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FINAL REPORT

ON THE

SIXTEENTH

IN-PLANT GROUP TRAINING

PROGRAMME ON MAN-MADE FIBRES

APPLICATION OF MAN-MADE FIBRES

IN TEXTILE PROCESSING

(BLENDING AND QUALITY CONTROL)

T3/8

Project No. US/INT/89/064

16th In-Plant Group Training Programme

on Man-made Fibres

"Application of Man-made Fibres in Textile Processing"

(Blending and Quality Control)

C O N T E N T

Höhere Bundes-Lehr- und Versuchsanstalt für
Textilindustrie Wien V
Spengergasse 20, A-1050 Vienna, Austria

Österreichisches Chemiefaserinstitut
Plößlgasse 8, A-1040 Vienna, Austria

Director: OSTR Mag. A. Berger
Director of Austrian Man-Made Fibre Institut: Univ.Doz.Dr. J. Lenz
Project Manager: Univ. Doz. Dr. J. Lenz

Sixteenth In-Plant Group Training Programme on Man-Made Fibres

Organized by the United Nations Industrial Development Organisation (UNIDO) in co-operation with

the Government of Austria
Austrian Federal Chamber of Commerce
Association of Austrian Industrialists
Höhere Bundes-Lehr- und Versuchsanstalt für
Textilindustrie, Wien V, and
Österreichisches Chemiefaserinstitut Vienna;

Held in Vienna, Austria
from 26th September to 28th October 1989.

Final Report:

by Prof.Dipl.Ing.Dr. L. Machherndl
Executive Manager

1. Acknowledgements

The Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie Wien V, and the Österreichisches Chemiefaserinstitut wish to express their appreciation to the UNIDO for organizing this training programme and for the excellent and successful cooperation.

Our thanks are specially directed to

Mr. A. Vassiliev (Deputy Director General, Department of Industrial Operation, UNIDO)

Ms. A. Tcheknavorian-Asenbauer (Head, Chemical Industries Branch, Department of Industrial Operations, UNIDO)

Ms. I. Lorenzo (Head , Training Branch, Department of Industrial Operations, UNIDO)

Mr. V. Bysyuk (Chemical Industries Branch, UNIDO)

Mr. M. Youssef (Chemical Industries Branch, UNIDO)

Mr. D. Gardellin (Director, General Services Division, Department of Administration)

Mr. S. Morozov (Chief, Contracts Section)

Ms. U. Schandl (Project Assistant, Chemical Industries Branch, UNIDO)

At the same time we give our thanks to the Austrian authorities and corporations, whose aid, preparatory work, valuable aid and understanding enable us to achieve a remarkable effect of the training programme.

Austrian Federal Chancellery
Ms. B. Dekrout

Austrian Federal Ministry for Foreign Affaires
Mr. C. Krepela

Austrian Federal Ministry for Educations and Art
Mr. W. John Mr. O. Tischler

Austrian Federal Chamber of Commerce

Mr. K. Haas

Mr. K. Laaber

Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie (HBLVAT)

Mr. A. Berger Mr. L. Machherndl

We also are indepted to the Austrian Companies which we visited to complete our training programme.

2. Background and Objectives

1. The programme, organized by UNIDO in co-operation with the Government of Austria, is one of a series of UNIDO Training Programmes on specific sectors of industry for engineers from developing countries. The programme will be carried out by the Austrian Man-made Fibre Institute (Österreichisches Chemiefaser-Institut-OCI) and the Federal Institute for Higher Education and Research for Textile Industry (Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie - HBLVAT), a leading technological institute in the field of textile technology. The programme is the sixteenth in a series of programmes implemented annually since 1974.

2. UNIDO implements technical assistance projects and holds meetings in the field of man-made fibres production and application. Therefore, the training programme is considered a logical and very important part of UNIDO activities aimed at further development and strengthening of these industries in the developing countries.

3. The trend of training activities in the field of processing and application of man-made fibres is characterized by increasingly sophisticated nature of the training programme requiring high level experts, consultants and modern specialized equipment. Consultation meetings at plants and companies to deal with specific technological problems are also an important feature of current training activities.

4. Of the man-made fibres developed to date, four principal types, namely polyester, polyamide, polyacrylonitrile and cellulosic fibres, dominate the market at present. This situation will not charge substantially in the near future, although olefin fibres have already become important in certain areas of application.

5. The following trends are apparent in the application of man-made fibres in textile processing:
   - improvement of cotton processing with modern textile machinery by blending with man-made fibres (polyester, modal, viscose, acrylic, polyamide);
   - substitution of expensive wool by blending with man-made fibres combined with appropriate finishings;

- improvement of comfort, function and aesthetic of garments by blending fibres and yarns of different origin;
- improvement of the value-in-use of textiles by blending natural fibres with man-made fibres;
- improvement of the quality by automated statistical process control and computer aided quality control (CAQ);
- introduction of the methods: "quick-response" and "quality management";
- application of man-made fibres in the production of industrial textiles, e.g. reinforcement of tires, plastics ... personal protection, safety equipment, surgical and medical end-uses, filtration, construction;
- use of man-made fibres for non-wovens.

6. Generally, the following trends are apparent in man-made fibres production:

- the reduction of process stages, e.g. for quasi-textiles by non-woven technology or by film production;
- the integration of textile treatment stages in the process of fibres, e.g. warping, stretch-texturizing, dyeing, converting;
- rapid spinning methods, combined shaping, stretching and winding or rapid shaping and winding for polyester and polyamide fibres;
- extrusion spinning;
- increasing the degree of automation in fully automatic production.

7. The developing countries, as a result of the increasing demand from the internal and external markets for man-made fibres products and the availability of comparatively cheap labour, have established man-made fibre industries which are rapidly expanding. A number of these countries lack the required raw materials, financial resources and know-how to start on man-made fibres production in order to meet the growing needs of the industry; but in general they have a relatively well developed industry for processing of man-made fibres for which the acquisition and introduction of new technical developments in this field are important.

8. The objective of the programme is to up-grade the knowledge and professional skills of the participants and to assist them in performing their duties more efficiently and solving the problems encountered in their daily work in the field of man-made fibre technology and application.
In particular the training programme includes the following technologies: blending, spinning, weaving, circular knitting, warp knitting, dyeing with respect to fibre and yarn blends, testing of yarns and fabrics, computer aided statistical evaluations, quality control of textiles produced from fibre and yarn blends.

9. The programme has received the support of the Austrian Federal Economic Chamber and the Austrian Federal Ministry of Education and Fine Arts and the Association of Austrian Industrialists. HBLVAT will conduct the training on its premises utilizing its laboratories and equipment for this purpose. The institute has a staff of highly qualified specialists.

The Training Programme

10. Recently, the main emphasis of the textile industry was on technology to improve the quality of cotton yarns by blending with viscose, polyester, polyamide, acryl, polypropylene which required special finishing methods, machines and quality control methods which is very important for the industries in the developing countries. Therefore, in 1989 the training course will be concentrated on practical technology to improve the quality of cotton yarns by blending and on quality control of textile products, as well as on improvement of operational efficiency of existing plants. It will consist of theoretical training and professional discussions designed to update the participants' knowledge on man-made fibre technology, laboratory and in-plant visits to study the latest developments in production and processing equipment and techniques. (For tentative programme, please see Appendix I.)

11. In addition to the programme to be undertaken at the HBLVAT, study visits in Austria will be arranged to provide an opportunity for the participants to study new developments in materials, processes and

applications, to exchange technical information with experts as well as to study the possibility of obtaining licenses and know-how on processes and equipment.

17. During the theoretical training, individual appointments could be arranged for the participants to discuss with UNIDO staff members problems affecting the developments of the man-made fibre industry in the participant's home country and outline technical assistance projects for eventual implementation by UNIDO.

3. Description of the Training Programme

This Year's training was focused on "Textile Production - Blending and Quality Control". It consisted of a theoretical part designed to up-date the participants' knowledge on man-made fibre technology and laboratory and in-plant studies to familiarize them with the latest developments in production and processing equipment and techniques.

The programme took place in Vienna, Austria from 25th September to 27th October 1989. (See appendix I for the time table)

The programme covered the latest technological developments in the field of application man-made fibres in textile processing and consisted of a theoretical part designed to up-date the participants' knowledge on man-made fibre technology and laboratory and in-plant studies. The main emphasis of the processing technology including fibre engineering, testing and identification and on the application of man-made fibres for various purposes.

The Höhere Bundes-Lehr- und Versuchsanstalt gave full co-operation in running the theoretical and practical courses on its premises utilizing its laboratories and equipment for this purpose. (See appendix II for details of lectures and appendix III for equipment used in the practical classes.)

The institutes staff of highly qualified specialists took full charge of the lectures, demonstrations, laboratory work, discussions, in-plant training programme and plant visits. (See appendix IV for list of staff members who participated in the training programme).

In addition to the course conducted at the Institute plant visits in Austria were arranged to provied an opportunity for the participants to see some new developments in materials, processes and applications. to exchange technical information with experts as well as to study the possibilities of obtaining licenses and know-how on processes as well as equipment. (See appendix V for details of in-plant training and plant visits.)

The training programme was attented by participants each from the following countries: Angola, Brazil, China, Columbia, Ecuador, Egypt, Ethiopia, Ghana, Iraq, Kenya, Mongolia, Pakistan, Sudan, Tanzania, Uganda, Vietnam

During the course of the training programme individual appointments were arranged for interested participants to discuss with UNIDO staff members problems affecting the development of man-made fibres and blending and qualitiy control in the participants' home-countries.

A programme of social activities was organized by HBLVAT and other sponsors for the benefit of the participants. (See appendix VII for details of social activities.)

Home countries of participants in the training programme on the production and application of Man-Made fibres 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988 and 1989 see appendix VIII.

Appendix I

Agenda and programme of work

Opening Ceremony: 25th September 1989, Conference Room at
Höhere Bundes-Lehr- und Versuchsanstalt Wien V
Spengergasse 20, 1050 Vienna, Austria

11:00 a.m.	Chairman pro tem:	Mr. Bysyuk Chemical Industries Branch, UNIDO
	Opening Speech:	Mr. Bysyuk Chemical Industries Branch, UNIDO
	Speeches:	Mr. Laaber Austrian Federal Economic Chamber
		Univ. Doz. Dr. J. Lenz Man-Made Fibres Institute (Österreichisches Chemiefaser-Institut)
		Mr. A.Berger Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie Wien V Spengergasse 20, A-1050 Vienna

Monday, 25th September 1989

11:00 - 12:30	Opening Ceremony, HBLVAT Vienna V
14:00 - 17:00	Presentation of National Papers at Höhere Bundes-Lehr- und Versuchsanstalt für Textilindustrie

Tuesday, 26th September - Friday 27th October 1989

Lectures, In-plant training and plant visits, laboratory work

Tuesday, 26th October 1989

19:00	Farewell Party at Ober St. Veit

Friday, 27th October 1989

12:00 - 14:00	Final session at HBLVAT, Vienna

Appendix II

Details of Lectures

Subject

Man-made Fibre Trends, Raw Materials and the Environment
W. Albrecht, Prof. Dr., Head of Textile Technology Institute of Enka Glanzstoff AG, Wuppertal, FRG

Selection of Fibres and Yarn Constructions for Textiles
W. Albrecht, Prof. Dr., Head of Textile Technology Institute of Enka Glanzstoff AG, Wuppertal, FRG

Special Fabrics from Blends Cotton with Man-Made Fibres
Prof. Dipl.Ing. W. Herzog
Austrian Textile Research Institute
A-1050 Vienna

Knitted Fabrics from Blended Yarns
Prof. Dipl.Ing. W. Graninger
Member of the staff of the HBLVAT
A-1050 Vienna

Processing of Synthetic Fibres and Blends, Fibre-Bl[illegible]'s and their Properties
Dipl.Ing. J. Hördler
Member of the staff of the HBLVAT
A-1050 Vienna

Yarn Making - Yesterday - Today - Tomorrow
Ing. K. Schnaubelt
Member of the staff of the HBLVAT
A-1050 Vienna

Spinning Quality from Pure cotton and Blends spun on conventional Systems
Ing. K. Schnaubelt
Member of the staff of the HBLVAT
A-1050 Vienna

Manufactoring

Viscose - Filaments for modern Textiles
Dr. A. Blaschke
Enka Austria AG
St. Pölten, Austria

Fibre Fineness, Micronaire Reading of Cotton Fibres
Prof. Dipl.Ing. J. Hördler
Prof. Dipl.Ing. Dr. P. Schrefl
Members of the staff of the HBLVAT
A-1050 Vienna

Physiological Aspects with Fabrics Made of Blends
Dr. techn.Dipl.Ing. P. Schrefl
Member of the staff of the HBLVAT
A-1050 Vienna

Dyeing of Synthetic Fibres and Blends
Prof. Dr. W. Lebensaft
Prof. Dr. L. Machherndl
Members of the staff of the HBLVAT
A-1050 Vienna

Deying of Polyester Fibre Blends
Prof. Dipl.Ing.Dr.techn. L. Machherndl
Member of the staff of the HBLVAT
A-1050 Vienna

The Burning Behaviour of Textiles - Textile Floor Covering
Ing.H.P. Bauer
Austrian Textile Research Institute
Vienna

Advanced Drycleaning Technology
Ing. H. Huff
Member of the staff of the HBLVAT
A-1050 Vienna

The Laundry in Theory and Practice
Ing. R. Hetzer
Member of the staff of the HBLVAT
A-1050 Vienna

Mercerisation and Aftertreatment
Prof. Dr. Dipl.Ing. H. Lass
Member of the staff of the HBLVAT
A-1050 Vienna

Modal-Fibres - an universal blending component
Ing. G. Neudorfer
Chemiefaser Lenzing AG
Lenzing Austria

Quality-Control of Man-Made Fibres, Filaments and Spinn Yarns: Principle and Methods

Dr. H. Schludermann
H. Schneider
Chemiefaser Lenzing AG
Lenzing Austria

Manufactoring of Polyester-Fibres

Dr. Straberger
Austria Faserwerke
Lenzing Austria

Manufactoring of Viscose Fibres and Tape Yarns

Dr. Lenz
Lenzing AG
Lenzing Austria

Process for the Production of Man-Made Fibres

Dr. Lenz
Lenzing AG
Lenzing Austria

Uses of Viscose and Modal Fibres

Ing. Kossina
Ing. Kampl
Lenzing AG
Lenzing Austria

Manufactoring of Polyester Fibres

Dr. Straberger
Austria Faserwerke
Lenzing Austria

Organisation of a Modern Textile Plant, Part I and II

B. Streng
Sulzer Rüti Machinery Works Ltd.
Rüti, Switzerland

Sulzer Bros. and the Textile Industry

M. Jäggli
Sulzer Rüti Machinery Works Ltd.
Rüti, Switzerland

Modern Weaving Preparation
M. Jäggli
Sulzer Rüti Machinery Works Ltd.
Rüti, Switzerland

Project Studies
B. Streng
Sulzer Rüti Machinery Works Ltd.
Rüti, Switzerland

Project for the Production of African Print
B. Streng
Sulzer Rüti Machinery Works Ltd.
Rüti, Switzerland

Quality aspects of PES/cotton blends
J. Spijkers
AKZO
Wuppertal

Manufactoring of Blended Yarns. Opening and Blending Technologies
W. Klein
Maschinenfabrik Rieter AG
Winterthur, Switzerland

Manufactoring of Blended Yarns: Spinning Machines and Technologies
W. Klein
Maschinenfabrik Rieter AG
Winterthur, Switzerland

Knitting Machines and Technologies
K. Kunde
Terrot Strickmaschinen GmbH
Stuttgart, W. Germany

Introduction to Electronic Date Processing Hardware and Software
Dr. M. Wöhrl
HBLVA
Vienna, Austria

Manufacturing and Application of Polypropylene Fibres
Dipl.Ing. Haider
Asota GmbH
Linz, Austria

Spinning of Special Yarns
Dir. Ribniczek
Becker u. Sohn
Marchtrenk, Austria

Spinning and Weaving of Blended Cotton Yarns
W. Buhl
Linz Textil AG
Kleinmünchen, Austria

Special Fabrics from Blended Cotton Yarns
Ing. Tumfarth
B. Tumfarth u. Sohn
Traberg, Austria

Weaving and Printing of Domestic Textiles
W. Baumann
Gebr. J. Baumann
Gmünd, Austria

Domestic Textiles
Ing. P. Backhausen
Joh. Backhausen u. Sohn
Gmünd, Austria

Domestic Textiles Dyeing and Finishing
Dr. Heinisch
A. Heinisch GmbH
Gmünd, Austria

Garnmentmarking
Hr. Holletz
Triumph GmbH
Wr. Neustadt, Austria

Spinning of Cotton Blends
Dipl.Ing. Zierleyn
Walek u. Co
Wr. Neustadt, Austria

Finishing
H. Hardin
Pottendorfer Textilwerke
Felixdorf, Austria

Appendix III

Equipment for Testing Fabrics and Man-made Fibres

Programme at HBLVAT Vienna

VIBROSKOP, linear density of fibres
MICRONAIRE, linear density of fibres
AIR-FLOW, linear density of fibres
JOHANNSEN-ZWEIGLE, fibres length distribution by array method
USTER, fibre length and length distribution automatically working
INSTRON, breaking-strength and elongations yarns, fabrics
USTER-DYNAMOMETER, breaking-strength and elongations yarns, automatically working
ZWICK-TESTIMAT, breaking-strength and elongations yarns, automatically working
ZWICK-Tearing-Tester
TWIST-Tester
PRESSLEY-Tester, strength of fibres, bundle method
BURSING-Tester, VEB Rauenstein
THICKNESS-Gage
USTER-Tester equipment (Uneveness of textile strands)
ABRASION-Tester
AIR-PERMEABILITY-Tester
RANDON tumble pilling Tester
ACCELERATOR
SCANNING ELECTRON MICROSKOP, PSEM 500, Philips
PRETEMA-Spectromat FS 3 A (Filterspectrophometer) Colour masurement, Pretema, Switzerland
FIXOTEST
XENOTEST, Original Hanau Quarzlampengesellschaft, BRD
PRAXITEST
LABOR-STENTER, LABOUR-PADDING Machine, E. BENZ, Switzerland
EPPRECHT RHEOMAT 15 Contraves, Switzerland
FLAMETESTER, Ahiba, Basel Switzerland

INFRARED-SPECTROPHOMETER 197, Perkin Elmer
GASCHROMATOGRAPH SIGMA 3 Perkin Elmer
SPECTROPHOMETER PM Q II, C. Zeiss, BRD
ELREPHO, Zeiss, BRD
ELREPHO 2000, Zeiss, BRD
HT-Dyeing apparatures, Scholl, Switzerland
HT-Dyeing apparatures, Ochsner, Austria
HT-Yet Dyeing machine, Then, BRD

Appendix IV

Staff of the Training Programme

Director: Mr. OStR Mag. A. Berger
Managing Director: Univ.Doz.Dr. J. Lenz
Executive Manager: Prof. Dr.techn. Dipl.Ing.L. Machherndl
Scientific Adviser: Univ. Prof.Dr. W. Albrecht

Public Relations and social Engagements: Ing. R. Hetzer
Plant Visits: Univ. Doz. Dr. J. Lenz

Lectures: Prof. Dr. W. Albrecht
Ing. P. Backhausen
Ing. H. P. Bauer
Dkfm. W. Baumann
Ing. W. Bingisser
Dr. A. Blaschke
Ing. W. Buhl
Dipl.Ing. W. Graninger
Dipl.Ing. F. Haider
Dr. B. Halder
Dr. D. Heinisch
H. Herdin
Prof. Dipl.Ing. W. Herzog
Ing. R. Hetzer
Prof. Dipl.Ing. J. Hördler
P. Holletz
Ing. H. Huff
Prok. M. Jäggli
Ing. R. Kampl
Dipl.Ing. W. Klein
Ing. A. Kossina
Dipl.Ing. K. Kunde
Prof. Dipl.Ing. Dr. H. Lass
Ing. J. Lejeune

Dir. Univ.Doz. Dr. J. Lenz
Dipl.Ing. Dr. R. Mach
Prof. Dipl.Ing. Dr. L. Machherndl
Dipl.Ing. L. Michel
Ing. G. Neudorfer
Ing. H. Pfister
Dr. F. Puchegger
Dir. J. Ribniczek
Ing. W. Schaumann
Dr. H. Schludermann
Ing. K. Schnaubelt
F. Schneider
Prof. Dipl.Ing. Dr. P. Schrefl
Dr. J. Spijkers
Dr. F. Straberger
Ing. B. Streng
Ing. W. Tumfart
Dr. M. Wöhrl
Dir. N. Zierleyn

Assistance and Preparation: Ass. C. Hoffmann, Ass. Ing. G. Schneider, Ass. H. Klein

G. Gschmeidler
B. Holzner
H. Neufingerl
R. Nothelfer
J. Pichler
M. Schmid

Appendix V

In-Plant training and plant visits

To the special interest of the participants in-plant training at fibre producing companies and plant visits to fibres-using companies during the four week course were organized.
The selection of the companies gave a regional and technical survey on the Austrian man-made fibre-producing and using industry:

1)	Chemiefaser Lenzing AG Pulp, Viscose Staple fibre, Acrylic staple fibres, Paper, Sodiumsulfate, Sulphurc acid, Synthetic sheets and foil strips, Machinery for processing Synthetic sheets, laboratories	A-4860 Lenzing
2)	Austria Faserwerke GesmbH	A-4860 Lenzing
3)	Linz Textil AG Spinning and Weaving Mill	A-4020 Linz
4)	Tumfart Comp., Weaving Mill	A-4183 Traberg
5)	Baumann, Textile Weaving and Printing Factory	A-3950 Gmünd
6)	Schiel Seide AG, Weaving Mill	A-3813 Dietmanns
7)	Triumph International AG	A-2700 Wr.Neustadt
8)	Salesianer, Laundry - Drycleaning	A-2700 Wr. Neustadt
9)	Asota Ges.m.b.H. Filaments, Spun Fibres, Sheets Non-woven, Fertilizers, Pharmaceuticals, Laboratories	A-4020 Linz
10)	Becker & Söhne, Spinning Mill	A-4614 Marchtrenk
11)	Linz Textil AG Spinning and weaving Mill	A-4020 Linz

12)	Joh. Backhausen and Sons Weaving Mill	A-3950 Gmünd
13)	A. Heinisch G.m.b.H. Textile Finishing Mill	A-3950 Gmünd
14)	Walek & Co Spinning Mill	A-2700 Wr. Neustadt
15)	Pottendorfer Textilwerke Ges.m.b.H. Weaving and Finishing Mill	A-2603 Felixdorf
16)	Glanzstoff Austria AG Viscose Fibre, Tire Cord	A-3100 St. Pölten
17)	Zentralwäscherei Wien Centre Laundry for the Government of Vienna	A-1140 Vienna

Appendix VI

LIST OF PARTICIPANTS

Country	Name	Address
Angola	Mr. HIPOLITO Antero	Textang II U.E.E: Rua Ngola Kiluangi KN 14 P.O.Box N 5404 Luanda, Angola
Brazil	Mr. ROLIM Aldir Tadeu Parisi	Rua Quintino Bocaiuva No.123 Sao Roque - Sao Paulo CEP 18130 Brazil
China	Mr. QIAN Weiquan	Jiangsu Wujin Textile Industry Corp. 100, Bo Ai Road Changzhou, Jiangsu, China
Columbia	Mr. LEIVA BARON Carlos	Ciplas Ltda Calle 10 # 60-10 Bogota, Columbia
Ecuador	Mr. NARANJO TORO Marco	Francelana S.A. P.O.Box 2524 Quito, Ecuador
Egypt	Mr. YASSEN Mahmoud Soghi Helmy	Wooltex Shoubra El Kheima P.O.Box 1938 Cairo, Egypt
Ethiopia	Mr. MINASSIE Kebede	Dire Dawa Textile Factory P.O.Box 29 Dire Dawa Addis Ababa, Ethiopia
Ghana	Mr. KUMFU Oscar	Freedom Textiles Industries Ltd. P.O.Box 5050 Accra, Ghana
Iraq	Mr. ALI Hassan Ali	P.O.Box 108 Nassirya, Iraq

Kenya	Mr. MATHENGE Harry G.	East African Fine Spinners P.O.Box 78114 Nairobi, Kenya
Mongolia	TSAMBA Tomorchodor	Ulan Bator, Sukh bator district Baga toirog 27, Mongolia
Pakistan	Mr. SHAIKH Shahid	National Fibres Ltd. Plot No. 13/20, Sector 22 Korangi Industrial Area Karachi, Pakistan
Sudan	Mr. FAROUG ABDEL SALAM, M.	The General Spinning and Weaving Co. P.O.Box 765 Khartoum, Sudan
Tanzania	Mr. MALIKI R. Said	Morogoro Polyester Textiles Ltd. P.O.Box 269 Morogoro, Tanzania
Uganda	Mr. MBAALYA Asirike Aaron	Nyanza Textile Ind.Lts. P.O.Box 408 Jinja, Uganda
Vietnam	Ms. HOANG Quynh Kha	Gen.Department of Chemistry 2.Pham ngu Lao street Hanoi, Vietnam

Appendix VII

Social Activities

1. Visit to the Spanish Horse Riding School
2. Visit to the Museum of Arms
3. Visit to the Museum of Arts
4. Visit to the " Schatzkammer "
5. Private Invitations
6. Sight-Seeing Tour in Vienna
7. Visit to the Opera (Volksoper)
8. Visit to the Monastery of Klosterneuburg
9. Farewell Party at Ober St. Veit

Appendix VIII

Home countries of Participant

	74 - 80 1. - 7.	81 8.	82 9.	83 10.	84 11.	85 12.	86 13.	87 14.	88 15.	89 16.	Total
Afghanistan			1								1
Angola										1	1
Argentina	2						1				3
Bangladesh	4		3								7
Bolivia	2					1					3
Brazil	3	1	1							1	6
Bulgaria	1		1								2
Burma					1			1			2
Burundi					1						1
China	1	1				1	1	2	1	1	8
Colombia	2									1	3
Costa Rica	1										1
Cuba									1		1
Ecuador										1	1
Egypt	7		2			2		1		1	13
Ethiopia	2	1				2	1	1	1	1	9
Ghana	4				1			1	1	1	8
Guinea									1		1
Guyana				1							1
India	3			1					1		5
Indonesia	3		1								4
Iran	1										1
Iraq	8	1								1	10
Jamaica	2										2
Kenya	1									1	2
Korea	1			1			1		1		4
Lybia	2	1									3
Malaysia						1	1				2
Mexico	2										2
Mongolia										1	1
Mozambique	1										1
Nepal					1						1
Nigeria									1		1
Pakistan	2						1	1		1	5
Peru	1		1					1			3
Philippines	4										4
PLO	1										1
Poland	2										2
Romania	3										3
Singapore	3										3
Somalia				1							1
Sri Lanka	2						2				4
Sudan			1					2	1	1	5
Syria	3										3
Tanzania		1		1	2				1	1	6
Thailand	4										4
Turkey	3	1					1				5
Uganda				1	1	1	1	1	1	1	7
Uruguay	1						1				2
Vietnam						1	1	1		1	4
Yemen A.Rep.			1						1		2
Yemen PR				1		1			1		3
Yugoslavia	1										1
Zambia			1		1	1					3
Zimbawe					1						1
	82	8	12	8	9	11	12	12	13	16	183

The UNIDO in Vienna has to be congratulated in bringing about this Training Programme and we want to express our appreciation to all UNIDO-members who have contributed to the realization of this project.

We hope that we could fulfill the intentions of UNIDO by giving the participants as much as possible of insight, knowledge and experience.

We also want to give our thanks to the participants for their co-operation and wish them an effective evaluation in their native countries.