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SUPPORT TO SENAI-CETIQT RESEARCH UNIT

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BRAZIL

Technical report: Findings and recommendations  
(third 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

Backstopping officer: J.P. Moll,  
Agro-based Industries Branch

United Nations Industrial Development Organization  
Vienna

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## 1. SUMMARY OF RECOMMENDATIONS

- a. Seminars should continue to be offered but adequate publicity with precise details must be available well in advance of the event. Material should be targeted to the right people in the organization (including managers) and be informative, technologically sound and applicable.
- b. Brazilian instructors who participate in the program should be prepared to offer the same seminar at a later time if required. Seminars at the introductory, intermediate and advanced levels should also be considered.
- c. CETIQT professors need to up-grade themselves in terms of technology and the way that such technology is interpreted, utilized and evaluated. One to one instruction and a course development program would be beneficial in this respect.
- d. Emphasis on applied Statistical Process Control, testing, auditing and worker involvement should be increased in UNIDO sponsored programs whenever possible.
- e. On-site projects should be incorporated in technological courses when possible and courses should continue to be offered in conjunction with on-site plant audits. Managers should be encouraged to participate in such audits in a manner that will allow them to become familiar with problems in their respective plants.

- f. Preliminary meetings with plant and personnel managers before any seminar is organized and/or offered should be held to determine industrial requirements and desires. A questionnaire approach by mail could also be used.
- g. CETIQT personnel should be encouraged to visit industrial plants to be more attuned to industrial conditions and needs.
- h. Video taping of seminars should be encouraged; such tapes could then become one component of a tape-leasing program for companies which are unable to send people to seminars which are offered.
- i. When possible, UNIDO specialists should be encouraged to write instructional booklets which can subsequently be translated into Portuguese for plant and CETIQT use.

## 2. INTRODUCTION

This project is a continuation of previous work that has been sponsored by UNIDO. Originally the program was designed to determine the needs of small and medium sized companies in Santa Catarina. At first, attention was focused on plant visits and on-site technical assistance but later work included the presentation of seminars. During all visits and seminars, a professor from CETIQT has assisted with the program.

In the contract, the knitting technician, in co-operation with CETIQT, was expected to:

- conduct, during his mission, one or more seminars which dealt with modern knitting methods with special emphasis on: modern machinery, optimum workplace layouts, quality requirements, machine settings and productivity;
- repeat the seminar at one or more locations which would be determined by the Director of CETIQT in conjunction with input from industry;
- visit and audit various small and medium plants and give on-the-spot recommendations for technical improvement;
- submit seminar papers prior to his fielding, enabling CETIQT to begin translation of the material and finalize the preparation of the seminars; and
- prepare a technical report setting out the findings of the mission and recommendations to the Brazilian government on

further action which might be taken.

During initial discussions with the Director of CETIQT, it was decided that an initial period of time would be spent in Rio de Janeiro then two seminars would be offered; one in Joinville, Santa Catarina and one in Sao Paulo, S.P. Visits were scheduled in the mornings and seminars were conducted in the afternoons (see ANNEX I).

### 3. PROJECT PROGRESS

As with previous assignments in this project, there has been a general sense of satisfaction with the way the people and the companies involved in the project have responded to both the seminars and the audits conducted during the plant visits. There has been a special feeling of accomplishment with the special co-operation that has developed with CETIQT. Although not all material has been applicable to all companies (especially the smaller ones) feedback has been positive and noted that the material has been practical and generally applicable. In many companies, however; there is still somewhat of a temptation to try and solve a particular problem without first really defining the problem.

In the case of CETIQT, there has been considerable progress in presenting new ideas and ways to look at situations but there is still much to do. As ever, CETIQT has a problem with too little money and too few people with the correct skills and experience.

Because there was only one month of funding available and support money was limited, it was decided not to produce a quality control booklet during the present mission.

It is hoped that the accomplishments achieved in this project can be continued in the future.



#### 4. RECOMMENDATIONS

##### 4.1 Seminars

a. Three levels of seminars should be incorporated in the program for a full coverage approach; in this context an entry level series of lectures should be given to new attendees, a more advanced program should be offered to previous attendees and a condensed overview program should be provided for interested managers and/or owners.

b. Seminars should be tried on both a one and two week basis for comparison purposes. When the seminar is offered during only one week, there are frequently times when certain participants are unable to attend and considerable background material is missed. As a result, following material can be quite confusing; in addition, with only one week of lectures, it is difficult if not impossible to conduct plant trials. When possible, problem solving skills should be incorporated in the program.

If a two week approach is adopted, it may be desirable to have a 2 hour (per day) introductory course followed by a 2 hour (per day) more advanced program.

c. If possible, the same course(s) should be offered in different locations. After the first offering, the observer and/or translator assistant in the program should be encouraged to conduct any further program on their own

with a minimum of assistance.

- d. Group projects and team presentations should be incorporated in the seminar if at all possible to promote a team approach atmosphere in the solution of problems.
- e. All seminars should be video taped and copies given to participating companies for post-presentation viewing. Even for seminar participants, it is often difficult to be on time or understand every concept on the first exposure. If the tapes were available on-site, lecture review would be possible and other supervisors could listen to the seminar material at their leisure.
- f. In technology programs, interactions between processes should also be emphasized so that parameters which cause problems can not only be understood but modified and/or eliminated as need be to prevent and/or minimize similar problems in the future.
- g. Because it is often difficult to plan for the long term in Brazil, it is vital to promote seminar programs as far in the future as possible. Not only should advance advertising note times, places, people and topics et cetera but material should be directed to the proper people in the organization. In this respect, both plant and personnel managers should be considered.

#### 4.2 On-Site Visits

- a. Site visits need to be arranged well in advance of the event, re-confirmed one week before and verified the day before the visit. An updated listing of plant visits should be provided to the UNIDO representative on arrival.
- b. Upper level administrators and owners (if possible) should be encouraged to accompany the UNIDO specialist during the plant visit so that they will be able to visualize and understand problems and proposed corrective measures. At the very least, attendance at the session which reviews the audit findings should be encouraged.
- c. During visits to a number of the plants, it became obvious that many supervisors and/or managers were not aware of many of their true problems and too much time was being focused on the symptoms of problems and not the problems themselves. In many cases, supervisors were surprized at the simplicity of the solutions to stated problems. Auditing, cause and effect and follow-up techniques should be stressed in this context to minimize these deficiencies in the future.
- d. During most of the plant visitations, certification practices, process control techniques and product testing capabilities were severely lacking and measures to offset these deficiencies should be introduced as quickly as possible. Otherwise the Brazilian knitting industry will

fall even further behind as compared to where it is now, especially in light of revisions in governmental import policies.

- e. Plants that were visited were not using or were not capable of using information profitably under the present circumstances and new ways need to be found to disseminate and utilize available (and sometimes not readily available) information in a manner that will enhance quality, productivity and profitability.
- f. During plant visits, it was fairly common to observe poor and/or faulty utilization of material, machinery and manpower. In addition, problems relating to product flow, product handling and machinery lay-out were noted. Furthermore it also was apparent that operator, mechanic and supervisor training - especially in terms of quality and preventative maintenance techniques were very deficient. In this respect, possibly an on-site and on-going program supervised by CETIQT for interested companies should be instituted to rectify the situation. The use of video tapes would be especially helpful.
- g. Expertise in the setting up and interpretation of experiments should be provided to smaller plants so that they will be able to conduct meaningful trials and become more competitive.

#### 4.3 CETIQT

- a. CETIQT professors need to spend more time in textile plants to become more aware of industrial trends and needs. At present, a number of the professors are former students of CETIQT and have little to no industrial experience. As such, it is often tempting for them to merely re-teach material which was taught to them. Without continuous industrial exposure, even industrially experienced professors can become dated very quickly.
- b. A number of CETIQT professors need to change their way of looking at and utilizing material. In addition, it would very useful to get students in classes and seminars more involved in the learning process rather than merely letting the students becoming note-takers. Group projects and a questioning and/or case study approach could force students to become part of, rather than an observer of, the learning process.
- c. CETIQT professors should be encouraged to write texts and/or periodic pamphlets that indicate and discuss industrial problems. Once written such information should be incorporated in courses which are offered at CETIQT and elsewhere. In certain cases, some course outlines at CETIQT may need to be updated and/or restructured.
- d. CETIQT personnel should be encouraged to organize and

participate in selected short course programs which could be offered at CETIQT or on-site at textile plants for interested companies. Involvement in this context would encourage an exchange of information with industry and would allow involved CETIQT professors to upgrade themselves on a continuing basis.

- d. CETIQT, with the input and assistance of its' advisory board, should consider new means of obtaining input from industry with respect to issues of importance and how such issues can or could be addressed. Industrial problems and their resolution could, for example, involve projects which would require CETIQT students to become involved in trials and/or library searches et cetera for industry. Such projects could thus become part of the laboratory aspects of appropriate courses offered by CETIQT.
- e. CETIQT should continue to expand their exchange programs with learned institutions in other countries.

## 5. GENERAL FINDINGS

Typical situations and problems common to many of the small to medium size knitting companies are listed:

- a. CETIQT professors must upgrade themselves and money must be found to allow such upgrading.
- b. Emphasis in many of the companies encountered during this mission was on: 1. merely surviving without the normal flow of capital (because of attempts to control inflation) and, 2. how to cope with the quality and cost implications associated with a new and relaxed importation policy. Under the old policy, waste and inefficiency could be tolerated but this is probably not true anymore. Now the problems associated with labor turnover, poor training and pollution et cetera must be addressed.
- c. Although productivity and quality recommendations were well received, technology access and usage are still problems. Too often, perfectly good technology (though somewhat obsolete) is not used properly because it is not understood or there is a significant degree of indifference.
- d. There is still too little material available in Portuguese either at CETIQT or in the plants that can be used to allow a general upgrading to occur. In the recent past however, the newspaper published by CETIQT and the magazine Revista Textil are trying very hard to correct this deficiency.

- e. Poor preventative maintenance, purchasing and scheduling practices continue to generate production bottlenecks and in this respect, techniques used by industrial engineers could be used with great success to resolve these problems.
- f. Poor yarn purchasing practices still predominate but more and more companies are discovering that proper yarn purchasing can overcome many production related problems.
- g. Standardization practices both within and between companies producing the same product still leave much to be desired. It should be noted however that some companies are starting to realize the merits of standardized techniques and some of them are putting these concepts into practice.



## 6. GENERAL CONCLUSIONS

The four week program that was undertaken in July of 1990 was personally very satisfying and productive in the sense that a great deal of information was transferred in a very short period of time. This information transfer was made to both personnel at CETIQT and to representatives from industry.

Industrial information transfer was achieved by means of both industrial visits and two seminars whereas transfer to CETIQT was achieved through personal communication and CETIQT involvement in the overall program. Of particular significance was the further bonding of relations with SENAI in Sao Paulo and CETIQT in Rio de Janeiro. which are separated by both distance and some differences in educational philosophies. Conversations with SENAI personnel in Sao Paulo indicated that further co-operation with CETIQT would be highly desirable.

In retrospect, having plant visitations tied to seminars is a very good approach towards helping smaller companies as compared to on-site visits alone and the combined approach should be continued in any further program.

ANNEX I

DIARY OF EVENTS

July 1, 1990 Left Raleigh, N. C., flew to Miami and Rio de Janeiro

July 2, Arrived in Rio de Janeiro, discussed plans with Professor Alexandre Rodrigues, Director of SENAI-CETIQT

July 3 - 6 Prepared and reviewed seminar material with CETIQT personnel

July 9 - 10 Discussed seminar material with CETIQT personnel

July 11 Met with Mr. Clovis Goncalves de Souza Junior, a member of the CETIQT council

July 12 Conducted final review of seminar and other knitting material with knitting professors of CETIQT

July 13 Met with Mr. Decio Goncalves Moreira of Cia Tecidos Santanense of Belo Horizonte, MG

July 15 Flew to Joinville, Santa Catarina

July 16 Visited Fiacao Joinvillense in the morning  
Conducted seminar in the afternoon

July 17 Visited Malharia Merisi in the morning  
Conducted seminar in the afternoon

July 18 Visited Campea S/A in the morning  
Conducted seminar in the afternoon

July 19 Visited Textil Arp S/A in the morning  
Conducted seminar in the afternoon

July 20 Visited Cia Comfio and Cia Ado in the morning  
Conducted seminar in the afternoon

July 22 Flew to Sao Paulo

July 23 Visited Escola SENAI Francisco Matarazzo in the morning and discussed seminar plans  
Conducted seminar in the afternoon

July 24 Visited Industria de Meias Scalina Ltda.  
Conducted seminar in the afternoon

July 25 Visited T.D.B. Textil David Bobrow S/A  
Conducted seminar in the afternoon

July 26 No visit  
Conducted seminar in the afternoon

July 27 Visited Grupo Empresarial Pasmanik S/A  
Conducted seminar in the afternoon  
Flew to Rio de Janeiro

July 30 Flew to Miami

July 31 Arrived Miami, Florida then Raleigh, N. C.

ANNEX II

LIST OF COMPANIES VISITED

July 16, 1990	Fiacao Joinvillense
July 17	Malharia Nerisi
July 18	Campea S/A
July 19	Textil Arp S/A
July 20	Cia Confio Cia Ado
July 24	Industria de Meias Scalina Ltda.
July 25	T. D. B. Textil David Bobrow, Ltda.
July 27	Grupo Empresarial Pasmanik S/A

ANNEX III

SEMINAR TOPICS  
(JOINVILLE)

1. Improper yarn manufacturing practices and their implications:

scraping	bale laydown
audits	cleaning practices
re-cycling	machine condition
poor drafting	production/quality
packaging	lubrication

2. Factors to consider in purchasing yarn:

availability	requirements
quality/price	discounts
financing	storage considerations

3. Implications of recent yarn and machine developments:

package sizes	uniformity requirements
friction	new yarn technology
moveable sinkers	cadratex technology
machine speeds	roll capacity
auto-doffing	electronics
creel design	cleaning mechanisms

4. Effects of selected yarn, structural and machine variables on fabric defect levels:

a. Yarn:

holes and lint vs.	
spun and filament yarns	carded and combed yarns
fiber blend	lubrication
yarn regularity	% C. V.
letter grade	classimat majors
strength	twist
package density	joining technique
elongation	color
yarn count	span length
uniformity ratio	micronaire
age	

b. Structure:

holes and lint vs.	
course length	courses/centimeter
run-in ratio	tuck density
structural relief	structure

c. Machinery:

holes and lint vs.	balloon height
package alignment	guide condition
thread path	yarn feeding system
yarn tension	Ne/gauge
gauge	knock-over
dial height	machine RPM
feeder density	timing
gaiting	spreader width
take-down tension	
machine cleaning	

5. Practical applications and implications of the "STARFISH" program:

- shrinkage expectations and standards
- "STARFISH" concepts
- knitting control parameters
- finishing control parameters
- knitting control techniques
  - yarn count
  - course length
  - take-down
- yarn parameter influences
  - yarn count
  - twist level
  - yarn ply
- structural parameter influences
  - structure
  - fabric tightness
  - relaxation state
- machine parameter influences
  - machine type
  - machine manufacturer
  - total needles

6. Effects of selected yarn and machinery variables on productivity:

a. Yarn:

productivity vs.	
spun and filament yarns	combed and carded yarns
fiber blend	lubrication
uniformity	% C. V.
letter grade	classimat majors
strength	twist
package density	yarn joining
elongation	color
yarn count	cost/quality

b. Machinery:

productivity vs.	yarn feeding system
yarn tension	machinery RPM
feeder density	dial height
gauge	take-down tension
gaiting	machinery type
machinery age	pattern capability
machinery condition	defect feedback
monitoring capability	

7. Fabric modification techniques and their implications:

Width:	
fiber blend	yarn count
yarn type	course length
gauge	gaiting
machine diameter	

8. Problem prediction and prevention:

factors compounding fabric knitability  
potential causes of yarn breakage  
courses of action to minimize and/or  
prevent problems

9. Operator induced production and quality problems:

a. Creel:

creel timing  
creeling precautions  
package retrieval and disposal  
package checking  
defect correction

b. Knitting Zone:

inspection regularity and consistency  
swatch checking  
defect communication  
machine stoppage and reporting  
machine cleaning

c. Take-Down:

fabric inspection  
doffing and coding  
transportation and storage

10. Machine and product auditing concepts:

- a. Auditing Functions:
- b. Typical Questions:
- c. Yarn Auditing Considerations:
- d. Yarn Testing Auditing Considerations:
- e. Machinery Auditing Considerations:
- f. Warehouse Auditing Considerations:

11. Preventative maintenance practices:

needles	sinkers
lubrication	cleaning
miscellaneous	

12. Inventory considerations and practices:

needles	sinkers
guides	fabric

13. Problem prevention concepts:

yarn	structure
fabric	inventory

14. Elements of a quality assurance program:

a. Incoming Material:

fiber	yarn
fabric	chemicals

b. In-Process Controls:

- listing of all possible variables
- selecting of critical variables
- setting of variable limits
- developing a monitoring system
- establishing an action plan

c. Inspection/Grading Development:

- defining grading sophistication
- defining of inspection frequency
- defining data auditing policy

d. Testing Development:

sampling plans  
testing standardization  
testing follow-up

e. Auditing Procedures:

internal

external



ANNEX IV

SEMINAR TOPICS  
(SAO PAULO)

1. Knitted fabric properties and problems:

a. Stretch:

degree of stretch	degree of recovery
laundering variables	relaxation variables

b. Width:

inherent width	relaxation variables
modification:	
fiber blend	yarn count
yarn type	course length
gauge	gaiting
dial height	machine diameter

c. Shrinkage:

fiber blend	yarn count
yarn type	course length
timing	structure

d. Spirality:

fiber blend	yarn count
yarn twist	yarn ply
yarn conditioning	course length

e. Creasing:

fiber type	yarn type
knitting width	nip pressures
fabric configuration	roll density
fabric storage	fabric handling

2. Loop classifications and fabric characteristics:

width	length
thickness	weight
extensibility	effect

3. Fabric notation and examples:

4. Knitting actions and principles:

a. Jersey:

negative feed	positive feed
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b. Rib:

negative feed	positive feed
---------------	---------------

5. Knitting construction sheets:

need organization	requirements limitations
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6. Faulty knitting room practices:

a. Yarn Related Recommendations:

b. Machine Related Recommendations:

creel  
knitting zone  
take-down

7. Machine audit sheets:

need organization	requirements limitations
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8. Productivity:

a. Examples

b. Grid-charts

c. Production parameters

yarn character	yarn purchasing
yarn storage	yarn transport
fabric structure	fabric tightness
feeder density	machine RPM
machine age	machine condition
feeding system	yarn tension
dial height	take-down tension
training	management practices
ambient conditions	preventative maintenance
parts availability	operator load

9. Productivity improvement techniques:

- a. Yarn related:
- b. Machine related:
- c. People related:
- d. Technique related:

yarn breakage                      lint reduction

10. Cause and effect analysis:

11. Machine purchasing considerations:

cost	manufacturer
gauge	diameter
feeders	RPM
pattern capability	availability
spare parts	training assistance

12. Fabric structures, modifications and camming systems:

one track	two tracks
four tracks	five tracks

- a. Jersey fabrics:
- b. Rib fabrics:

13. Yield, shape and dimension control:

- a. Negative feed:
- b. Positive feed:

14. Factors to consider in purchasing yarn:

availability	requirements
quality/price	discounts
financing	storage

15. Problem prediction and prevention:

factors compounding fabric knitability  
potential causes of yarn breakage

courses of action to minimize and/or  
prevent problems  
causes of knitted fabric barre?

16. Machine and product auditing concepts:

- a. Auditing Functions:
- b. Typical Questions:
- c. Yarn Auditing Considerations:
- d. Yarn Testing Auditing Considerations:

17. Preventative maintenance practices:

needles	sinkers
lubrication	cleaning
miscellaneous	

ANNEX V

SEMINAR PARTICIPANTS  
(CETEJE)

1. Carlos Benkendorf	Fiacao Joinvillense S/A
2. Ronaldo Baechtold	Fiacao Joinvillense S/A
3. Liomar Josino	Campea S/A
4. Adelbert Hort	Campea S/A
5. Ildemar Manke	Campea S/A
6. Cesar Pereira Dohler	Cia Comfio
7. Sebastiao Manoel Matos	Cia Comfio
8. Umberto Pereira Perini	Malharia Nerisi Ltda.
9. Aldo Schroeder	Malharia Nerisi Ltda.
10. Josimeire Santana	Textil Arp S/A
11. Vitor Macieski	Textil Arp S/A
12. Oscar Henrique Schenkel	CETEJE*

\* Centro de Treinamento Textil de Joinville

ANNEX VI

SEMINAR PARTICIPANTS  
(ESCOLA SENAI FRANCISCO MATARAZZO)  
(SAO PAULO)

- |                                |   |
|--------------------------------|---|
| 1. Adao Evaldo de Moura Souza  | Malharia Arco Iris Ltda.                              |
| 2. Antonio Kaminsky            | SENAI   |
| 3. Antonio Pereira da Costa    | SENAI   |
| 4. Carlos Fernando G. Tavares  | Cambuci S/A   |
| 5. Claudio Roberto Teixeira    | Callas Textil S/A                                     |
| 6. Claudio T. Szuster          | Aster Eight Textil Ltda.                              |
| 7. Celso Aparecido da Silva    | Cipatex de Tecidos Ltda.                              |
| 8. Dan Samuel Mordo            | Grisbi S/A  |
| 9. Edmundo da Silva Navarro    | Alpargatas Confeccoes do<br>Nordeste S/A              |
| 10. Eduardo Faro               | Cotonificio de Sao Bernardo<br>S/A                    |
| 11. Erasmo Cesar Oliveira      | Sol-La-Si Malhas Ltda.                                |
| 12. Fernando Felipe de Almeida | Malharia Arco Iris Ltda.                              |
| 13. Fernando Gasi              | Cotonificio Guilherme<br>Giorgi S/A                   |
| 14. Gerson Luiz Souza          | SENAI   |
| 15. Helicio Donizete Soares    | Grisbi S/A  |
| 16. Helio Jose' Alves          | Fabrica de Tecidos Tatuape<br>S/A                     |
| 17. Humberto Durazzo Filho     | Industria e Com. de Tecidos<br>Durazzo Ltda.          |
| 18. Ilmar Vilela da Silva      | Lelio Gomes & Cia. Ltda.                              |
| 19. Jairo Aparecido Giralaldi  | Climase Industria e Com.<br>Meias e Malhas Ltda.      |
| 20. Jose' Augusto Bueno        | Danuska Industria e Com.<br>Malhas e Confeccoes Ltda. |
| 21. Jose' Carlos T. Schumann   | Callas Textil S/A                                     |
| 22. Jose' Nilton Moreira       | Grisbi S/A  |
| 23. Jose' Roberto Tornieri     | Cotonificio de Sao Bernardo<br>S/A                    |
| 24. Josue' Vieira Barboza      | Cotonificio de Sao Bernardo<br>S/A                    |
| 25. Lauro Aparecido Benassi    | Cambuci S/A   |
| 26. Liliana Nascimento         | Allimaglia Confeccoes Ltda.                           |
| 27. Luciana Utemberg Fujise    | SENAI   |
| 28. Manoel Bispo de Jesus      | Textil Irmaos Kachani Ltda.                           |
| 29. Marcelo Andrade Aranha     | Fransu Industria e Com. de<br>Malhas Ltda.            |
| 30. Marcelo Andre' Kovezi      | Meianyl Industria e Com.<br>Ltda.                     |
| 31. Marcelo Luchetti Vieira    | Tudd's Confeccoes Ltda.                               |

- |                                    |  |
|------------------------------------|--|
| 32. Marco Antonio de Souza         | Elizabeth S/A                                    |
| 33. Mario Yamani                   | Alpargatas Confeccoes do Nordeste S/A            |
| 34. Osvaldo Daroz Bertanha Cyrato  | Cipatex de Tecidos Ltda.                         |
| 35. Ozires Lapo                    | Lapotex Industria Textil Ltda.                   |
| 36. Paulo Cesar Couto Filho        | Alpargatas Confeccoes do Nordeste S/A            |
| 37. Paulo Sergio de Bene           | Fibra S/A  |
| 38. Ramon Sivila Sarmiento         | Fabrica de Tecidos Tatuape' S/A                  |
| 39. Reinaldo Cesar Antonioli       | Sol-La-Si Malhas Ltda.                           |
| 40. Renato Vidal de Lima           | Climase Industria e Com. de Meias e Malhas Ltda. |
| 41. Roberto Gaal                   | SENAI  |
| 42. Rosileide Alcantara dos Santos | Callas Textil S/A                                |
| 43. Ruben Angelo Ceccato           | Fibra S/A  |
| 44. Salvatore Zeoli                | Callas Textil S/A                                |
| 45. Selma Regina Lara              | Textil Irmaos Kachani Ltda.                      |
| 46. Sergio Yuti Issogai            | Omi Zillo Lorenzetti S/A                         |
| 47. Shirley Cavalcante Rocha       | SENAI  |
| 48. Toshihiko Tsuruta              | Omi Zillo Lorenzetti S/A                         |
| 49. Vania Maria Rosalin            | Callas Textil S/A                                |
| 50. Verginia Zamboli Melo Garcia   | Lapotex Industria Textil Ltda.                   |
| 51. Walter Hrivnatz                | Fabrica de Tecidos Tatuape' S/A                  |
| 52. Wanderlei Antonio Laporta      | Irmaos Laporta & Cia. Ltda.                      |
| 53. Yasuo Yamamura                 | Elizabeth S/A                                    |
| 54. Francisco Ferreira de Souza    | Filobel S/A                                      |
| 55. Antonio Sanches Netto          | SENAI  |
| 56. Paulo Pedroso                  | SENAI  |
| 57. Antonio Cesar Corradi          | SENAI  |
| 58. Benedito Batista da Costa      | SENAI  |
| 59. Cosmo Burti                    | SENAI  |
| 60. Joao Batista de Assis          | Fiacao Alpina Ltda.                              |
| 61. Laercio Paschoal Tesser        | SENAI  |
| 62. Marcello Vincenzo Greco        | Fiacao Alpina Ltda.                              |
| 63. Mauricio Vaz de Carvalho       | SENAI  |
| 64. Nelson Gregorio                | SENAI  |

ANNEX VII

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

An extract from a previous UNIDO 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 industry.