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BRAZIL

Technical report: Findings and recommendations
(second mission)*

Prepared for the Government of Brazil

by the United Nations Industrial Development Organization,

acting as executing agency for the United Nations Development Programme

Based on the work of Gary W. Smith
Knitting technologist

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United Nations Industrial Development Organization
Vienna

*

This document has not been edited.

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1. SUMMARY OF RECOMMENDATIONS

- a. The seminar and plant visitation concept is a good one and should be continued next year and in the future.
- b. Since there is only a 4 week allocation for 1990, one possibility is to prepare material for one week in Rio and spend one week each in Joinville, Blumenau and Jaragua do Sul.
- c. If the program is extended beyond 1990, a two week period in each lecture location would be desirable.
- d. In future programs it would be desirable to have two levels of instruction run back to back to minimize any problems with material repetition; a one to two day program for upper management during the two week period would also be beneficial.
- e. The companies visited are now ready for an entry level SPC (Statistical Process Control) course either in 1990 or beyond: if the seminar-plant visitation program is extended then more in-depth material in an SPC course should be presented.
- f. It would be desirable for the CETIQT professor to translate the completed seminar material entirely into Portuguese and make a video tape of the material and then a copy of the tape should be given to each participating company.
- g. Material presented in the program must have practical applicability.
- h. Certificates should be given to all participants.

- i. More complete program details must be made available to all concerned parties as soon as possible; upper level management in each knitting company should also be included.
- j. In any post 1990 project, it is recommended that part of any program similar to this one should contain some spun yarn manufacturing exposure; without it even the most basic attempts to achieve supplier certification will be unsuccessful.
- k. During plant visitations, the manager or owner should be encouraged to accompany the UNIDO specialist during the audit; they should also be encouraged to attend the audit review session at the end of the visitation. Results of progress could then be sent to CETIQT for review and/or follow up.
- l. CETIQT should be encouraged to send a questionnaire to participating companies asking for their opinion of the program; recommendations should be followed up, and when possible, incorporated into the program.
- m. More texts in Portuguese need to be made available to the Brazilian knitting industry; this knitting specialist is willing to do this if a proper amount of time is allowed.
- n. In addition to the two week per week seminar approach in any post 1990 program, it would be beneficial to conduct two to three day group projects on a plant by plant basis. In this way, the dramatic benefits of problem prevention and continuous improvement concepts (for example) could be demonstrated on an on site and instantaneous basis. Here, seeing would be believing.

2. INTRODUCTION

This project is a continuation of previous work that has been sponsored by UNIDO. Initially, the program was designed to determine the needs of the small and medium sized companies in Santa Catarina. During the early stages of the program attention was focused on plant visitations and on-site technical assistance. Later the work was expanded to include plant visitations, on-site technical recommendations and technical seminars.

As the program developed, the content and the approach taken in both the plant visitations and seminars has also changed. In this context, it should be noted that many of the topic headings in the seminars on a year to year basis are similar but the material discussed is progressive and more challenging. It is assumed that material discussed previously, in other seminars has been understood and essentially not forgotten.

In all lectures, the applicability of seminar material has been stressed.

During the on-site visits and seminars there has always been a professor from CETIQT present for translation and exposure purposes. By utilizing this arrangement, the CETIQT professor is not only exposed to conversational English but to teaching and application techniques that often differ from those used at CETIQT or in Brazil. It is hoped that the exposure to these techniques which have been successful in the U. S. will prove to be useful in subsequent Brazilian projects involving CETIQT professors and/or leaders in the Brazilian textile industry.

3. PROJECT PROGRESS

This specialist is quite satisfied with the overall progress of the project. Indeed, in terms of the seminars being offered, there is generally positive feedback and participants appear to be happy not only with the topics being discussed but with the practical applications of the material. It should be noted however that some companies are still having a difficult time coping with the idea that standardization (at least to some extent) and a methodical approach is both desirable and necessary.

In terms of scheduling the seminar and plant visits, there has been somewhat of a problem in Blumenau but apparently such difficulties have been resolved by personnel at CETIQT. No further problems are anticipated.

Although CETIQT has a potentially bureaucratic organization, it is amazingly efficient considering its size and distance from Santa Catarina. Not only are the people at CETIQT very helpful in all respects, but they seem to be able to work with governmental and industrial agencies in an efficient manner. Indeed, by their efforts many potential problems have been prevented or minimized.

Because this specialist is in regular contact with CETIQT, ideas are exchanged on a frequent basis and it is possible to more clearly identify with the needs of the textile industry in Brazil. Many of the ideas that have been discussed with CETIQT have been incorporated in the work done to the present time. All three locations have expressed an interest in continuing the program next year.

4. RECOMMENDATIONS

4.1 Seminar

- a. In seminars offered during the last couple of years, it is apparent that in certain cases the same student has attended each of the yearly seminars whereas in other cases completely new students have attended. This has created a problem in that as seminar material became more advanced, people without the proper background sometimes have had trouble keeping up. On the other hand, if material of a fundamental nature is introduced for repeat students there is frustration for the advanced students.

So far this has not created excessive concern because the content in each seminar is progressive and there is a minimum of repetition.

In the future, one recommendation for optimizing the benefits of these seminars would be to have a 2 hour beginners level seminar followed by a 2 hour advanced seminar over a two week period of time in the afternoons.

In the past two years when there has been a plant visitation and seminar combination, there has not been two weeks available in each location to allow separate instruction levels to apply and discuss the material presented to the depth desired.

Part of any continued (post 1990) program must contain some spun yarn manufacturing technology to give knitters the necessary background to try to certify their suppliers.

- b. Although seminar material is designed to incorporate theory and proper industrial practice, there is only a limited amount of time available in the seminar to discuss more than a limited number of the common observations noted during plant visits. It would therefore be very desirable in the future to have sufficient time available in each location to become much more involved in group projects in lecture. At least a two week assignment per location (involving seminars and plant visitations) would be adequate to allow for this recommendation.
- c. The emphasis in seminars so far has been in educating floor level supervisors and mechanics in the art and science of knitting. Unfortunately these are not the people who have real authority in making decisions. Therefore there should be a specialized and concise course for upper level management and owners to inform them about possible ways of enhancing productivity, profitability, quality and customer satisfaction. This program could be done on a one (or two) day intensive course basis and the plant visitations could take place on the other eight or nine days of the proposed training period in each location.
- The two day course conducted for management this summer in Joinville was well received. Blumenau and Jaraguá do Sul have also expressed an interest in such a program.
- d. Seminars should be video-taped and copies distributed to companies which have sent participants to the program.

Alternatively it may be beneficial for the CETIQT professor summarize the course and present it entirely in Portuguese.

- e. For the companies that have been visited in Santa Catarina and who have had participants in at least one of the knitting seminars, it would be very desirable to offer an entry level Statistical Process Control course in the first year of a three year program and a more advanced session in the other two years. This two stage approach is probably necessary because of the need to prove that such material can be understood, applied and is useful at the production and managerial level.

This course would require group projects to be effective.

- f. Certificates to all participants should be provided to signify participation.
- g. Adequate advance notification of the program details from CETIQT (time, duration, location, content et cetera) needs to be sent to and understood by the organizing agency in the designated location.
- h. Using a video tape pointing out typical plant problems would be very useful in confirming the validity of concepts discussed in lecture. Too often it is difficult to visualize the significance of comments made in lecture about sources of problems unless visual reinforcement techniques (other than slides) are used.

4.2 On Site Visits

- a. Plant visit times and locations need to be confirmed at least two days before the visit is to take place to allow for any last minute changes in plans. If possible, the itinerary of plant visits should be given to the UNIDO specialist upon arrival.
- b. During plant visits it would be advantageous for someone from upper management to accompany the UNIDO specialist so that issues of concern are more clearly understood. There can be a difference in terms of future fault elimination and/or prevention if this procedure is followed.
- c. Whether upper management does or does not accompany the UNIDO specialist during the actual plant audit, upper management should be encouraged to attend the session reviewing the results of the audit. It would be highly desirable for a progress report on process (and product) improvements to be forwarded to CETIOT for evaluation and possible follow up.

4.3 CETIOT

- a. It would be helpful if questionnaires were sent to participating companies after the seminar has been completed in order to evaluate and follow up on the needs of the companies involved. Too often in offering a course it is necessary to address topics in a generic fashion. Here the result can be that specific applications of the topic are not covered at all or they are covered

superficially. A properly designed questionnaire could redress this deficiency.

- b. More knitting texts that deal directly with industrial problems need to be written and subsequently be made available to the Brazilian knitting industry. Because there are few texts written in Portuguese, most of the small to medium size knitting concerns are not aware of new techniques and developments et cetera that should be of direct concern to them. Such material needs to be in a form that is understandable, practical and applicable. For small to medium sized concerns, simplicity is an asset.
- c. When there are on location difficulties in scheduling plant visits and seminar related items in a particular region, it may be desirable to have the professor assigned to assist the UNIDO specialist step in and assume these responsibilities. Obviously this should be done with the full knowledge and consent of the local organizer.
- d. Adequate lead time for organization purposes must be provided to CETIQT otherwise unnecessary complications in scheduling can and will result. The UNIDO specialist should also do his/her part in helping the program succeed by providing required information and suggestions as early as possible to UNIDO and CETIQT.
- e. Sometimes scheduling and co-ordination information is sent to a person who lacks authority. As such, it is recommended that a copy of schedules, plans et cetera should be sent to the managers, technical superintendents and/or owners also so that everyone concerned is fully informed.

5.0 GENERAL FINDINGS

5.1 Information Utilization

Although CETIQT makes listings of published information available to the textile (and apparel) industry on a regular basis, only a limited number of the knitting companies in Santa Catarina make use of this knowledge. Even when the publication is in English or German etc., it is possible to have desired information translated into Portuguese. It is unfortunate that many knitting concerns do not take advantage of this service either.

Because of the theoretical nature of some of the material that is written, it is sometimes difficult to utilize such information efficiently.

Because of the inherent size of the majority of the companies involved, information is generally not being used effectively in most plants. As such, there is still much to be desired in terms of optimizing cost, productivity and quality.

5.2 Yarn Availability

In Brazil, yarn producers can be ranked according to the quality of the yarn that they produce. Not only is much of the better yarn that is produced exported, but at the time of this project it was very difficult for some knitters to get any yarn at all for periods of time. Even if yarn was available, it often did not have the characteristics required by the knitter but it was used

anyway. This problem obviously created many difficulties for knitters and complicated attempts to standardize yarn characteristics and fabric performance.

In addition, too many knitters are still buying yarn essentially by price alone.

5.3 Machine Purchasing

At the time of this project, it was apparent that many knitters were trying to buy additional and/or new knitting machines because anything that they could knit was being sold. Indeed, a number of companies had order books filled until December of 1989 and beyond.

Not only did many knitters not fully appreciate the fact that other knitting companies were trying to do the same thing (knitters tend not to talk with one another about relative production and machine purchasing plans), but they did not fully comprehend that: 1) yarn supplies were already tight and getting tighter all the time, 2) there were essentially no new knitting machines available until April of 1990, and 3) often machines were being bought with inadequate input from the knitter.

5.4 Manpower Utilization

Except for one or two of the larger knitting firms in Santa Catarina, there is generally not an efficient use of manpower.

One of the reasons for this problem is the fact that there is a chronic labor turnover problem caused by low

wages, a lack of opportunity, and a feeling on the part of many people that they do not truly "belong" to the company et cetera. A second reason is the general lack of (continuous) technical and total involvement training that is necessary for any successful knitting company. A third reason is the waste factor that is associated with an operation that does not take advantage of the benefits of process flow analysis, procedural enforcement, error cause removal analysis and auditing to name only several techniques that are not only available but readily applicable.

Undoubtedly the economic difficulties in Brazil also have an influence because of a pre-occupation with survival.

6.0 GENERAL CONCLUSIONS

The six week program that was conducted was not only a very active one but it highlighted a number of factors that could and should be improved when conducting future programs of this type. Having seminars tied in with on site visits is a very useful approach in upgrading the skills of participants.

Because the program has been accepted by the companies involved and since they would like a continuation of the program next year, it is time to think about a future and more involved project that builds upon the skills and techniques that have been learned in the present seminars and visits. In this respect, it is suggested that a three year program be considered beginning in 1991 that would incorporate not only the present type of seminar but also an initial entry level and later a somewhat more advanced SFC program.

ANNEX I

DIARY OF EVENTS

June 15, 1989 Left Raleigh, stayed in Miami overnight
June 16, Picked up visa in Miami, flew to Rio de Janeiro
June 17, Arrived Rio de Janeiro
June 19-23, Organized, wrote and discussed papers to be given at the V Conferencia Nacional de Tecnologia Textil e de Confeccao at CETIQT and material to be given in Santa Catarina
June 25, Flew to Joinville, S. C.
June 26, Visited Fiacao Joinvillense for technical assistance/seminar in the afternoon (4 hours)
June 27, Visited Malharia Martric/seminar in afternoon
June 28, Visited Malharia Nerisi/seminar in afternoon
June 29, Visited Malharia Campea/seminar in afternoon
June 30, Visited Cia. Comfio/seminar in afternoon
July 1, Travelled to Blumenau, S. C.
July 3, Visited Malharia Maju
July 4, Visited Malharia Thielmann
July 5, Visited Malharia Hering
July 6, Visited Malharia Lancaster and Cia. Catarinense Textil de Exportacao Ltda
July 7, Visited Cia. Catarinense Textil de Exportacao Ltda and Malharia Pemar
July 9, Travelled to Jaraguá do Sul, S. C.
July 10, Visited Malharia Marisol/seminar in afternoon
July 11, Visited Malharia Menegetti/seminar in afternoon
July 12, Visited Malharia Marisol/seminar in afternoon
July 13, Visited Malharia Nanete/seminar in afternoon
July 14, Visited Malharia Fruet/seminar in afternoon
July 15, Flew to Rio de Janeiro
July 17-18, Prepared for Conference
July 19-21, Attended Conference, presented two papers
July 23, Flew to Joinville, S. C.
July 24-25, Gave two day seminar on problem prevention techniques to managers, technical directors and owners
July 26, Flew to Rio de Janeiro, wrote UNIDO report and completed assignment
July 28, Flew to the United States

ANNEX II

LIST OF COMPANIES VISITED

June 26, 1989	Fiacao Joinvillense
June 27,	Malharia Martric
June 28,	Malharia Nerisi
June 29,	Malharia Campea
June 30,	Cia. Comfio
July 3,	Malharia Maju
July 4.	Malharia Thielmann
July 5.	Malharia Hering
July 6,	Malharia Lancaster Cia. Catarinense Textil de Exportacao Ltda
July 7,	Cia. Catarinense Textil de Exportacao Ltda Malharia Pemar
July 10,	Malharia Marisol
July 11,	Malharia Menegetti
July 12,	Malharia Marisol
July 13,	Malharia Nanette
July 14,	Malharia Fruet

ANNEX III

SEMINAR TOPICS

1. Implications of recent yarn, machinery and product developments
2. Yarn requirements for knitting
3. Yarn purchasing considerations
4. Benefits of yarn specifications
5. Yarn specifications
6. Spun yarn considerations
7. Yarn properties, problems and implications
8. Yarn testing
9. The interaction between yarn parameters and problems
10. Yarn storage considerations
11. Warehouse auditing
12. Machinery classifications and implications
13. Fabric classifications and implications
14. General fabric properties and problems
15. Implications of altering fabric properties
16. Typical machinery purchasing considerations
17. Notation
18. Structural development and associated implications
19. Implications of knitting on high gauge machinery
20. Implications of machine re-needling
21. STARFISH concepts and implications
22. Factors compounding knitability, productivity and quality
23. The interactions between machine parameters and problems
24. Machinery auditing
25. Construction sheets
26. Fabric inspection considerations
27. Defect prevention principles

ANNEX IV

SEMINAR PARTICIPANTS

STUDENT	COMPANY
1. Ronaldo Baechtold	Fiacao Joinvillense S. A.
2. Carlos Benkendorf	Fiacao Joinvillense S. A.
3. Romeu Ruske	Campea S. A.
4. Renato Caetano	Campea S. A.
5. Carlos Keiser	Martric S. A.
6. Osamu Mitsomari	Martric S. A.
7. Aldo Schroeder	Malharia Nerisi
8. Luiz do Nascimento	Malharia Nerisi
9. Jose Aguiar	Malharia Manz
10. Anelio da Silva	Malharia Manz
11. Adolfo Silveira	Malharia Menegetti
12. Reinaldo Steffens	Malharia Menegetti
13. Zenilto Furlaneto	Malharia Fruet
14. Aldecio Gasda	Malharia Fruet
15. Joao Ronchi	Malharia Nanete
16. Faustino Rosa	Malharia Marisol
17. Marcio Schmalz	Malharia Marisol
18. Jose Ostetto	Malharia Marisol
19. Rudolfo Debatin	Malharia Marisol
20. Jovercir de Freitas	Malharia Marisol
21. Silvio Rumpf	Malharia Marisol
22. Valcir Mathias	Malharia Marisol
23. Carlos Schulze	Cia. Fabril Lepper
24. Elias Auras	Campea S. A.
25. Ilario Zietz	Tricotagem Alfredo Marquardt S. A.
26. Ildefonso Frankowiak	Textil Arp S. A.
27. Mario Marquardt	Tricotagem Alfredo Marquardt S. A.
28. Nilo Knop	Cia. Fabril Lepper
29. Quido Bauer	Dohler S. A.
30. Remar Siewert	Malharia Manz
31. Sebastiao Warsch	Campea S. A.
32. Sergio Nesi	Lumiere S. A.

ANNEX V

NOTE ON "CETIQT" - CENTRO DE TECNOLOGIA DA INDUSTRIA QUIMICA E
TEXTIL

A previous extract from a Technical Report by Mr. J. Carbonell is quoted.

"CETIQT is part of SENAI (Servico Nacional de Aprendizagem Industrial), the national institute for technical education. Originally CETIQT functioned as a technical school training textile technicians, but in recent years, applied research has been added to the activities of the Center to support the training programs and to provide technical assistance to the industry. CETIQT is the only institution in Brazil for training textile technicians."