of the wire.

Type of material being processed(Cotton or Synthetic) - Trash content

Material throughout per hour/rate

It was pointed out to the staff that metallic wire should be ground only when quality demands it. Grinding rollers in all mills require replacing. Grinding fillet is not changed often enough.

Flexible wire should be ground on a regular basis of running hours, and being much better to grind the wire lightly and more often than letting the wire get completely dull then having to grind heavy or for long periods.

Stripping cycles on flexible wire were adequate but many stripping brackets required adjusting. Stripping of metallic wire was excessive in most mills once every 50 running hours should be sufficient. Sudanese cotton created problems here and quite often the cylinder wire required stripping daily.

Flats are totally neglected, whilst all mills have grinding equipment it is not used correctly on a regular basis. It was quite common for flats to be ground only every 6-9 months(flexible wire). None of the private mills have installed a flat end milling machine.

Card settings in general was very poor, even on cards with metallic wire it is common to find settings varying between 4/1000" to 8/1000" on cylinder/doffer. Much of this was due to poor wire mounting, or in many cases utilising wire from reel ends to cover a complete card cylinder or doffer.

#### DRAWFRAMES:

The drawframes being a very important part of the process in producing a good even yarn, are one of the most neglected machines in the spinning preparation section throughout the textile industry in Bangladesh.



Maintenance is not of a very high standard. The two main factors effecting the quality are:

1. Stop motions: on creels and drafting system are quite often ineffective allowing single/light sliver to pass through.
2. Top rollers: cots are in very poor condition, being very uneven, cracks in the cot. Minimum roller dia are ignored. Roller end bearings in many cases had completely collapsed.

Only three mills visited carried spare cots in stores. We recommended that both quality control personnel and shift supervisors check all top rollers on drawframes at least once each shift, and that spare rollers are available at all times.

Looking to the future mill owners must consider replacement of machines in this section. More emphasis must be placed on quality control by the management and supervisory staff in the drawframe sections.

LAP FORMER:

Whilst these machines are ageing they are in reasonable condition except for the top rollers and stop motion which are in a similar condition as on drawframes.

COMBERS:

Combers in use are mainly late 50s and early 60s models, nevertheless will produce a reasonable product when maintained, set and operated correctly and is quite apparent in one of the mills.

On the whole the combing sections are not adequately supervised, operators should be made aware of the process they are involved regularly with. We recommend checking the following points:

1. Nipper cushion plates are uneven and allow tufts of fibres to slip through.
2. Quite frequently machines are operated without top combs.
3. Poor top rollers, in some cases one top roller missing.
4. Waste extraction based on the use of the fibre diagram was encouraged.
5. Waste extraction percentage equal on each head (Quite often those wire visibly different).
6. Needles on top combs and cylinders to be maintained in good condition.
7. Brushes maintained in good condition.
8. General importance improved.

#### SIMPLEX MACHINE:

The Simplex Machine with overarm drafting system was in many cases producing very poor quality roving. There was several reasons for this which could be brought to a minimum with adequately trained supervisors, and mechanics.

1. Top rollers and aprons in poor condition.
2. Ends running without aprons and platforms.
3. Quite frequently back top rollers were missing which eliminated the break draft therefore produced the wrong hank roving. Yarn produced from these roving being 5-7 counts coarser at the ring frame.
4. Capacity limits of lift and build not utilised.
5. Operators allowing single and double roving to pass on to the rings.

It became quite obvious, the supervisors and some of the technical personnel are not fully conversant with this machine.

Maintenance is often of a very low standard not because of inexperienced fitters but due to the reluctance of their supervisors to involve themselves in the operation of this section.

There is also a tendency to withhold technical information regarding the machine by the fitters.

#### RING FRAMES:

In many cases the older model of ring frame with dead weight drafting system

is giving a more satisfactory result in production per spindle/hour and quality. It is not uncommon to find end breaks rates in excess of 30 breaks/100 spindle per hour. Generally the bottom steel roller settings were unreasonable.

Top roller settings varied considerably throughout a frame, and from frame to frame on overarm drafting. The main problems areas are:

1. Roller cots and aprons are not maintained in a good condition.
2. Variation in cot diameter too great on one arm. Quite often back rollers are not in contact with the bottom rollers.
3. Roller cots loose on the centre boss due to wrong adhesive being used.
4. Roller cots missing.
5. Pneumafil flutes apertures were rough causing blockages.
6. Ring tubes loose on spindles effecting twist.
7. More attention to travellers changing.
8. Frames must be kept clean.

Frame allocations are usually one machine, this would be considered low normally but with an end breakage rate in excess of 30 and the working conditions(i.e. temperatures) a higher allocation would result in an unacceptable amount of waste.

This allocation will allow time for cleaning which in most cases is not carried out. The amount of slubs and thick pieces in the yarns produced would be unacceptable to the international market.

Yarn tested at Textile Industry Development Centre, Savar, Dhaka from various mills were by far outside Uster normal standards. Waste figures stated, ranged from 3-6% but in many cases must be much higher. A figure of 2-3% would be acceptable in the present condition of the mill and the staffing levels.

Production flow through the mills could be much better managed. There are frequent stoppage on the Ring Frames due to shortages of material, ring tubes, roving bobbins etc. When this happens supervisors tend to make smaller packages as a temporary stop gap, this becomes permanent consequently lowering the

efficiencies even further.

Idle spindle rate is high varying from mill to mill from 2% to as high as 15%. Quite often this is due to poor supervision rather than maintenance. Shortages of spare parts is also a contributor to idle spindle problems.

WINDING:

This department without exception requires much improvement throughout the industry. There is a tendency to turn away from the main problem of very poor operation of the winding machines.

1. Clearers must be repaired and used.
2. Spares must be made available.
3. Packages i.e. cones should be in a reasonable condition to obtain a good package.
4. Operators must use knotters where available.
5. Operators should be given allocations according to the count being wound. Not just a 20 drum irrespective of count being wound.

The winding section effects enormously the efficiency of the Warping and Weaving this seems to be totally ignored!

Spinning faults be it - slubs, mixed yarn, dirty/oily yarn, thick and thin yarn etc. are the largest contributor to the down-grading of cloth manufactured in Bangladesh. The problems must be attached from the bale store onwards throughout the process of yarn manufacture, nevertheless the winding machine is the final stage at which the quality may be retained or improved.

The supervision must be good, management must help by supplying material handling equipments suitable for the work. All operators and staff must be educated in the need to produce a good quality product at the right time and cost, this will take time and much perseverance.

REELING:

Problems in the reeling are few but being personnel problems will not be solved easily. These relate to the product being sold by length. Few are fitted with measuring motions that work. The responsibility lies with the operators being conscientious when end breaks and correct length is reached.

QUALITY CONTROL:

The private sector is very ill equipped with testing equipment. Equipment available in all mills is very basic and in many cases very unreliable.

None of the private sector mills have any Uster Electronic or equivalent testing equipment. Much more could be done by the various quality control sections to improve the quality by carrying out simple basic checks. Recommendations were made to:

1. Check Blowing Room mixing.
2. Laps, CV% and spot checks should be done weekly.
3. Nep counts on all cards, wrapped should be done weekly.
4. Wrap drawframe on "all" shifts twice.
5. Weekly tests on simplex.
6. Daily tests on rings, each count, and check CV% weekly.
7. Check trash content of new batches of cotton in Blowing Room and on cards.
8. End break tests on simplex and rings daily.

SUPERVISION:

Generally supervision is of a low standard. There being several reasons for this. One main problem is the fact that few supervisors are conversant with the machinery. This seems to apply throughout the departments, but spinning preparation in particular. Supervisors should be given a good practical basic training as well as theoretical training.

Managements tend to overload supervisors with paper work rather than keeping them in the production areas. The supervisor should be of a good calibre and must be made to realise their work is important. The fact is that in many

mills supervisors are responsible for the running of the department 24 hours 16 of which could be without a manager. Supervisors must command respect from the management and operative staff. Too often the supervisor is bye-passed.

#### PLANT MAINTENANCE:

In general maintenance standards are low. There are many factors contributing to this situation.

1. Senior management must replenish spare parts stocks. In all cases there are minimal in some cases nil.
2. Spares should be of a reasonable quality, when these fail prematurely due to poor material or poor fittings the problem should not be ignored. If necessary, the manufacturers should be consulted to make improvements to their products.
3. Maintenance schedules must be implemented and carried out practically and not simply appear on record sheets.
4. Maintenance staff should be trained by suitably qualified personnel with practical experience, not <sup>be</sup> lectured to from a book?
5. Records should be kept of maintenance carried out and parts used on each machine, this will help to assess:

Machine performance;  
Mechanic or fitter's performance;  
Operator's performance

Whether manpower costs are high or low it is important to attain the highest possible machine efficiency.

Maintenance must be planned at all times with the production requirements of the plant in mind. Nevertheless maintenance should not be neglected due to poor production planning and inefficient operation.

#### MANAGEMENT:

Whilst it is essential that technical personnel and supervisory staff are kept fully informed of the overall situation of the mill. It is also

essential that meeting should be fully informative without being too long. Management must ensure figures quoted in production reports are correct in all details. It is not difficult to see when looking at the ring tubes etc. that quite often some efficiency figures look very doubtful.

ACKNOWLEDGEMENTS:

We acknowledge the co-operation received from the management and staff of different textile mills and wish to thank all concerned.

We also wish to express our appreciation to the Secretary and staff of the Ministry of Textiles, to the Director and staff of the Department of Textiles, to the Chairman and Secretary of Bangladesh Textile Mills Association (BTMA) for their help and assistance throughout the past months.

To the UNDP staff for their support to the project whenever necessary. To SIDFA, JPO of UNIDO office, secretaries, drivers, our thanks for your assistance.

Finally to the Government and people of People's Republic of Bangladesh our thanks for the courtesy understanding and hospitality extended to us throughout the project.

LIST OF DESIGNATED TEXTILE MILLS

<u>Sl.No.</u>	<u>Name of Textile Mills</u>	<u>Date of Transfer</u>
1.	Afsar Cotton Mills Ltd., Savar, Dhaka	March 6, 1983
2.	Al-haj Textile Mills Ltd., Ishardi, Pabna	December 12, 1982
3.	Ashraf Textile Mills Ltd., Tongi, Dhaka	November 30, 1982
4.	Asiatic Cotton Mills Ltd., Chittagong	December 5, 1982
5.	Bogra Cotton Spinning Mills Ltd., Bogra	December 14, 1982
6.	Calico Cotton Mills Ltd., Pabna	February 28, 1983
7.	Chand Textile Mills Ltd., Dhaka	December 8, 1982
8.	Chand Textile(Spinning) Mills Ltd., Dhaka	December 8, 1982
9.	Chittagong Textile Mills Ltd., Chittagong	December 6, 1982
10.	Eagle Star Textile Mills Ltd., Chittagong	
11.	Gawsia Cotton Spinning Mills Ltd., Murapara, Dhaka	December 14, 1982
12.	Goalundo Textile Mills Ltd., Faridpur	April 3, 1983
13.	Habibur Rahman Textile Mills Ltd., Comilla	March 9, 1983
14.	Halima Textile Mills Ltd., Comilla	December 14, 1982
15.	Ibrahim Cotton Mills Ltd., Chittagong	November 13, 1982
16.	Jaba Textile Mills Ltd., Dhaka	December 5, 1982
17.	Jalil Textile Mills Ltd., Chittagong	December 15, 1982
18.	Kushtia Textile Mills Ltd., Kushtia	March 6, 1983
19.	MainmaticTextile Mills Ltd., Comilla	December 2, 1982
20.	Mowla Textile Mills Ltd., Dhaka	January 5, 1983
21.	Muslin Cotton Mills Ltd., Kaligonj, Dhaka	December 2, 1983
22.	Raz Textile Mills Ltd., Jessore	February 13, 1983
23.	Quasem Cotton Mills Ltd., Bainail, Dhaka	February 2, 1983
24.	Serajgonj Cotton & Spinning Mills Ltd., Pabna	November 13, 1982



SURVEYS IN SPINNING COMPLETED

<u>Sl.No.</u>	<u>Name of Textile Mills</u>	<u>No. of Spindles</u>
1.	Asiatic Cotton Mills Ltd., Chittagong	30,928
2.	Al-haj Textile Mills Ltd., Ishurdi, Pabna	27,200
3.	Ashraf Textile Mills Ltd., Tongi, Dhaka	37,380
4.	Chittagong Textile Mills Ltd., Chittagong	37,200
5.	Chand Textile (Spinning) Mills Ltd., Dhaka	27,712
6.	Eagle Star Textile Mills Ltd., Chittagong - Phase I	20,736
7.	Eagle Star Textile Mills Ltd., Chittagong - Phase II	25,056
8.	Eagle Star Textile Mills Ltd., Chittagong - Phase III	29,376
9.	Ibrahim Cotton Mills Ltd., Chittagong	13,696
10.	Jalil Textile Mills Ltd., Chittagong	12,400
11.	Pahartali Textile & Hosiery Mills Ltd., Chittagong	30,832