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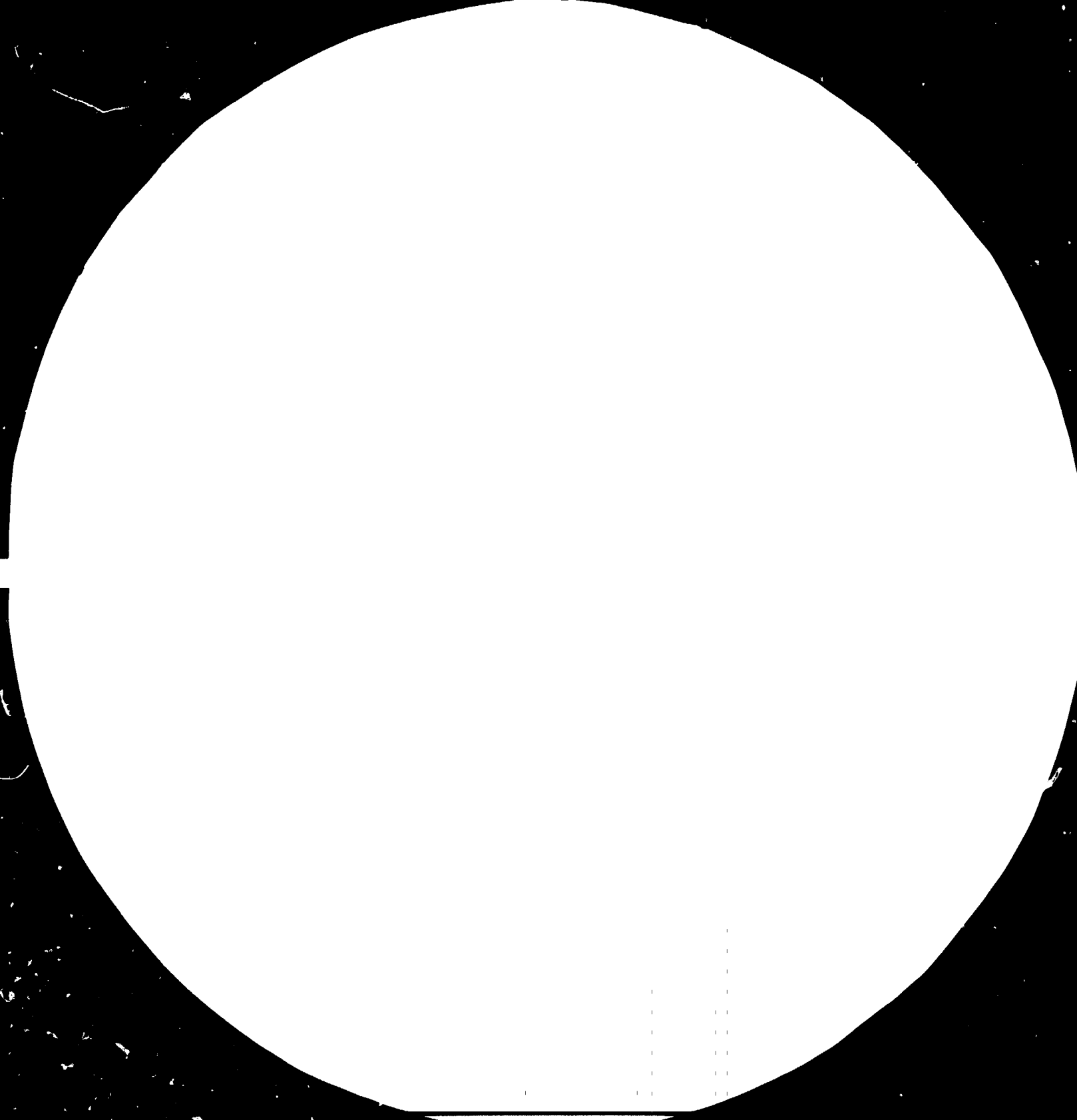

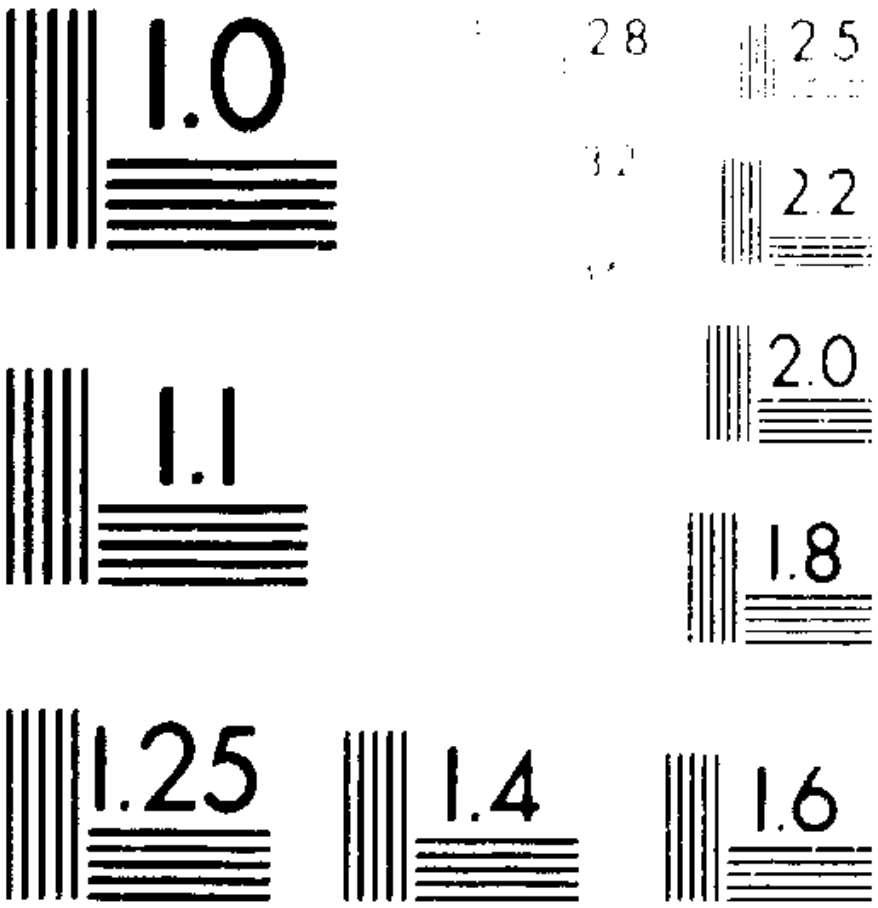

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TEXTILE TESTING AND STANDARDIZATION (Phase II)

(DP/NIR/78/001)

TERMINAL REPORT

Prepared for the Government of Nigeria by the United Nations Industrial Development Organization, executing agency for the United Nations Development Programme.

Based on the work of Dr. G. S. Aschner,
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United Nations Industrial Development Organization
Vienna

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EXPLANATORY NOTES

In the report the following abbreviations can be found:

i	American Association of Textile Chemists and Colorists	-	AATCC
ii	American Society for Quality Control	-	ASQC
iii	American Society for Testing & Materials	-	ASTM
iv	British Standards	-	BS
v	European Organization for Quality Control	-	EOQC
vi	Federal Institute of Industrial Research Oshodi or Institute	-	FIIRO
vii	German Standards (Deutsche Industrie Normen)	-	DIN
viii	Hungarian Standards (Magyar Szabvany)	-	MSZ
ix	International Academy for Quality	-	IAQ
x	International Standard Organization	-	ISO
xi	Naira	-	₦

The rest of the abbreviations are in correlation with those used by the United Nations Industrial Development Organization.

The exchange rate of the ₦ during the period of the project:

1 U.S.$ = 0,766 ₦

ABSTRACT

TEXTILE TESTING AND QUALITY CONTROL (PHASE II)

DP/NIR/78/001

The purpose of the project is to render technical assistance to the Nigerian Government in textile testing and quality control. This included the equipping of the Federal Institute of Industrial Research Oshodi with different textile testing apparatuses and the training of the staff, referring to the utilization of these units, as well as maintenance, respectively. Duration of the field-mission extended from 1 November till 8 December, 1984.

The objectives of the project were the followings

- selection of the necessary laboratory testing equipment
- assist in placing the equipment in order
- instal the equipment and supervise its initial operation
- correct damage or initiate replacement when necessary
- train the personnel in the operation and maintenance
- assist in the preparation of national standards
- advise for further assistance.

All these targets were fully met.

INTRODUCTION

A. Project Background

Although the world textile industry is generally in state of serious depression and has been suffering for several years, there has tended to be a growth pattern in both spinning and weaving of short staple fibres throughout Africa. In the area of the textile industry Nigeria is one of the leading countries in Africa and the rate of growth is above the average African level. The increase of installed short staple spinning capacities between 1969-1979 represents a staggering 188.8%, the highest in Africa. The growth of the installed looms between the same period is 83.1%, the second largest in Africa.

The textile industry in the country consists of approximately 120 mills, 35 of which are integrated mills while the remaining have varying capacities and types of operation. In 1979 there were about 691 thousand spindles and 13.215 looms, well over 1,000knitting machines of various types and a lot of modern dyeing and finishing plants installed and operating throughout the country. This industry is the biggest employer of industrial labour force. According to the latest sources, less than 0.4% of the whole population, actually 274,738 workers are engaged by the industry and the textile industry is responsible for 63,786; which is more than 23% of the total manufacturing labour force. (Federal Office of Statistics, Lagos: Digest of Statistics, Vol. 27, 1979).

Within the textile industry, cotton and synthetic industry play a prominent role, while the development of the wool and carpet industry is expected in the near future,

In 1971 the Government of Nigeria expressed its desire for UNIDO assistance to provide the FIIRO with the necessary basic equipment for textile testing and quality control and to train personnel in the utilization of the equipment. Taking into consideration the limited number of equipment involved in the project the project's objective was achieved. There was a need, however, to introduce a wider range of equipment and to train the personnel in the use and repair of this equipment.

At present, there is not a single institution in the textile and clothing industry in the country which is equipped to meet the needs either of the

Government or of the industry in testing and quality control. The FIIRO, which already has some of the basic equipment and trained personnel, is the most suitable institution to be developed and strengthened to meet these needs in association with the Nigerian Standards Organization.

The FIIRO, which is under the Federal Ministry of Science and Technology, was established in 1955, to assist the industrialisation of the country through research on the industrial use of local raw materials and through the development of local technologies. The Institute also renders technical assistance to the existing industry, either Government or privately owned, by the provision of laboratory facilities for analyses of their products and seeking solutions to their technical and production problems. Further on the Institute's activity extends to the solution of economic and statistical problems raised by the factories, firms, etc. The Textile Unit of FIIRO has been an integral part of the Institute since its establishment. The unit engages in research and quality control. Also offers technical assistance to government agencies. The staff of the unit has served on technical committees of the NSO for the establishment of standards for textiles and allied products. Most of the experimental work for the establishment of these standards was done in the unit. The NSO has continually made use of the facilities in the unit by sending samples for quality control evaluation for the issuance of the Certification Mark to Industries. The unit offers training courses for students and Quality Control Personnel.

Under the Third National Development Plan the FIIRO has been allocated the sum of ₦1.32 million for the expansion and improvement of the laboratory facilities. More than 50% of this amount has been utilized for the building programme. An annual allocation of some ₦100,000 is to cover all equipment requirements of the Institute, which includes all laboratory and pilot plant equipment. There were, therefore, no funds available to enable the textile testing and quality control laboratory to become fully operational.

The textile industry in the country currently aims at increasing its share of the domestic market which is partly satisfied from imports. The project helps to achieve this aim by providing research, technical assistance and specialists capable of improving the quality of the local textile production.

B. Official Arrangements

The assistance for the present project was requested by FIIRO through the Nigerian Government in 1978. The project document was approved on 5 March

1980 by the Government,28 March, 1980 by UNIDO and on 3 April, 1980 by the UNDP.

The project became operational on 23 April, 1981 when the international expert arrived to Nigeria to make his suggestion on the equipment involved and on the fellowship training. This mission lasted for a month. The expert personally supervised and assisted in the development of the project during his next two assignments. Onward 18 March 1982 there was a one-month-mission and from 5 August, 1982 the expert was on the field for 4 months. During these assignments the expert supervised the unpacking of the equipment, installed these equipment, carried out the necessary actions to repair the damages, trained the staff, revised the fellowship training, made suggestions on the further improvement of the facilities and the project itself. During the latter mission UNIDO attached an Electrical Expert to the project for a duration of one month to assist in the electrical installation of the equipment,

The present part of the project became operational on 1 November, 1984 with the arrival of the expert for a 6-week-assignment to Nigeria to fulfil the objectives of the project.

It has to be noted that FIIRO has requested and UNIDO has approved the assignment of the electrical expert for a period of four weeks. Because of the lack of approval on the side of the Nigerian Government the electrical expert could not join the international expert in this assignment. In the mean time, however,the local government has given the necessary approval on the person selected as the electrical engineer of the project.

C. Contribution

The contribution to be covered by the UNDP has come up to US $249, 573.00. The detailed budget is attached in the Annexes (No. 4). According to the original project document UNDP contribution was to be U. S. $218,150.00. This project budget has been revised several times, mainly because of the increased proforma costs, the additional cost of the replacement of the water cooled air conditioning unit by an air cooled one and because of the expert's return mission.

The contribution of the Nigerian Government totals ₦53,500.00 in kind and has not changed in the meantime.

1 OBJECTIVES

Development Objective

Promotion of development in the textile industry based on local resources, adapting imported technologies and modifying existing technologies in order to achieve optimal results in quality and price.

Immediate Objective

To assist the Government through FIIRO in

(i) establishing an adequate laboratory for testing and quality control of textile materials, products and related materials by expanding the present laboratory facilities at FIIRO

(ii) strengthening and developing the capabilities of FIIRO's staff to provide the necessary services to Government and Private Sector.

(iii) developing the capability to render greater assistance in the preparation of national standards and to render assistance in the certification process.

The objectives have not been revised.

The immediate objectives have been fully met. In the course of the mission the equipment involved were installed, the staff of the FIIRO has been trained further on guidance and directives were given to elaborate the referring local standards.

11. MAIN DUTIES OF THE JOB DESCRIPTION

Main duties according to the job description were as follows:

- to instal the equipment and supervise its initial operation
- to report and correct damage, and if not repairable, initiate the necessary steps for the repair of malfunctioning equipment
- to participate in workshop on Textile Testing and Quality Control
- to advise on the eventual need for further assistance

A copy of the job description is attached to the Annexes (No. 1)

111. ACTIVITIES

A. Reviewing advance of the project which has taken place since the expert left Nigeria

Equipment received by FIIRO

In the course of 1983 and 84 the following equipment were shipped to FIIRO:

- water repellency tester
- mechanical treader for carpets
- Wira skein gauge
- air conditioner

This indicates that except two outstanding equipment FIIRO has received all the hardware which was included in the present project.

Books received by FIIRO

The list of books supplied to FIIRO under the auspices of the project is attached in the Annexes (No. 5)

Fellowship training of the staff

Three of the staff members have attended a fellowship training in the United Kingdom. The training actualiy took place in the Shirley Institute, Manchester, England between 3-21 January 1983. The participants were Dr. I. Aladeselu Asst. Chief Res. Officer, Mr. O.M. Odutola Res. Officer I, and Mr. M.D. Balogun Princ. Techn. Officer.

B. Checking the equipment

Beside the equipment recently arrived the condition of all equipment involved in this project was checked.

Condition of equipment which have arrived during 1983-84

All the cases were opened in the absence of the international expert. In the case of opening a parcel which had been seriously damaged during transportation the representative of UNDP, Lagos was on the spot. The equipment, however, have not been put into operation because of the lack of installation.

Serious damages could be observed on the Water Repellency Tester for clothes (type FT-10) marketed by Textest. There were scratches and dents on the body of the equipment, at the soldering to the water reservoir the fixing

joint of the water filter was broken. No instruction manual was enclosed. As the case in which this equipment has been delivered was broken FIIRO initiated a claim addressed to UNDP Lagos on 5th June, 1984. According to UNDP's reply of 15 June, 1984 the underwriters of the insurance have offered UNDP 75 percent of the insured value of the consignment which was accepted.

The expert established further more that the plate which holds the blotting papers and is fitted on the top of the tray which is due to collect the water penetrated through the sample during the test was not properly produced, in addition to that sealings were missing, proper screws have not been used, the sprinkle of the tester was not correctly set by the manufacturer etc. One special shaped weight was missing for the Wira Skein Gauge

The plastic protecting cover of the Mechanical Treader for Carpet (type FC-03) was broken. There was no proper instruction manual enclosed. During the installation it could be observed that the rod which holds the stroking head in position was not correctly manufactured; in the case of the swinging system test the stroking head could not swing because it was blocked.

Several problems have arisen in the case of the Air Conditioner. Parks-Cramer (G.B.) Ltd, whose name has changed in the meantime for Magnavac Air Systems Ltd, have supplied the unit. The heater element of the equipment shipped needs a water supply of 2,000 liter per hour. The engineer of the supplier, Mr. A. Hill was on the field on March 1983. Neither the supplier nor their engineer have taken into consideration the fact that this high quantity of water supply can not be expected in a developing country. On request the supplier offered to change the water cooler condenser with a more efficient air cooled condensing system for £5,079.00. In addition to that the supplier insists in assigning his service engineer to Nigeria once more for additional charges. The air conditioning unit which was supplied therefore was not the proper one for the purpose, and in spite of the installation by the supplier's engineer it can not be used, was not calibrated, no operation manuals have been left etc.

Condition of the equipment which have arrived in the framework of the project in 1982 and before

Some of these equipment are out of order because of the lack of spare parts, some should need new parts in the near future because of the wear and

unreliability of the existing ones, taken into consideration the time which has ellapsed since their installation, other need servicing. In the following those equipment are listed where these symptoms could be observed.

Yarn Eveness Tester (type FY-26)
broken pen (new is needed)
adjusting tape has been broken several times (new is needed)
the electrical circuits of the measuring heads are aged, new panels are needed
electrical adjustment and control are necessary

Zwick Tensile Strength Testing Machine (type 1445)
electrical problem; the moving crosshead is unidirectional.

Scourotester (type FE-09)
electrical parts are missing (they were used up when servicing other equipment)
main switch is out of order (a new one is needed)
plastic programing plates are missing

Fibre Bundle Strength Tester
electrical circuits, switches are faulty
fibre clamp is broken

Bursting Strength Tester
electrical problems during test of the readout

Moncolor D
digital readout is faulty (a new one is needed)

Automatic Yarn Tensile Strength Tester (type FY-17)
drive belt is worn out (a new one is necessary)
more balls and lubricant are required

Shearing Apparatus for cutting to length pre-loaded fibre bundles
tension meter is out of order because of mechanical failures

Drying Equipment with Predryingoven and balance
balance is out of order

C. Installation

Mechanical installation and repairing the equipment

All the mechanical failures, misalignments and production failures listed in section B have been repaired. Sketches were given to the

Engineering Department of the Institute to produce certain parts. The shaped weight for the Wire Skein Gauge, however, has not been finished at the time of compiling this report. At the end of the expert's mission the equipment were free from mechanical failure.

Electrical operation

Because of the lack of the Electrical Engineer and spare parts five equipment could not been repaired. The failures of this equipment are listed in section B.

Spare parts and accessories provided by the expert

On the request of FIIRO the expert had collected and provided for FIIRO's disposal the following spare parts and accessories free of charge:

diagram pen for yarn eveness tester (type FY-26)
plastic programing plates for scourotester (type FE-09)
abrasive material for "Rubtester" abrasion tester (type FF-25)
operation manual for mechanical treader for carpet (type FC-03)

FIIRO has received a quotation, further more, for those spare parts and accessories which could not been provided free of charge.

Operation manuals

Taking into consideration that the expert has provided FIIRO with the correct manual for the Mechanical Treader for Carpet one more manual is needed. This should refer to the Water Repellency Tester, Action was initiated to Messrs. Tex Test (supplier) to supply the operation manual (Annex No.6)

D. Faulty equipment

i. Five equipment are faulty because of electrical problems. These equipments are: Scourotester, Fibre Bundle Strength Tester, Yarn Eveness Tester, Zwick Tensile Strength Tester, Bursting Strength Tester.

ii. Beside the electrical failures the following parts are needed the absence of which make impossible to operate the equipment.

Yarn Eveness Tester: adjusting tape, new electrical circuits for the measuring heads
Scourotester: switches, contacts etc.
Fibre Bundle Strength Tester: fibre clamp, switches
Momcolor D: readout
Automatic Yarn Tensile Strength Tester: drive belt,

iii. The plastic protective cover of the Mechanical Treader for Carpet is broken. This is one of the safety features of the unit, the operator's hand can be seriously damaged if the cover is not in place during the test. Therefore it is not recommended to operate the equipment until the receipt of the replacement.

iv. Because of the water cooler condenser supplied the Air Conditioner can be considered as faulty, as well.

E. Training

Training was provided to the staff referring to the newly arrived equipment. The staff became familiar with the different standards. They were taught the handling and maintenance of the equipment. They carried out tests themselves.

Tables were given to evaluate the test results. The values in this tables were based on the expert's practice. The use of these tables enable the staff to classify textile materials on the results achieved by carrying out tests.

F. Workshop

The one-week-workshop on Textile Testing and Quality Control and the official launching of the equipment have been postponed. The postponment has been discussed thoroughly by FIIRO's Director, senior staff and the expert. The reasons of this decision are as follows:

- The air conditioner cannot yet be operated. Basic modification has to be madeto alter its cooling system to operate on air instead of water.
- There are five equipment which have to be repaired electrically (scourotester, fibre bundle strength tester, yarn eveness tester, zwick tensile strength tester, bursting strength tester). The Nigerian Government has approved the electrical expert, Mr. A. Solymos suggested by UNIDO, recently only. It was not possible, therefore, that the electrical expert should be able to get to Nigeria during the expert staying there.

- There are two outstanding equipment which have not yet arrived (compact micronaire, aspiration psychrometer). The installation of these equipment, therefore, could not been executed.
- The reconstruction of the laboratory building housing the equipment has not been completed in spite of the fact that FIIRO has put a great pressure on the contractor.
- Some of the equipment which have been recently delivered were badly damaged during transportation and production failures were discovered as well. To manufacture some new parts and to correct the damaged ones took more time than it was available.

The electrical expert and the project manager should return to the field after all these listed problems are solved to install and to repair the rest of the equipment, to put a final touch to the project and to attend the workshop meeting.

G. Further accessories and equipment to be acquired

Accessories

Some accessories are needed and should be acquired, like

- For the evaluation of the specimen after tested by the Random Tumble Pilling Tester (Type PT-4, supplied by Atlas Electric Devices Co.) a series of standard rating photographs are needed. Three sets of fine photographic pilling test standards, each set corresponding to size of pills produced, are available from ASTM HQs (1916 Race St., Philadelphia, PA 19103).
- For the evaluation of board type Yarn Eveness Tester (Seriplan) a series of standard rating photographs are needed.
- The Schiefer type Abrasion Tester (Rubtester) was delivered with one abradant only. The following items should be acquired additionally enabling the full utilization of the abrasion tester:

spring steel blade abradant
cross-cut tungsten tool steel blade abradant
wearing brush
carpet clamping device
mounting aid (hold-down press) for clamping carpets and felts

Photographs of these items were published in ASTM D 1175, as well as in AATCC Technical Manual volume 57, 1981/82 edition on page 361 and 362. Care has to be taken that the listed accessories should match and fit the present abrasion tester, therefore the order should be placed at the producer of the mentioned equipment.

In this report it was mentioned earlier that some further accessories are needed, like

adjusting tape for the Yarn Eveness Tester
balls and drive belt for the Automatic Yarn Tensile Strength Tester, fiber clamp for the Fibre Bundle Tensile Strength Tester, etc.,

Equipment

It is suggested to set up a pilot plant simulating the processes in a typical textile industry. This should complement the laboratory techniques and should assist to render more assistance to the local industry especially in the utilization of the local resources.

A draft plan for the machines and equipment involved is attached (Annex No. 7)

Remark on the acquisition of the equipment

It has to be pointed out that at the selection of the equipment the expert's advices were generally taken into consideration. There were a few cases, however, that his suggestions were neglected and some of them may have serious consequences.

- In the expert's report of May 1981 (on page 12) under item No. 8., the following can be read:
  "Bundesmann Water Repellency Tester
  in compliance with the Textile Institute
  Working Party for Waterproofness Testing.
  Producers: Shirley, Goodbrand
  Suppliers: Sas, Heal or CML

The Water Repellency Tester which has been selected is not the Bundesmann type and fulfils the Hungarian Standards only, i.e. tests according to BS, ASTM or DIN can not be executed. The problem actually is that the test results can not be evaluated and interpreted according to the most important, internationally acknowledged standards. Based on the expert's own experience, no correlation exists between the results obtained by the selected and the Bundesmann type equipment.

- In the same report mentioned earlier, it was suggested under item No. 19 that a Rothschild type Static Voltmeter should be acquired. (on page 14). The selected equipment was supplied by Schroeder the operating manual of which states the following:

> "Keep the instrument off from moisture which might cause leakage leading to errors".

Because of the high relative humidity there are problems in using the Statometer, and preparation is needed which may last a few hours before every measurement. That limits the use of equipment up to a great extent.

- Certain equipment which were due to operate together were selected from different suppliers. As it was stated in the expert's letter of 7 October, 1982 addressed to Mr. A. G. Evstafiev, UNIDO, the presser foot of the Carpet Static Loading device, produced by WIRA and that of the Carpet Thickness Gauge, supplied by Messrs. Schroeder were not compatible. The latter has not fulfiled the requirements of the BS 4939 and BS 4051 referred in the expert's cited report (on page 13, item Nos. 14,15).

For a different reason the Mechanical Treader for Carpets can not be operated together with Carpet Thickness Guage. This latter does not fulfil the requirements of the BS 4051, as it was previously stated, and therefore it causes difficulties in the evaluation of the results obtained by using the Mechanical Treader.

IV. OUTSTANDING EQUIPMENT

There are two missing equipment which have failed to arrive till the expert's left the field. These equipment are as follows:

item No. 29 Compact Micronaire
34 Aspiration Psychrometer

V. ACHIEVEMENT OF THE IMMEDIATE OBJECTIVES

The immediate objectives were fully met. FIIRO is in possession of a well equipped laboratory on the area of testing textiles. The staff can carry out the necessary tests according to international standards and they can evaluate the results and classify textile materials accordingly, FIIRO's staff too has accumulated the knowledge to elaborate national standards as well.

Handbooks have been compiled, titled "Handbook of Textile Testing and Quality Control""further more" Testing and Analytical Services for the Textile and Allied Industries" with a view to intimating the textile and allied industries of the highly improved facilities available for their use and for training purposes, respectively.

The official launching of the equipment should take place in the course of 1985. A one week workshop on Textile Testing and Quality Control is to follow the official launching. Participation will be extended to ECOWAS countries for the sake of international utilization of the facilities. This workshop should be organized after the reconstruction work of the laboratory building has been completed, the unit to supply the standard atmosphere for testing is in operation further more all the equipment are installed and repaired both in mechanical and electrical point of view. FIIRO has expressed its desire to extend the international expert's assignment by an other six weeks and to take the advantage of the electrical engineer' presence for a complete month to finish the installation of the equipment, to assist in the final preparation, further more to present papers and participate at the workshop.

Further expansion of the project, i.e. to set up a pilot plant, to improve the quality orientation of FIIRO and to develop FIIRO to a regional training centre status, respectively should increase the utilization; not only to achieve the objectives but to surpass them to a great extent.

IV. FINDINGS

Taking into consideration all the achievements FIIRO has made on the area of industrial research and service in general or on the same for the textile industry alone, it is an ideal organization for UNIDO assistance so far and in the future, respectively. The utilization of this project up to now is excellent.

FIIRO has made all the efforts to provide a far better infrastructure for the project than it exists in Nigeria in general. The Institute was able to provide a constant water supply and has acquired three new generators to compensate the unreliable power supply in the region. FIIRO has put a great pressure on the contractor who is responsible for the reconstruction of the laboratory building. In spite of all initiatives the reconstruction work has not yet begun.

The staff of the Textile Department has been increased numerically and now it seems that the permanency of the staff has been achieved. The head of the Textile Department, Dr. I. Aladeselu was an efficient partner of the expert, he assisted a lot and made all facilities available to achieve success. The Director of the Institute, Dr. O. A. Koleoso has rendered an effective support to the activity of the expert by all means and his assistance has a great effect on the achievements.

It is evident that the project has made an effect on the local industry and the expansion of the project will further increase the utilization.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

The objectives of the project were as follows:

- selection of the necessary laboratory testing equipment
- assist in placing the equipment in order
- install the equipment and supervise its initial operation
- correct damage or initiate the replacement
- train the personnel in the operation and maintenance
- assist in the preparation of national standards
- advise for further assistance.

These targets were fully met and achieved.

B. Recommendation

i. To expand the project to set up a Pilot Plant

- (Activity needed by UNIDO)

The Institute already possesses pilot plants for food processing further more for the ceramics which are in operation. A pilot plant set up simulating the processes in a typical textile industry should complement the laboratory techniques and should assist to render more assistance to the industry and to carry out more effective research activity. A draft plan for the pilot plant is attached to the Annexes (Annex No. 7).

II To improve the quality orientation of FIIRO

In the course of this project FIIRO has been equipped with equipment enabling the Institute to carry out tests, do research work on the field of material testing, evaluate the test results and assess the quality of the textile products.

There is a suggestion included in this report referring to the Phase III of the present project to equip FIIRO with a Pilot Plant. This provides FIIRO the necessary hardware for research on the processing field as well and the facility to render effective assistance to the Nigerian textile and allied industries to solve their processing problems.

Beside all these FIIRO should possess the necessary software to assist factories to establish and to improve their own quality organizations and to improve their technique and effectiveness. FIIRO alone can not control the quality of the whole Nigerian textile industry but it can be a leading institution in the implementation of the advanced quality control in the industry through the channel of the quality control organization of each factory.

For the above mentioned reasons the quality orientation of FIIRO should be improved and the staff should be familiar with the theory of quality control, statistical quality control, quality assurance and quality management. This aim can be reached as follows:

- Training of the persons involved abroad

There will be an inplant group training programme in the filed of quality improvement of industrial products organized by UNIDO, to be held in the Training Centre of the Japan Association of Overseas Technical Scholarship, Tokyo from 24 January 1985. Dr. I. Aladeselu Asst. Chief Res. Officer, the main counterpart of the expert in the present project has already been nominated to attend this seminar because of the benefit of the project. Approval of UNIDO, however, has failed to reach UNDP or FIIRO.

- **Local training of the staff.**
  A seminar should be organized under the auspices of UNIDO on quality control, statistical quality control and quality management. The international expert should organize this seminar but some internationally accepted personalities, whose special field corresponds with the listed topics should also be involved, like Mr. Richard A. Freund. (Mr. R.A. Freund is the president of Quality Planning Service, and a consultant at the Rochester Institute of Technology, past president of ASQC, member of IAQ, can be reached on 155 Yarkerdale Drive, Rochester, New York 14615, USA).

- Acquisition of books.
  The list of books which should be acquired is enclosed to the Annexes (No. 8)

Further assistance to develop FIIRO to be the training centre of the region

(Activity needed by UNIDO)

It is always favourable to select and to develop a local institution to be the training centre for a given area. The local institution has the advantage over the foreign ones; knowing better the local circumtances and need, how to train and what to teach.

In this report there is a suggestion to give further financial assistance to FIIRO to set up a pilot plant. If this suggestion is accepted with some additional assistance FIIRO can easily be developed to be the training centre for textile testing and quality control not only for Nigeria but for the region as well.

The other advantage to select FIIRO as a regional training centre is that by this time, as a result of previous UNIDO projects, it should possess most of the hardware and its staff will have most of the knowledge which are necessary for an efective training centre. This means that the cost to achieve this aim is far less significant than in the case of other institution which has not benefited from previous UN assistance.

The creation of the suggested training centre should highly increase the utilization of the present project as well.

IV. Further accessories to be acquired (Activity needed by UNIDO)

In Chapter III, Section G the list of accessories can be found the acquisition of which should greatly improve the utilization of the project.

V. Reconstruction of the laboratory building and producing different furniture (Activity needed by FIIRO)

In the expert's previous report a detailed description was given about the reconstruction of the building which houses the textile laboratory. This included the creation of a mechanical laboratory section which is provided with the standard atmosphere for testing, that of a separate small room for the safe conduct of the flammability test and the creation of a chemical laboratory section and that of a room for the staff.

The reconstruction of the lighting system was also detailed; further more the construction of certain laboratory furniture was discussed.

VI. Finding the local alternative of different materials needed to perform and to standardize tests (Action needed by FIIRO)

Beside the specimen there are certain materials needed to execute tests. Abrasive paper of given quality is needed for the abrasion test, special abrasive resistant adhesive is needed for the accelerotor and pilling tests, thread of a prescribed quality is needed to execute the flammability test etc. These materials can be obtained from foreign producers but because of the high consumption it is strongly recommended to find the local version of the needed materials.

Parallel comparative tests should be carried out at FIIRO and the correlation of the results should be calculated which were obtained using the original materials and their local substitute. On the basis of these comparative tests local standards can be elaborated taking into consideration the local resources.

VII. Organization of a workshop and extension of the international expert's assignment (Activity needed by UNIDO and FIIRO)

It was mentioned earlier (Chapter III, Section F) that because of several reasons the one week workshop on Textile Testing and Quality Control and the official launching of the equipment have been postponed. This should be organized in the course of 1985 after the Air Conditioner has put into

operation, the outstanding equipment have arrived and are installed in mechanical and electrical point of view, and the reconstruction of the laboratory building has been completed.

FIIRO wishes therefore to suggest an extension of the expert's assignment for a period of 6 weeks and should like to make use of the service of the electrical engineer for a period of 1 month. For both assignments FIIRO had initiated and has already received the Government's approval.

This would enable the expert and the electrical engineer to complete the installation, repair the failures and to participate and present papers at the workshop. By April-May 1985 the laboratory building will be ready to give flawless demonstration during the launching of the equipment and the workshop.

LIST OF ANNEXES

UNITED NATIONS

Annex No.1

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO

4 June 1984

PROJECT IN THE FEDERAL REPUBLIC OF NIGERIA

JOB DESCRIPTION

DP/NIR/78/001/11-01/31/3/K

ost title	Expert in Textile Testing Equipment and Standardization
uration	One month
ate required	September 1984
uty station	Lagos
urpose of project	To promote development in the textile industry based on local resources, adapting imported technologies and modifying existing ones in order to achieve optimal results in quality and price.
uties	The expert will work in co-operation with the personnel of the Federal Institute of Industrial Research (FIIR) and will specifically be expected to:

1. Instal the equipment and supervise its initial operation.
2. Report and correct damage and, if not repairable, initiate the necessary steps for the repair of malfunctioning equipment.
3. Participate in workshop on Textile Testing and Quality Control.
4. Advise on the eventual need for further assistance.

The expert will also be expected to prepare a final report, setting out the findings of the mission and recommendations to the Government on further action which might be taken.

.../2

Applications and communications regarding this Job Description should be sent to:

Qualifications: University degree in Engineering or Applied Physical Sciences or equivalent experience in the assembly, installation, calibration, operation, maintenance and repair of scientific testing instruments, particularly those used for textile testing.

Language: English

Background information: The textile industry in the country consists of approximately 120 mills, 35 of which are integrated mills (cotton and other fibres) while the remaining have varying capacities and types of operation. This industry is one of the biggest employers of the country's labour force. In 1972, the textile industry accounted for 22.1 per cent of the total manufacturing labour force and was the second largest contributor to manufacturing value added. Within the textile industry, cotton and synthetic industry play a prominent role, the jute and silk industry being less important. A development of the wool and carpet industry can be expected.

At the request of the Government, a project was developed which was designed to provide the Federal Institute of Industrial Research (FIIR) with basic equipment required for textile testing and quality control and to train personnel in the working, repair and maintenance and use of the equipment. The project's objectives have been achieved. There is a need, however, to introduce a wider range of equipment and to train personnel in the use and repair of this equipment.

At present, there is not a single institution in the textile and clothing industry in the country which is equipped to meet the needs either of the government or of industry in textile testing and quality control. The FIIR, which already has some of the basic equipment and trained personnel, is the most suitable institution to be developed and strengthened to meet these needs in association with the Nigerian Standards Organisation. Under the Third National Development Plan (1975 - 1980) the FIIR has been allocated the sum of N 1.32 million for the expansion and improvement of the laboratory facilities. Of this amount, approximately N 700,000 have been utilized for the building programme. The new laboratory buildings which will also house the textile testing and quality control laboratory are being completed. An annual allocation of some N 100,000 is to cover all equipment requirements of the Institute, which includes all laboratory and pilot plant equipment. There are, therefore, no funds available to enable the textile testing and quality control laboratory to become fully operational.

The textile industry in the country currently aims at increasing its share of the domestic market which is partly satisfied from imports. The present project will help to achieve this aim by providing research, technical assistance and specialists capable of improving the quality of local textile production.

Annex No. 2

International Staff

At this phase of the project the international staff consisted of the author of this report only. His name, nationality, expertise and duration of service on the field are as follows:

Dr. G. S. Aschner, Hungarian

Expert on textile testing, quality control and standardization

From 1 November till 8 December 1984.

Annex No. 3

Senior Counterpart Staff

In Table No. 1/3 the names, qualifications and position of the senior counterpart staff are given. The service they provided extended the whole duration of the international expert's presence in Nigeria.

STAFF IN THE POLYMER AND TEXTILE LABORATORY Table No. 1/3

NAME	QUALIFICATION	DESIGNATION
Dr. Ibitoye ALADESELU	B.Sc. (Hons) Chemistry; M.Sc. (Fibre Science) Ph.D. (Polymer Sci. & Techn.), C.Text, A.T.I. C. Chem, M.R.S.C.	Asst. Chief Research Officer
Dr. Eric E. IKPEAMA	C.Text, A.T.I, M.Phil Ph.D. (Colour Chemistry	Senior Research Officer
Mr. Olusola M. ODUTOLA	B.Sc. (Hons) Fibre Science C. Text, A.T.I.	Research Officer 1
Mr. Mudashiru D. BALOGUN	O.N.D. (Textile Techn.) H.N.D. (Textile Techn.) C.Text, A.T.I.	Principal Technical Officer
Mrs. E. O. OREKOYA	O.N.D. (Textile Techn.) H.N.D. (Textile Techn.)	Higher Technical Officer
Mr. Bisi O. OLAWOYIN	OND (Textile Techn.) City and Guilds Advanced Dyeing of Textiles	Higher Technical Officer
Mr. Richard ABANGMA	Dipl. in Electrical Wiring and Installation	Technical Officer

Annex No. 4.

Revised Project Budget

COUNTRY	PROJECT NUMBER AND AMEND	P.P.C.S.A.	DATE PRINTED
NIGERIA	DP/NIR/78/001/ 1/ 01/37	31.3.k	84/04/02

PROJECT TITLE
TEXTILE TESTING AND QUALITY CONTROL (PHASE II)

PROJECT PERSONNEL EXPERTS POST/TITLE	TOTAL M/M	TOTAL $	77-81 M/M	77-81 $	1982 M/M	1982 $	1983 M/M	1983 $	1984 M/M	1984 $
11-01 TEXTILE CONSULTANT	7.0	43,579	1.0	5,719	5.0	30,520		1,310-	1.0	8,650
11-02 ELECTRICAL ENGINEER	1.0	6,805			1.0	4,810		1,995		
11-XX	8.0	50,384	1.0	5,719	6.0	35,330		685	1.0	8,650
15-00 PROJECT TRAVEL		424						224		200
16-00 OTHER PERSONNEL COSTS		12,640								12,640
IX XX	8.0	63,448	1.0	5,719	6.0	35,330		909	1.0	21,490
32-00 STUDY-TRS/UNDP GROUP I		17,117				17,571		454-		
41-00 EXPENDABLE EQUIPMENT		1,591				1,591				
42-00 NON-EXPENDABLE EQUIPM.		165,553		153,500		6,253		7,189-		12,989
4X-XX		167,144		153,500		7,844		7,189-		12,989
51-00 SUNDRIES		1,864		1,044		320				500
TOTAL	8.0	249,573	1.0	160,263	6.0	61,065		6,734-	1.0	34,979

Annex No. 5.

BOOKS SUPPLIED BY THE UNIDO

(1) Juran J. M. : Quality Control Handbook, 3rd Ed., McGraw Hill Book Co. 1976

(2) B.S. Handbook 11:1974: Methods of Test for Textiles. British Standards Institution, London 1974.

(3) Davies O.L. and Goldsmith P.L.: Statistical Methods in Research and Production, 4th Ed., Longman Group, Ltd 1977.

(4) 1981 Annual Book of ASTM Standards Part 32 ASTM, 1981 - 2 copies

(5) 1981 Annual Book of ASTM Standards Part 33 ASTM, 1981 - 2copies

(6) Graf - Henning H.J. Wilrich P. Th.: Statistische Methoden bei Textilen Untersuchungen. Springer - Verlag Berlin, 1974 - 2 copies.

(7) Sommer H. and Winkler Fr.: Handbuch der Werkstoffprüfung Vol. 5: Die Prüfung der Textilien Springer - Verlag, Berlin, 1960 - 2 copies.

(8) Technical Manual of the American Association of Textile Chemists and Colorist, Vol. 57. 1981/82 - 2 copies.

Annex No. 6

UNITED NATIONS DEVELOPMENT PROGRAMME

OFFICE OF THE RESIDENT REPRESENTATIVE IN NIGERIA

P.O. BOX 2075
LAGOS

TELEPHONES
xxx680731
xxx680906
xxx680792
xxx680969

TELEPHONES
603730
603731
603732
603733

TELEX No. 21372
CABLES: UNDEVPRO-LAGOS
STREET ADDRESS:
11, QUEEN'S DRIVE-IKOYI

Ref.

Date 15 Nov. 84

Messrs. Tex Test
8802 Kilchberg
Zurich
Switzerland

To the attention of the Sales Manager.

Subject: Request for Operating Manuals.

Dear Sirs,

Under the auspices of a UNIDO project the Federal Institute of Industrial Research Oshodi received one piece of your Water Repellency Tester for Clothes Type FF-10 on May 23, 1984. Serial No. of the equipment is 7707-04.

Much to my regret no Operating Manuals were enclosed.

Would you please have two Operating Manuals for the above mentioned equipment mailed to the address given below

Federal Institute of Industrial Research Oshodi
Attention: Dr. I.Aladeselu Asst.Chief Res.Off.
P.M.B. 21023
Ikeja, Lagos State
Nigeria

Your kind assistance in this matter should be highly appreciated.

Yours sincerely

[signature]

[illegible]
Project Manager

Annex No. 7.

TO SET UP A PILOT PLANT AT FIIRO

Because of the time element a proper project document could not been elaborated. Neitherwas the international expert aware of the fact that in this report a detailed suggestion on the expansion of the project should be included. The producer and price of the machines to be selected, therefore, can not be given. This draft is intended to be a document only on which future activity can be based.

INTRODUCTION

There has been a rapid increase in textile production in the recent years. It has even continued when the rest of the world suffered from stagflation.

FIIRO has received assistance from UNIDO on the area of textile testing,quality control and standardization. As a result of these projects FIIRO possess a well equipped laboratory and the staff is able to utilize these equipment. A pilot plant set up simulating the processes in a typical textile industry should complement the laboratory techniques and should assist to render more assistance to the industry and to carry out more effective research activity especially in the area of using and processing local raw materials.

The suggested project should include the following

1. Selection of the necessary machinery for the pilot plant
2. The acquisition of the machinery
3. Providing the proper housing for the pilot plant
4. Installation and reparation of the machinery, training of the staff, respectively.

This draft is intended to deal with the first point only. The following, however, should be mentioned:

- Accomodation of the pilot plant should be provided through FIIRO by the Government
- The project should include 3 or 4 experts including spinning,weaving, knitting and finishing specialists and an electrical engineer.
- Training of the staff should consist of their teaching on the field by international experts further more of fellowship training of the staff abroad.
- The project should include the machinery processing cotton, synthetic fibres and their mixtures only.

MACHINERY FOR THE PILOT PLANT

Small scale operation machinery should be selected, which can be grouped according to the following:

- spinning and preparatory machines
- weaving and preparatory machines
- knitting machines and machinery making up knitted goods
- dyeing and finishing machines

Spinning and preparatory machines

Opening and cleaning: bale plucker and doffer
Carding machine
Drawing and doubling: conventional draw frames
Combing
Rowing machine
Spinning: ring spinning, open end spinning machines

Weaving and preparatory machines

Cone winding machine
Warping
Slashing
Drawing in
Pirn winding
Weaving machines: conventional automatic loom, shuttleless loom (Sulzer), air jet loom

Knitting machines and machinery making up knitted goods

Single knitting machine
Warp fabric knitting machine
Cutting device
Sewing machine
Pressure (type Hoffman)

Dyeing and finishing machines

Singeing machine
Desizing machine
Scouring machine (Kiering machine) for fabric

Saturators (sodium hypochlorite + caustic soda/hydrogen peroxide)

J box

Vaporloc-steamer

Washers

Drying machine

Mercerising machine

Dyeing machines: jigger, HT apparatus, jet

Padding mangle

In addition to the listed machinery some auxiliary equipment are needed, like

Effluent treatment plant

Boiler, etc.

Annex No. 8.

List of books to be acquired.

Feigenbaum A.: Total Quality Control 3rd edition
McGraw Hill Book Co. 1984

Crosby P.: Quality without Tears
McGraw Hill Book Co. 1984

Crosby P.: Quality is Free
McGraw Hill Book Co. 1980

European Organization of Quality Control: EOQC Glossary of Terms used in the Management of Quality Control
5th edition. English language.
EOQC Secretariat, P.O. Box 2613,
CH-3001 Berne, Switzerland.

American Society for Quality Control: Glossary and Tables for Statical Quality Control
ASQC, 230 West Wells. Milwaukee,
WI 53203.