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FINAL REPORT
ON THE
FIFTEENTH
IN-PLANT GROUP TRAINING
PROGRAMME ON MAN-MADE FIBRES
APPLICATION OF MAN-MADE FIBRES
IN TEXTILE PROCESSING
(BLENDING AND QUALITY CONTROL)

Project No. US/INT/88/130

15th 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

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

Österreichisches Chemiefaserinstitut
Plöbllgasse 8, A-1040 Vienna, Austria

Director: OSTR Mag. A. Berger

Director of Austrian Man-Made Fibre Institut: Dr. Hans Keiper

Project Manager: Dr. Robert Katschinka

Fifteenth 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 1988.

Final Report:

by Prof. Dipl. Ing. Dr. I. 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 Affairs

Mr. H. Miltner Mr. C. Krepela

Austrian Federal Ministry for Educations and Art

Mr. W. John Mr. O. Tischler

Austrian Federal Chamber of Commerce

Mr. H. R. Seidl

Mr. K. Haas

Mr. K. Leaber

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

Mr. A. Berger Mr. L. Machherndl

We also are indebted 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 fifteenth 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 production 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 change substantially in the near future, although olefin fibres have already become important in certain areas of application. Special fibres, including inorganic and carbon fibres, are still very expensive and will, for the present, continue to be produced only in small quantities.

5. On the whole, the trend is towards modified man-made fibres based on more basic polymer and extensive knowledge of production and conversion techniques. Chemical modification is affected essentially by: co-polymerization, introduction of additives, polymer combination, treatment by irradiation, introduction of reactive groups. Physical modification is possible by four principal methods: changing the fibre cross-sections or spinning hollow fibres, mixing elementary filaments of various types, texturing, increasing the number of elementary filaments while reducing the general titre.

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.
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 1988 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.

12. 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 26th September to 28th October 1988. (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 provide 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 attended by participants each from the following countries: China, Cuba, Ethiopia, Ghana, Guinea, India, D.P.R. Korea, Nigeria, Sudan, Tanzania, Uganda, Yemen Arab Republic, Democratic Yemen

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 quality 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 and 1988 see appendix VIII.

Appendix I

Agenda and programme of work

Opening Ceremony: 26th September 1988, Conference Room III, "C"-Building
at VIENNA INTERNATIONAL CENTRE

- 9:30 to 11:00 a.m. Chairman pro tem: Mr. M.A. Youssef
Officer-in-Charge
Chemical Industries Branch
Industrial Operations Technology
Division, DIO
- Opening Speech: Mr. M.H.A. Hamdy
Officer-in-Charge
Department of Industrial Operations
- Speeches: Mr. M. Krepela
Austrian Federal Ministry for
Foreign Affaires
- Mr. H. Lederleitner
Austrian Federal Economic Chamber
- Mr. H. Hubeny
Director
Laboratroy for Plastics Technology
- Mr. L. Machherndl
Höhere Bundes-Lehr- und Versuchs-
anstalt für Textilindustrie,
Spengergasse 20
A-1050 Vienna
- Man-Made Fibres Institue
(Österreichisches Chemiefaser-
institut)
- Mr. M. Wersonig
Austrian Plastics Processing
Company SCHMIDBERGER

Monday, 26th September 1988

11:00 - 12:00 Opening Ceremony, HBLVAT Vienna V

14:00 - 17:00 Presentation of National Papers at
Höhere Bundes-Lehr- und Versuchsan-
stalt für Textilindustrie

Tuesday 27th September - Friday 28th October 1988

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

Tuesday, 25th October 1988

19:00 Farewell Party at Ober St. Veit

Friday, 28th October 1988

08:30 - 12:00 Final session at HBLVAT, Vienna
Discussion about national problems

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-Blends
and their Properties

Dipl.Ing. J. Hördler
Member of the staff of the HBLVAT
A-1050 Vienna

Cotton, one of the major agricultural Products of this world
and some reflections on development and Industrialization

Ing. G. Grünwald
UNIDO Textile Expert

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

Viscose - Filaments for modern Textiles
Dipl.Ing. Dr. L. Kloimstein
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

The TREVIRA Sortiment - its Properties and Fields of Application
Dr. H. Zimmermann
Farbwerke Hoechst AG
Frankfurt, FRG

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

Transfer of Chemical Technology in Developing Countries

Dipl.Ing. K. Prah
Member of the staff of the HBLVAT
A-1050 Vienna

The Textile Industry from an International and National
Point of view

Dr. H. Huber
Hauptgeschäftsführer des Fachverbandes der
Textilindustrie
Vienna

Man-Made Fibres - Their Development and economic significance

Doz. A.O.Univ.Prof. Ing. DDr.habil H. Krässig
Formerly Director of the Research Department
of Chemiefaser Lenzing AG,
Lenzing Austria

Quality Control

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

Dipl.Ing. F. Führinger
Dr. H. Schludermann
H. Schneider
Chemiefaser Lenzing AG
Lenzing Austria

Introduction to Polyester-Fibre Production and Equipment

Dr. Straberger
Austria Faserwerke
Lenzing Austria

The TREVIRA Sortiment - its Properties and Fields of Application

Dr. H. Zimmermann
Farbwerke Hoechst AG
Frankfurt, FRG

Process Planing and Practical Work

Dipl.Ing. Dr. Mach
Member of the staff of the Chemiefaser Lenzing AG
Lenzing Austria

Viscose - and Modal Fibres in Blended Fabrics

A.O.Univ.Prof.Doiz.Dipl.Ing.Dr. H. Krässig
Director of the Research Department of Chemiefaser Lenzing AG
Lenzing Austria

Special Blends, i.e. Viscose, Polyester, Viscose/Cotton and
Viscose/Acrylic Fibres

Dr. K. H. Wegleitner
Chemiefaser Lenzing AG
Lenzing Austria

Yarn Preparation for Weaving Machines

H. Mall
Sulzer Rütli Machinery Works Ltd.
Rütli, Switzerland

Organisation of a Modern Textile Plant, Part I and II

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

Latest Technology in Engineering and Optimizing
Preparation machinery of Fibre Blending (Intimate Blend)
applications: Open End Yarns - Ring Yarns

M. Schwartz, B.S.C. Engineer
Trützscher GmbH & CoKG
Mönchengladbach, FRG

Sulzer Bros. and the Textile Industry

W. Bingisser
Sulzer Rütli Machinery Works Ltd.
Rütli, Switzerland

Typical Fabrics

W. Bingisser
Sulzer Rütli Machinery Works Ltd.
Rütli, Switzerland

Yarn Preparation

H. Mall
Sulzer Rütli Machinery Works Ltd.
Rütli, Switzerland

Project Studies

B. Streng/H. Mall
Sulzer Rütli Machinery Works Ltd.
Rütli, Switzerland

Raw Material - related influences on Machine and Yarn
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Interference Factors and their Effect at the Spinning Process
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Technical Application Conditions

Cotton

Blends

Man-Made Fibres

N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

A new quality standard - the knot-free package
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

The Piecing Carriage

N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

The principal of the automatic package doffer

N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Vaxing

N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

The Relationship between density, volume and diameter of packages

N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Installation Planing

N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Warp and weft pars in woven fabrics

N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Pars and uneven loop formation in knitted fabrics

N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Effective doubling in Rota Spinning

N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Spinning preparation and draw frames
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Technical application
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Manufacture of fine weaving yarns on AUTOCORO
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

New performance and quality standards in knitting, with fine-count
AUTOCORO yarns
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Some thoughts on the role of cotton in new spinning technologies
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Theoretical and practical limits of rotor spinning in the
production of fine yarns
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Foreign fibres - a problem in rotor spinning
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

Why does the need for finer, stronger and cleaner cotton fibers require
a change in the cotton grading and marketing system?
N.N., Schlafhorst & Co., Textile Machinery
Mönchengladbach, FRG

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 (Unevenness 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
measurement, Pretema, Switzerland
FIXOTEST
XENOTEST, Original Hanau Quarzlampengesellschaft, BRD
PRAXITEST
LABOR-STENTER, LABOUR-PADDING Machine, E. BENZ, Switzerland
EPPRECHT RHEOMAT 15 Contraves, Switzerland
FLAMMETESTER, 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 apparatuses, Scholl, Switzerland
HT-Dyeing apparatuses, Ochsner, Austria
HT-Yet Dyeing machine, Then, BRD

Appendix IV

Staff of the Training Programme

Director: Mr. OSTR Mag. A. Berger

Managing Director: Dr. R. Katschinka

Executive Manager: Prof. Dr. techn. Dipl.Ing. L. Machherndl

Scientific Adviser: Univ.Prof. Dr. W. Albrecht

Doz.A.O. Univ.Prof. Dipl.Ing.DDr.habil H. Krässig

Public Relations and social Engagements: Ing. R. Hetzer

Plant Visits: Dr. R. Katschinka

Lectures: Prof. Dr. W. Albrecht

Ing. H. P. Bauer

Ing. W. Bingisser

Ing. F. Führinger

Dipl.Ing. W. Graninger

Ing. G. Grünwald

Dr. B. Halder

Prof. Dipl.Ing. W. Herzog

Ing. R. Hetzer

Prof. Dipl.Ing. J. Hördler

Dr. H. Huber

Ing. H. Huff

Ing. R. Kampl

Dipl.Ing. Dr. L. Kloimstein

Ing. A. Kossina

Doz. A.O.Univ.Prof.Dipl.Ing.DDr.habil H. Krässig

Prof. Dipl.Ing. Dr. H. Lass

Ing. J. Lejeune

Dir. Doz. Dr. J. Lenz

Dipl.Ing. Dr. R. Mach

Prof. Dipl.Ing. Ing. Dr. L. Machherndl

Dipl.Ing. H. Mall

Dipl.Ing. Dr. J.M. Meißner
Dipl.Ing. L. Michel
Ing. G. Neudörfer
Ing. H. Pfister
Dipl.Ing. K. Prah
Dipl.Ing. M. Schwartz
Ing. H. P. Supanz
Ing. W. Schaumann
Dir. Ass. R. Schlie
Dr. H. Sch...
Dr. H. Schludermann
Dipl. Ing. J. Schmidbauer
Ing. K. Schnaubelt
Prof. Dipl.Ing. Dr. P. Schrefl
Dr. F. Straberger
Ing. B. Streng
Dr. K. H. Wegleitner
Dr. J. Zauner
Dr. H. Zimmermann

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

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

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, Sulphuric 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 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) VOEST-Linz AG A-4020 Linz

Appendix VI

LIST OF PARTICIPANTS

Country	Name	Address
China	Mrs. WANG YUN	Beijing Chemical Fibres Research Institute No. 75 Chao Nei St. <u>Beijing, China</u>
Cuba	Mr. FRANCO PEREZ Enérido	Apartado 39 <u>Sta. Clara, Villa Clara</u> Cuba (<u>Habana</u>)* Mario Rodriguez Hernandez Edificio 11 No. 51 Apto. 12 Entre 8va. y Doble Via Reprto Escambray, <u>Santa Clara</u> Cuba
Ethiopia	Mr. YIRDAW Tegenie	Ethio-Japanese Synthtic Textiles S.C. P.O. Box 2184 <u>Addis Ababa, Ethiopia</u>
Ghana	Mr. SARFO Emmanuel	Loyalty Industries Ltd. P.O. Box 6358 <u>Accra-North, Ghana</u>
Guinea	Mr. CONDE Souleymane	Ministry of Industry and Commerce B.P. 413 <u>Conakry, Guinea</u>
D. P. R. Korea	Mr. WON DEK YONG	<u>Sinnuizu City</u> North Pyongan Province (<u>Pyongyang</u>)* D. P. R. Korea
Nigeria	Mr. ADEWALE FATAHI OSHIKOYA	ATLANTIC TEXTILE MFG. CO. LTD. ILUPEJU <u>Lagos (Nigeria)</u>

* nearest international airport.

Sudan	Mr. ABDEL RAHIM ABDULIA ABDEL RAHIM	COTTON TEXTILE MILLS P.O.Box 203 <u>Khartoum North</u> Sudan
Tanzania	Mr. MWENDWA, Godfrey Dominic	Mwanza Textile Ltd. P.O.Box 1344 <u>Mwanza</u> <u>(Dar-es-Salam *)</u> , Tanzania
Uganda	Mr. WANYAMA, Aaron	African Textile Mill Ltd. P.O.Box 242 <u>Mbale (Kampala*)</u> Uganda
Yemen Arab Republic	Mr. AL-AMUDI Abdulatif Abdulaziz	Yemen Textile Corp. P.O.Box 214 <u>Sana'a</u> , Yemen Arab Republic
Democratic Yemen	Mrs. QASSIM Hassan Saeed	Textile and Spinning Factory P.O.Box 2003 <u>Aden</u> , Democratic Yemen
India	Mr. Shri Ranbir Kumar VIJ	Bongaigaon Refinery and Petro- chemicals, Ltd. Surya Kiran Bldg. 19, Kasturba Gandhi Marg, New Delhi 1, India

* nearest international airport.

Appendix VII

Social Activities

1. Trip to the Wachau, Visit to the Monastery of Melk and Dürnstein
2. Visit to the Empiral Chapel (Hofburgkapelle)
3. Visit to the Spanish Horse Riding School
4. Visit to the Museum of Arms
5. Visit to the Museum of Arts
6. Visit to the Museum of Textiles
7. Visit to the "Schatzkammer"
8. Private Invitations
9. Visit to the Monastery of St. Florian
10. Sight-Seeing Tour in Vienna
11. Visit to the Opera
12. Visit to the Monastery of Klosterneuburg
13. Farewell Party at Ober St. Veit

Appendix VIII

Home countries of Participants

	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	Total
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	
Afghanistan									1							1
Argentina	1				1								1			3
Bangladesh	1		1		1	1			3				1			7
Bolivia				1			1					1				3
Brazil	1				1		1	1	1							5
Bulgaria	1								1							2
Burma											1			1		2
Burundi											1					1
China							1	1				1	1	2	1	7
Colombia				1		1										2
Costa Rica		1														1
Cuba															1	1
Egypt	1	1	1	1	1	1	1		2			2		1		12
Ethiopia				1	1			1				2	1	1	1	8
Ghana			1	1		1	1				1			1	1	7
Guinea															1	1
Guyana										1						1
India		1			2					1					1	5
Indonesia		1	1	1					1							4
Iran	1															1
Iraq		1	2	2	2	1		1								9
Jamaica		1			1											2
Kenya						1										1
Korea		1								1			1		1	4
Libya		1		1				1								3
Malaysia												1	1			2
Mexico	1			1												2
Mozambique								1								1
Nepal											1					1
Nigeria															1	1
Pakistan		1		1									1	1		4
Peru		1							1					1		3
Philippines	1	1		1			1									4
PLO							1									1
Poland						1	1									2
Romania	1		1		1											3
Singapore	1	1	1													3
Somalia										1						1
Sri Lanka				1		1							2			4
Sudan									1					2	1	4
Syria			1			1	1									3
Tanzania								1		1	2				1	5
Thailand				1	1	1	1									4
Turkey	1		1			1		1					1			5
Uganda										1	1	1	1	1	1	6
Uruguay			1										1			2
Vietnam												1	1	1		3
Yemen A. Rep.									1						1	2
Yemen PR										1		1			1	3
Yugoslavia	1															1
Zambia										1		1				3
Zimbabwe											1					1
	12	11	12	14	12	11	10	8	12	8	9	11	12	12	13	167

The UNIDO in Vienna has bo 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.