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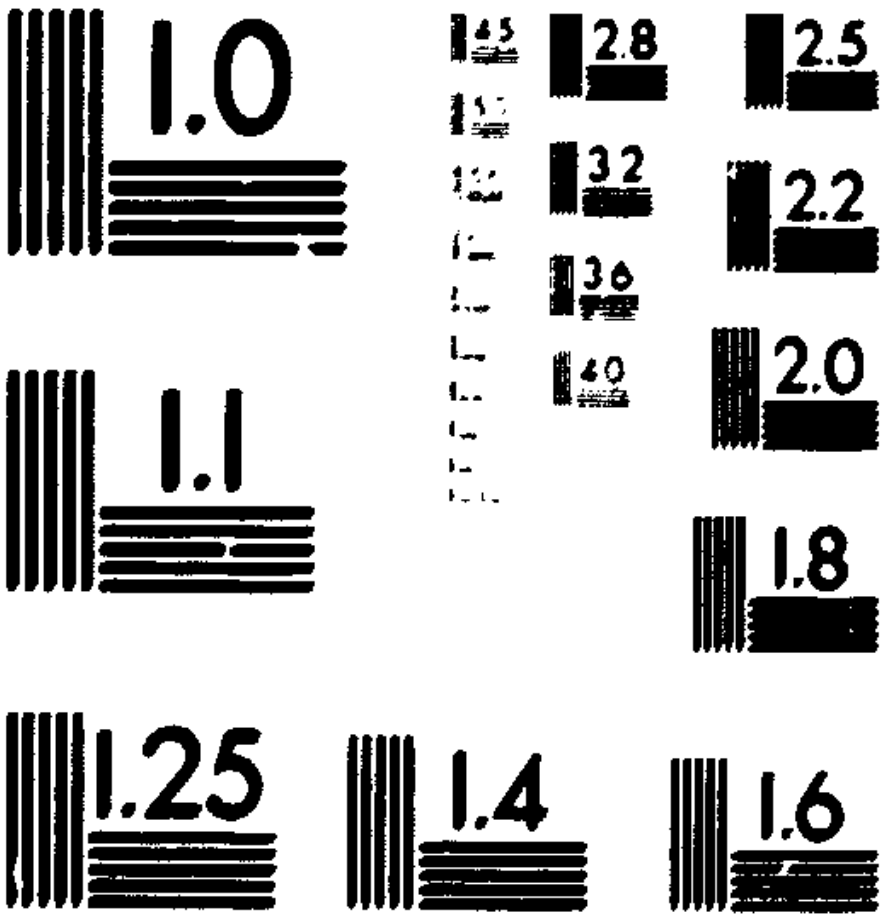

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FINAL REPORT

ON THE

ELEVENTH

TRAINING PROGRAMME

ON

SYNTHETIC FIBRES

APPLICATION OF SYNTHETIC FIBRES IN TEXTILE PROCESSING

US/INT/84/097

L. Machherndl 3394

Projet No.US/INT/84/097

11th In-Plant Training Programme

in the Field of Synthetic Fibres,

Vienna - Austria

Höhere Bundes- Lehr- und Versuchsanstalt für
Textilindustrie Wien V.,
Spengergasse 20, A-1050 Vienna, Austria
Österreichisches Chemiefaserinstitut
Plößlgasse 9, A-1040 Vienna, Austria

Director: Ms. A. KUBICEK
Managing Director: R. KATSCHINKA

Eleventh Training Programme in the Field of Synthetic Fibres.

Organized by the United Nations Industrial Development Organization (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 1st October - 25th October 1984

Final Report

by
L. MACHHERNDL
Executive Manager

C O N T E N T

Introduction

After a decade of successively conducted courses for advanced training - topic : "Production and Application of Synthetic Fibres" - for UNIDO - scholarshipholders, the organizers have decided - in agreement with UNIDO and the responsible authorities of the Republic of Austria - to take the current requirements of the textile industries of the individual developing countries into account by reorganizing the courses offered.

To increase their efficiency, a division with annually alternating contents is planned.
Consequently, the improvement of yarns and textiles of a less qualitative cotton by blending them with chemical fibres - both viscose and synthetic fibres - has been emphasized this year, with regard to cotton production in various countries.

This required a special concentration on such topis as spinning, production of woven and knit fabrics, textile printing, dyeing, finishing and care of textile products.
In 1985 topics covering problems like production of chemical fibres of all kinds and types, including their modification for certain end-uses as well as their spinning will be dealt with, forming the main part of this newly developed programme.

The reorganizations, however, cause an alternation with regard to the selection of the participants:
In 1984 we had experts from textile industries in central African states. For 1985 we expect participants to come from those countries in which an industry for manmade fibres is being built.

In addition to the problems associated with the realization of such projets, those of blending will be dealt with as well because blended fabrics are steadily advancing.

A valuable enrichment was offered by the opportunity given to the participants of this year's 11 th course to take part in the 23rd chemical fibre conference held in Dornbirn (26th to 28th September) by the Austrian Chemical Fibre Institute - Topic:"Chemiefasern für Problemlösungen"

A similar opportunity will be offered in 1985 when this conference will be conducted in Dornbirn again (25th to 27th September). Its topic, namely new developments concerning textile machines and extrusion spinning of quality yarns from blended fibres - will be one of the aims of the 12th UNIDO - course in Vienna.

1. Acknowledgements

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

Our thanks are specially directed to

Mr. A. Vassiliev (Director of Industrial Operation Division, UNIDO)

Ms. A. Tcheknavortah-Asenbauer (Offizier in Charge Chemical Industries Branch)

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

Mr. R. Gumen (Chemical Industrial Branch, UNIDO)

Mr. K. Sepic (Head, Agro-Industries Branch)

Mr. M. Minke (Agro Industries Branch)

Mr. D. Gardellin (Head, Purchase and Contract Service)

Mr. H. J. Bauer (UNIDO Investment Promotion Service)

Mr. K. Zerezghi (Industrial Infrastructure Branch)

Ms. H. Schindlauer (UNIDO, Chemical Industries Branch)

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. H. Miltner

Austrian Federal Ministry for Educations and Art

Mr. W. John

Mr. O. Tischler

Mr. D. Uyka

Austrian Federal Chamber of Commerce
Mr. H. R. Seidl
Mr. K. Haas

Association of Austrian Industrialists (VÖI)
Mr. P. Kapral
Mr. H. Krejci

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

2. Background and Objectives

The background and objectives of the training programme were stated in the Aide Memoire from March 1984 virculated by UNIDO as follows:

1. The programme, organized by the United Nations Industrial Development Organization (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 form developing countries. The programme will be carried out by 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 eleventh in a series of programmes implemented annually since 1974.

2. The trend of training activities in the field of production and application of synthetic 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 sompanies to deal with specific technological problems are also an important feature of current training programmes.

3. UNIDO implemented some technical assistance projets and held meetings in the field of synthetic fibres and this experience can be available for the developing countries through the training programme.

4. During the last decade, research and development work in the field of man-made fibres has been largely geared to rationalization and modification, and the fibre manufacturers have endeavoured to introduce new products on the market. The following types of synthetic fibres can be produced: aromatic polyamide fibres, which include a number of variations suitable for special fields of application, carbon fibres, produced by pyrolysis of cellulose, or polyacrylonitrile fibres under specific conditions. Carbon fibres are at present used solely as reinforcement for a wide range of matrix materials, polytetrafluoroethylene is one of the most stable polymers known. The properties of the major types such as polyamide, polyester, cellulose and polyacrylonitrile have also been modified recently. Taking into account environ-

mental pollution and energy problems, research centres throughout the world are also working on new technologies including new solvent systems, new processing during dyeing and finishing.

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

6. The objective of this training programme is to broaden an up-grade the participants' professional knowledge in a relatively short time and acquaint them with problems in the synthetic fibres industry and their solution, by concentrated training and exchange of information with specialists in the synthetic fibre industry.

7. The programme has received the support of the Austrian Federal Chancellery, the Austrian Federal Ministry of Foreign Affairs, the Austrian Federal Ministry of Education and Fine Arts, the Austrian Federal Economic Chamber and the Association of Austrian Industrialists (VÖI). 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.

3. Description of the Training Programme

The training course was divided into two parts and implemented over two years alternately from 1984: the first year concentrated on practical side of textiles in order to assist participants who are involved in the practical side of textiles, the second year would concentrate on technology for chemical people. 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 synthetic 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 1st October to 26th Ocotber 1984. (see appendix I for the time table)

The programme covered the latest technological developments in the field of application synthetic fibres in textile processing and consisted of a theoretical part designed to up-date the participants's knowledge on synthetic 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 synthetic 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 institute's 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 ooportunity 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:
Burma, Burundi, Ghana, Nepal, Tanzania, Uganda, Zambia, and Zimbabwe.

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 synthetic fibres and blending and quality control in the participants home country.

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 Synthetic Fibres 1974, 1975,1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983 and 1984 see appendix VIII.

Appendix I

Agenda and programme of work

Opening Ceremony: 1st Ocotber 1984. Conference Room III

09:30 - 11.30 Chairman pro tem: Ms. A. Tcheknavorian-Asenbauer
Officer-in-Charge
Chemical Industries Branch
Division of Industrial Operations
UNIDO

Opening speech: Mr. A. A. Vassiliev
Director
Division of Industrial Operations
UNIDO

Speeches by: Mr. H. Miltner
Adviser to the Permanent Representative of Austria to UNIDO

Ms. B. Dekrout
Counsellor
Austrian Federal Chancellery

Mr. K. Haas
Austrian Federal Economic Chamber

Mr. H. Hubeny
Director
Laboratorium für Kunststofftechnik
LKT-TGM (Laboratory for Plastics Technology)

Mr. R. Katschinka
Director
Österreichisches Chemiefaser-Institut
(Austrian Man-made Fibre Institut)

Monday, 1st October - Friday 26th October 1984

09:00 - 12:00 and 14:00 - 17:00	Lectures at Höhere Bundes- Lehr- und Versuchsanstalt für Textil-industrie In-plant training and plant visits, laboratory work

Thursday, 25th October 1984

14:00 - 17:00	Final Session at HBLVAT, Vienna Discussion about national problems
19:00	Farewell Party at Sievering

Appendix II

Details of Lectures

Subjet	Hours
Man-made Fibre Trends Raw Materials and the Environment W. Albrecht, Prof. Dr. Head of Textile Technology Institute of Enka Glanzstoff AG, Wuppertal, FRG	4
Selection of Fibres and Yarn Constructions for Textiles W. Albrecht, Prof. Dr., Head of Textile Technology Institute of Enka Glanzstoff AG, Wuppertal, FRG	4
Processing of Synthetic Fibres and Blends Fibre-Blends and their Properties J. Hördler, Dipl.Ing. Member of the staff of the Höhere Bundes- Lehr- und Versuchs-anstalt für Textilindustrie, Vienna	3
Cotton, one of the mayor agricultural Products of this world and some reflections on development and industrialization G. Grünwald, Ing. , UNIDO Textile Expert	1
Biophysical Evoluation of Protective Clothing by Use of Laboratory Measurements and Predictive Models K.H. Umbach, Dr., Bekleidungsphysiologisches Institute, Hohenstein e.V.	4
Yarn Making - Yesterday - Today - Tomorrow K. Schnaubelt, Ing., Member of the staff of the HBLVAT, Vienna	3
DREF - Friction Spinning Systems for Yarns in Coarse and Medium Count Range M. Gsteu, Techn. Sales engineer, Textilmaschinen-fabrik Dr. Ernst Fehrer AGm Kinz, Austria	2
Manufacture of Blended Yarns H. Tamas, Dipl.Ing. andR. E. Rebsamer, Ing., Riefer Machine Works Ltd, Winterthur, Switzer-land	4

Subjet	Hours
Chemistry and Technology of Cellulosic Staple Fibres and Filaments R. Färber, Dipl.Ing., Enka Austria AG St. Pölten, Austria	2
How to Spin a Quality Yarn from Cotton or Blends R. Siegl, Dir.Ing., F.M. Hämmerle, Textilwerke Dornbirn, Austria	4
Chemical Methods of Fibre Modification H. Lass, Dr., Member of the staff of the Höhere Bundes- Lehr- und Versuchsanstalt für Textilindustrie, Vienna	2
Physical Methods of Fibre Modification W. Herzog, Dipl.Ing. , Member of the staff of the Höhere Bundes- Lehr und Versuchsanstalt für Textilindustrie, Vienna	2
Fibre Fineness, Micronaire Reading of Cotton Fibres J. Hördler, Prof.Dipl.Ing., P. Schrefl, Prof, Dipl.Ing., Dr., Members of the staff of the HBLVAT, Vienna	3
Introduction to Polyester-Fibre Production and Equipment W. Peters, Dir.Dr. Austria Faserwerke,Lenzing Austria	1
The TREVIRA^{R} Sortiment - its Properties and Fields of Application H. Zimmermann, Dr., Farbwerke Hoechst AG, Frankfurt, FRG	2
Process Planing and Practical work A. Ernst, Ing., N. Mach, Dipl.Ing.Dr., Members of the staff of Chemiefaser Lenzing AG, Lenzing , Austria	2
Viscose- and Modal Fibres in Blended Fabrics H. Krässig, Doz., A.O. Univ.Prof.Dipl.Ing.Dr., Director of the Research Department of Chemiefaser Lenzing AG, Lenzing, Austria	4
Special Blends, i.e. Viscose, Polyester, Viscose/Cotton and Viscose/Acrylic Fibres J. Lenz, Dir. Doz., Chemiefaser Lenzing AG Lenzing, Austria	1

Subjet	Hours
Methods for Quality Control L. Puchegger, Dr., Chemiefaser Lenzing AG, Lenzing Austria	4
Economic Importance of Cellulosic in the World and in Austria R. Schlie, Dir. Ass., Chemiefaser Lenzing AG Lenzing, Austria	1
Cotton-Synthetic Mixtured Fabriecs H. Pfister, Sulzer Rüti Machinery Works Ltd, Rüti, Switzerland	1
Projectile Weaving Machines I + II F. Kneubühler, Sulzer Rüti Machinery Works Ltd. Rüti, Switzerland	2
Rapier Weaving Machines H. Locher, Sulzer Rüti Machinery Works Ltd., Rüti, Switzerland	1
Air-Jet Waeving Machines H. Locher, Sulzer Rüti Machinery Works Ltd. Rüti, Switzerland	1
Yarn Preparation for High-Speed Shuctleless WeavingMachines H. Pfister, Sulzer Rüti Machinery Works Ltd. Rüti, Switzerland	2
Organization of a Modern Textile Plant I + II B. Streng, Sulzer Rüti Machinery, Works Ltd. Rüti, Switzerland	2
Special Types of High-Speed Shuttleless Weaving Machines F. Kneubühler, H. Locher, H. Pfister Sulzer Rüti Machinery Works Ltd., Rüti, Switzerland	2
Blended Yarns for Circular Knitting H. Strauß, Engineer, Fa. Mayer & Cie, Allerstadt, FRG	4
Knitted Fabrics from Blended Yarns W. Graninger, Prof.Dipl.Ing., Member of the staff of HBLVAT, Vienna	4

Subjet	Hours
Dyeing and Finishing of Woven and Knitted Fabrics form Blended Yarns W. Lebensaft Prof.Dr., L. Machherndl, Prof. Dr., Members of the staff of HBLVAT, Vienna	3
The Burning Behaviour of Textiles-Textile Floor Covering H.P. Bauer, Ing., Austrian Textile Research Institute, Vienna	4
Advanced Drycleaning Technology P.Panrok,Böwe-Maschinenfabrik, Augsburg, FRG	2
The Laundry in Theory and Practice R. Hetzer, Ing., Member of the staff of HBLVAT, Vienna	2
Application of Polypropylene Fibres in Nonwovens G. Hüttner, Dipl.Ing., Chemie Linz AG, Linz Austria	3
Man-made Fibres for Technical Purposes H. Hailwax, Ing., Management Department of Erste Österreichische Glanzstoff-Fabrik AG, Vienna	2
Transfer of Chemical Technology in Developing Countries K. Czeya, Dozent, Dr. Dipl.Ing., Vienna	2
The Textile Industry from an International and National Point of View H. Huber, Dr., Hauptgeschäftsführer des Fachverbandes der Textilindustrie, Vienna	2
The Economic and Technical Future of Man-made Fibres H. Krässig, Doz.A.O.Prof.Univ.Ing.,DDr. habil, formerly Director of the Research Department of Chemiefaser Lenzing AG,Lenzing	2

Appendix III

Equipment for Testing Fabrics and Man-made Fibres

Programme at HBLVA 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
INSTROM, breaking-strngth 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
BURSTING-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 measurement, Pretema, Switzerland
FIXOTEST
XANOTEST, Original Hanau Quarzlampgengesellschaft,BRD
LINITEST
PRAXITEST
LABOR-STENTER, LABOUR-PADDING Machine, E. BENZ, Switzerland
EPRECHT 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
HT-Dyeing apparatures, Scholl, Switzerland
HT-Dyeing apparatures, Ochsner, Austria
HT-Yet Dyeing machine, Then, BRD

Appendix IV

Staff of the Training Programme

Director: Ms. OSTR Mag. akad. Maler A. Kubicek
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
Hans Krässig

Public Relations and Social Engagements: Ing. R. Hetzer
Plant Visits: Dr. R. Katschinka

Lectures: Prof. Dr. W. Albrecht
Ing. H. P. Bauer
Doz. Dr. Dipl.Ing. K Czeja
Ing. A. Ernst
Dipl.Ing. R. Färber
Dipl.Ing. W. Graninger
Ing. G. Grünwald
Ing. M. Gsteu
Prof. Dr. M. Hackauf
Ing. H. Hailwax
Prof. Dipl.Ing. W. Herzog
Ing. R. Hetzer
Prof. Dipl.Ing. J. Hördler
Dr. H. Huber
Dipl.Ing. G. Hüttner
Ing. F. Kneubühler
Doz. A.O.Univ.Prof.Dipl.Ing.Dr.Dr habil.
H. Krässig
Prof. Dipl.Ing. Dr. H. Lass
Prof. Dr. D.M.Sc. W. Lebensaft

Dir. Doz. Dr. J. Lenz
Ing. H. Locher
Dipl.Ing. R. Mach
Prof. Dipl.Ing. Dr. L. Machherndl
Dr. G. Peters
Ing. H. Pfister
Dr. L. Puchegger
Ing. R. E. Rebsamen
Dir. Ass. R. Schlie
Ing. K. Schnaubelt
Prof. Dipl.Ing. Dr. P. Schrefl
Ing. R. Siegl
Ing. H. Strauß
Ing. B. Streng
Dipl.Ing. H. Tamas
Dr. K. H. Umbach
Dr. H. Zimmermann

Assistance and Preparation: Ass G. Jessner, G. Schneider

M. Fried
S. Friedl
G. Gschmeidler
A. Luger
H. Neufingerl
R. Nothelfer
J. Pichler
H. Stütz

Appendix V

In-Plant training and plant visits

To the special interest of the participants inplant 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 an regional and technical survey on the Austrian man-made fibre-producing and using industry:

1) Enka Austria, Viscose fibres, Rayon	A-3100 St.Pölten
2) 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
3) Austria Faserwerke GesmbH	A-4860 Lenzing
4) Linz Textil AG Spinning and weaving mill	A-4020 Linz
5) Tumfart Comp., Weaving Mill	A-4183 Traberg
6) Baumann, Textile Printing Factory	A-3950 Gmünd
7) Schiel Seide AG	A-3813 Dietmanns
8) Triumph International AG	A-2700 Wr.Neustadt
9) Salesianer-Laundry	A-2700 Wr.Neustadt
10) Chemie Linz AG Filaments, Spun Fibres, Sheets Non-wovens, Fertillizers, Pharmaceuticals, Laboratories	A-4020 Linz

11) Textilmaschinenfabrik Dr.E.Fehrer A-4021 Linz

12) Becker & Söhne, Spinning Mill A-4614 Marchtrenk

Appendix VI

LIST OF PARTICIPANTS

Country	Name	Address
Burma	Mr. Hla TUN	c/o Mr. E. Dessau Resident Representative United Nations Development Programme (UNDP) P.O. Box 650 Rangoon
Burundi	Mr. Celestin NIYINDEREYE	c/o Mr. H. van der Kloet Resident Reepresentative UNDP, P.O.Box 1490 Bujumbura
Ghana	Mr. Samuel B. AYAGIBA	c/o Mr. A. Mubanda Resident Representative UNDP, P.O.Box 1423 Accra
Nepal	Mr. Vijay UPAHYAY	c/o Mr. T. Niwa Resident Representative UNDP, P.O.Box 107 Kathmandu
Tanzania	Mr.Clement N. MNZAVA	c/o Mr. D. Quattara Resident Representative UNDP, P.O. Box 9182 Dar-es-Salaam
Tanzania	Mr.Clement S. MUNISI	c/o Mr. D. Quattara Resident Representative UNDP, P.O. Box 9182 Dar-es-Salaam
Uganda	Mr. Aaron WANYAMA	c/o Mr. A. Fre-Hiwet, OiC UNDP P.O. Box 7184 Kampala
Zambia	Mr.Peter Carl MUNTHALI	c/o Mr. D. Dragic Resident Representative UNDP P.O. Box 31966 Lusaka
Zimbabwe	Mr. Peter TEMBO	c/o Mr. A. Ambatchev Resident Representative UNDP P.O. Box 4775 Harare

Appendix VII

Social Activities

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

Appendix VII

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11) Visit to the Museum of Arts

Appendix VIII

Home countries of Participants

	74. 1.	75. 2.	76. 3.	77. 4.	78. 5.	79. 6.	80. 7.	81. 8.	82. 9.	83. 10.	84. 11.	Total
Afghanistan									1			1
Argentina	1				1							2
Bangladesh	1		1		1	1			3			7
Bolivia				1			1					2
Brazil	1				1		1	1	1			5
Bulgaria	1								1			2
Burma											1	1
Burundi											1	1
China							1	1				2
Colombia				1		1						2
Costa Rica			1									1
Egypt	1	1	1	1	1	1	1		2			9
Ethiopia				1	1			1				3
Ghana			1	1		1	1				1	5
Guyana										1		1
India		1			2					1		4
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		2
Lybia		1		1				1				3
Mexiko	1			1								2
Mozambique								1				1
Nepal											1	1
Pakistan		1		1								2
Peru		1							1			2
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
Sudan									1			1
Syria			1			1	1					3
Tanzania								1		1	2	4
Thailand				1	1	1	1					4
Turkey	1		1			1		1				4
Uganda										1	1	2
Uruguay			1									1
Yemen A. Rep.									1			1
Yemen VR										1		1
Yugoslavia	1											1
Zambia									1		1	2
Zimbabwe											1	1
	12	11	12	14	12	11	10	8	12	8	9	119

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 projet.

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.