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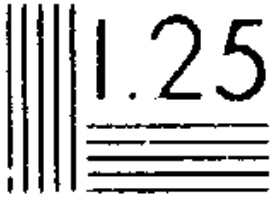
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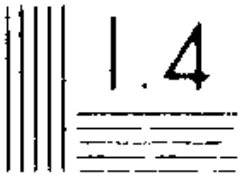
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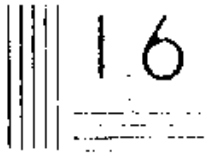
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11499

FINAL REPORT

by Helmut Hubeny

Project in the Arab Republic of Egypt.

UNIDO DP/EGY/77/004/11 - 02/S/32.1. H

Egypt.

Expertise in Training Assistance

Plastics Development Centre (PDC) Alexandria

11. July - 25. July 1981

Alexandria, Vienna, July 1981

ZT 107/Hu/GH

1. Purpose and Duties:

To establish an operationally active and effective Plastics Development Centre (PDC) to undertake and provide technical support necessary both for strengthening and expanding the Egyptian Plastics Industry.

The expert will undertake training activities considering the following top priorities:

a) Application of plastics in agriculture in order to irrigate and cultivate desert areas.

b) Introduction of modern technologies in the processing industry.

c) Training of technical personnel.

d) Trouble shouting.

The expert will also be expected to prepare a final report, setting out the findings of his mission and his recommendations to the Government on further action which might be taken.

2. Background:

2.1. Country Programme for Egypt 1982 - 1986

The Third Country Programme for Egypt covers the period 1982 - 1986.
The Department of International Co-operation for Development of the Ministry of Foreign Affairs, in concert with the UNDP office in Cairo was responsible for the preparation of the Programme, in consultation with the Ministry of Planning and the technical ministeries, departments and UN Agencies. The programming exercise was conducted throughout the entire year of 1980. In April 1980 the Resident Representative submitted the Government a note in which were defined the areas of concentration envisaged for the UNDP Technical Assistance in line with the priorities of the new National Development Plan (1980 - 1984).

The project EGY/77/004 - Plastics Development Centre for Agricultural Purposes (Phase II) is listed in the Country Programme by Governing Council, UNDP contribution US $ 600.000,--, duration 3 years.

"The second phase of the project is aimed at consolidating the activities of the Centre which started in 1979. Emphasis will be on the application of plastics for agriculture in order to irrigate and cultivate desert areas, introduction of modern technologies in the processing industry and training of technical personnel".

The present experts report refers to this project description as the basis for the phase II - period.

2.2. Sister-Institutional Agreement

2.2.1. Basic Agreement of 9. February 1981:

The Plastic Development Centre Alexandria (PDC, Egypt) and the Laboratorium für Kunststofftechnik Wien (LKT - TGM, Austria) under the patronnage of United Nations Development Organisation (UNIDO, Head - quarter Vienna) agree upon co-operation in training, quality control, applied research and development in the field of Plastics Technology, covering compounding, processing, finishing, application and recycling.

This sister-institutional arrangement in Plastics Technology has to ensure continuous interchange and updating of technical and organisational information and services by:

- Special training arrangements.
- Exchange of specialised experts at short notice.
- Planning execution and evaluation of common projects and services.
- Mutual visits to sister-institutions.

This agreement is to be carried out accordingly to the UNDP project EGY/77/004 by considering the following top priorities:

- Application of plastics in agriculture in order to irrigate and cultivate desert areas.
- Introduction of modern technologies in the processing industry.
- Training of technical personnel.
- Trouble shouting.

2.2.2. Sister Institute Contract Part I of 25. May 1981:

Following the Basic Agreement between PDC and LKT - TGM dated 9. February 1981, the first part, basic services, was contracted on 25. May 1981 covering the following fields:

a) Basic Advice for Equipment and Operation

- Advice in the preparation of a technical and operational manual for the library including list of books, reports and periodicals
- Advice in the preparation of a technical manual for the workshop including equipment and maintenance
- Advice in the preparation of a technical manual for

the optical laboratory (Microscopy, photography, copysystems)

b) Basic Advice for Output-Activities

- Advice in the preparation of market surveys
- Advice in the preparation of feasibility studies

c) Permanent Advice in Technical Assistance

- Permanent literature and patent research (INPADOC-International Patent Documention Vienna) in plastics technology and plastics in agriculture (summary every three months)
- Permanent information on LKT-research results (summaries in English)
- Permanent information through the Austrian Plastics Journal (Österreichische Kunststoff-Zeitschrift, bimonthly) with summaries in English
- Permanent technical and administrative inquiry-service by advice and assistance on request concerning
  - technical services
  - specification problems
  - material and equipment problems
  - administrative problems
- Support in the preparation of lectures, lecture notes, photos and slides concerning new applications.

d) GFKT-Membership

(GFKT: Gesellschaft zur Förderung der Kunststofftechnik, Association for the Promotion of Plastics Technology)

Benifit:
- Permanent technical information
- Austrian Plastics Journal
- 40 % discount for test series
- survey of Austrian expert recruitment

The 2nd part (Training Activities) will be finalised after the next mission of Prof.Dr.H. Hubeny to PDC Alexandria in July 1981.

2.3. Final Report by H. Hubeny, ZT 97/Hu/GH, February 1981

According to this document, the output of PDC in the field of training are TRAINING PROGRAMMES with PDC-CERTIFICATES at the level of undergraduates (industrial: skilled workers,

foremen, technicians; rural: farmers, workers), graduates and post-graduates (technologists, engineers, doctors) of following planned arrangements:

- Plastics technology:

  a) undergraduate courses, 1 - 3 weeks,
  20 % theory
  (max. 20 participants)
  80 % practice
  (max. 5 participants per group)

  b) postgraduate courses, 1 week,
  40 % theory
  (max. 20 participants)
  60 % practice
  (max. 5 participants per group)

  c) seminars, workshops, discussion-meetings, demonstrations 1 - 3 days (max. 70 participants)

- Plastics and Agriculture:

  a) undergraduate coruse, max. 1 week, 2 h/day theory, practice and demonstration to the experimental stations and to the pilot plant (max. 20 participants)

  b) postgraduate course, 1 h/week, Faculty of Agriculture

  c) Seminars, workshops, discussion-meetings, demonstrations, 1 - 3 days
  (max. 70 participants)

Technology courses can start after completion of the building and after operation of extruders and injection moulding machines. For one average training programme a full-time equivalent of 0,3 man-year has to be estimated.

The following output profile for 1982 was planned:

a) Plastics technology courses:

level	courses	participants
undergraduate	1	15
graduate	-	-
seminars	1	30

b) Agriculture and Plastics:

undergraduate	1	15
graduate	1	5
seminars	1	50

2.4. Personal Progress Report by O.Abu Zeid

During 1981 the following Application Development Projects have been contracted:

- Nouberia (Nouberia Sead, West Nouberia Cie.)
  100.000 ha cultivation, canal lining and other applications
- Marsa Matrou: water reservoirs, experimental stations, drip irrigation
- private agreements
- Red Sea (in discussion)
  hydroponic systems
- Sinai (in discussion)
  water reservoirs

With respect to those activities the industrial needs are the following:

a) Improvement of plastic materials:

selection of raw materials, standards for foreign purchasing committees (PDC as adviser), product design, quality control systems

b) New market areas in Egypt:

feasibility studies
market surveys

c) Specifications for industry and agriculture

Considering the gap of specifications for plastics in agriculture, several committees between plastics industry and agriculture have been formed under the sponsorship of the Ministery of industry in June 1981.

PDC acts as a permanent secretary in all committees which cover the following fields:

- Plastics black film used for canal lining for the purpose of surface irrigation in reclaimed areas.
- Long duration Plastic films used for plant protection - (green houses - tunnels)
- Perforated plastic long duration film used for plant protection

- Plastic materials used for installation of poultry houses.
- Technical spezifications for plastic systems for trinckle irrigation.
- Technical spezifications for plastic systems for drip irrigation.
- Plastic film used as silage for animal feeding.
- Transparent and black films used for mulching.

3. Training Assessment

3.1. Selection of Companies

The training needs of the Egyptian plastics industry have been determined by plant visits and personal interviews with the chairmans and the officers in charge with training activities. Three public and two private companies in Alexandria and Cairo, representing the potential Egyptian plastics processors, have been thoroughly selected and prepared by Dr. O. Abu Zeid according to the plan in appendix A. The results of the discussions can be summarised as follows (chronological order).

3.2. Middle East Company, Alexandria

Reference: Mr. Zaky Farag, Chairman
Summary: The company is well equiped to the latest standard of plastics technology. There is a gap in skilled technicians who are able to control the automatic and semi-automatic injection moulding and blow moulding machines and to adjust, start and supervise the processes. Up to now peopleare trained on-the-job. Maintenance, repair, process assessment and process control is executed by the family members of the owner. The gap between workers and engineers should be bridged. One problem of this private company consists in a permanet loss of on-the-job trained people.

3.3. Egyptian Plastics Company, Alexandria

Reference: Dr. Farouk Garrana, Chairman
Mr. Hazin Elkholy, Leader of Plastics Department.

Summary:
The chairmans point of view is to start with training of the middle management and to continue by training of supervisors and technicians in consideration of psychological reasons. Up to middle management (university graduates, minimum middle school graduates) has to become quality and training oriented.

The following items have to be considered in a training programme for the middle management:

- quality control, quality consciousness
- training oriented behaviour
- evolution of maintenance programmes
- increase of productivity
- cost consciousness
- know-how of training programmes

Supervisors should close the gap between workers and engineers. They have to be training oriented and make best use of material and equipment. A minimum standard on quality and trouble shouting is required.
The local training programmes should effect a change of mind, a change in behaviour. The duration of one month is considered as realistic by the chairman.

The Head of the Plastics Department confirm the priority to fill the gap between unskilled people and management.

Training of graduated people should start first with one week theory and one week practice in the factories. The following items are important:

- mould design and mould making
- testing and quality control
- selection of machinery
- protective maintenance (scheduling of maintenance)
- reductions of costs

Supervisors have to be trained in

- basic knowledge of materials (PE, PP, PVC, PS, Engineering materials, PF, MF, VF)
- mould protection
- machine adjustment (temperature, pressure, time)
- trouble shouting

3.4. Alsharif Plastics Factories, Caire

Reference: Abdel Latif A. Alsharif, Managing Director
Summary: The office gives a well organized impression. According to the directors opinion Egyptian plastics industry need technologically trained people at all levels with extrem shortage from supervisors. The main problem is the change of mentality. People have to become maintenance oriented and efficiency oriented. From the technical point of view electrical maintenance using microcomputers and mould design is the main shortage. Technical people are at the present trained by European Companies (i.e. Cincinnati) local training is preferable. The director recommands that PDC should contact the American Cairo University. The courses for engineers and technologists are to be held in English (in order to avoid translation faults) for foremen in Arabic. Any duration of the training programme is accepted if the programme is worthwile. There are some restrictions concerning the place Alexandria.
A part from training problems the director suggests top priority for the creation of standards and specifications for fittings and pipes according to DIN (ISO).

3.5. Medical Packing, Cairo

Reference: Gamal Ghali, Chairman
Gomaa Gamal Saleh, General Manager R & D Department
Hassan Youssif Samaha, Chief of Production
Nasrat G. Ghabrial, Chemist, R & D Departement

Summary:
The chairman welcomes any local training prefering Cairo.
The longest training period should be one week in order to keep people on the job.
The general manger of R & D department reports that the company has internal training with LIMEX for 13 years in the field of electrical maintenance, mould making and raw materials in English for engineers. Graduated persons give lectures to supervisors in Arabic and work out lecture notes in both English and Arabic. There is a personal link to the Cairo University by giving lectures in plastics technology in agriculture, engineering, pharmacy and science.
At the moment there are 5 lecture notes in English and Arabic on testing methods but no equivalent equipment.
The manager is author of a book "New dictionary of plastics" in Arabic language (Content: Historical background, statistical figures, raw materials, processing, trade names).
It seems to be suitable as supplement to the PDC training programmes.
According to the opinion of the R & D department the standardisation according to DIN (ISO) has preference.

4. Capacity of PDC in 1982/83

4.1. Staff

For training activities in plastics technology are available

Dr. O.A. Zeid and Eng. N. Nosseir (see also appendix B)
Eng. Mohamed Elsayed
Mr. Mohamed Abdel Halim
Eng. Magdy Gharib Farag
Eng. Mohamed Kamal
Eng. Nagwa El Mnawey

4.2. Equipment

During this mission the testing laboratory is in completion. The equipment according to appendix C and one press is in the institute.
The following equipment will be available at the end of 1981:

1 blow moulding machine
1 injection moulding machine
1 film blowing machine
1 extruder

5. Conclusions

5.1. Evaluation Basis

In order to meet the urgent need of the Egyptian plastics industry represented by discussions with chairman and managers of the leading public and private companies (item 3), the experiences of PDC (item 2.4), the capacity of PDC (item 4) and the output-documents (item 2.3) the following conclusions are to be considered.

5.2. General Training Objectives

Local training programmes are appreciated by the Egyptian industry. Up to now people are trained abroad. Local training programmes are considered as top priority with high efficiency for industry. Those training programmes have above all to initiate an irreversible change of behaviour and not only to give information to the participants.
Local training programmes help to overcome the gap between unskilled workers and middle management. The main objectives are quality consciousness, training consciousness and maintenance consciousness in order to increase total productivity of the industrial processes.
The middle management should be enabled to induce on-the-job-training, to motivate and to encourage themselves and their staff.
Technicians should be enabled to quality minded behaviour.

5.3. Participants

Training is required in the first place for middle management, engineers, technologists, young managers and secondly for technicians and supervisors. According to those require two types of courses should be established:

- industrial training programmes for technologists (middle management)
- vocational training programmes for technicians.

In order to avoid translation faults English and Arabic language is recommended for the middle management programme. Selection of participants has to consider this fact. Vocational training programmes are to be held in Arabic language using translation if necessary.

5.4. Content

Industrial training programmes for middle management should inform on

- general knowledge of plastics technology: plastic materials, additives, compounding processing, recycling
- quality control, test methods, standardisation, specifications
- principles of mould design, mould repair
- control engineering: process analysis, electronic control
- maintenance: electrical maintenance, scheduling
- training methods: learning and teaching
- cost control
- new applications.

Vocational training programmes for technician should inform on

- basic knowledge of raw materials
- principles of plastics processing including finishing
- machine adjustment
- maintenance and repair
- trouble shouting
- principles of quality control

5.5. Method

The main problem is the gap between graduated people and workers. Engineers with a good theoretical background have to be encouraged for practical work and workers should be motivated to act with knowledge of the interrelation between theory and practice. Both should be motivated in the correct use of equipment (in some companies many documents on testing exist - but no testing equipment and vice versa).
The training method consists in a very close relation and interaction between theoretical information by lectures and discussion and the practical work in the test laboratory and the pilot plant.
Participants in each training programme have to do both - theory and practice.
The instruments have to be operated and the results of practical exercises have to be recorded systematically and evaluated by each participant, in connex with theoretical lectures.
Theoretical lectures, seminars and discussions are to be held by PDC staff, foreign experts and experts from the Egyptian plastics industry. The lectures have to be supported by slides, films, lecture notes and report forms. Practical work is guided and operated by PDC staff.
Plant visits and visits to experimental stations are required from industry in order to complete the programme.
The programme is adjusted to the level of the participants and includes case studies and grouptraining.

5.6. Place

Although some Cairian managers prefer to have local training in Cairo, the programmes have to take place in Alexandria because they are directly connected with the test lab and pilot plant facilities. PDC Alexandria will be the only place in the next phase with all facilities in theory and practice. Furthermore it is useful for industrial people to be outside in order to initiate thinking and to start a change of behaviour (see item 4.2.).

5.7. Duration

The statement of managers differ between 1 month minimum and 1 week maximum. Following practical experiences of oversea training programmes and looking for a reasonable compromise the following durations seems to be realistic:

- Industrial training programmes for middle management:
  2 weeks maximum
- Vocational training programmes for technicians
  4 weeks minimum in two or three parts.

6. Training Recommendations

6.1. Training Activities

In consideration of PDC's capacity (item 4) and of the sister-institute agreement with LKT-TGM (item 2.2) five types of training programmes for middle management and for technicians are suggested:

TP 1: Industrial Plastics Technology for Middle Management
2 weeks (80 hours), 8 - 12 participants, March/April 1982

TP 2: Industrial Plastics Engineering for Middle Management
2 weeks (80 hours), 8 - 12 participants,
August/September 1982

TP 3: Plastic Processing I for Technicians
2 weeks (80 hours), 15 - 20 participants,
Nov./Dec. 1982

TP 4: Plastics Processing II for Technicians
2 weeks (80 hours), 15 - 20 participants, Jan./Feb. 1983
Condition: Certificate of Plastics Processing I

TP 5: Plastics Processing III for Technicians
2 weeks (80 hours), 15 - 20 participants,
March/April 1983
Condition: Certificate of Plastics Processing II

The courses are principally conducted by PDC in co-operation with one professor and one engineer of LKT-TGM according to the sister-institute-agreement part II.
Lectures are given by LKT and PDC lecturers, machines are operated by PDC staff.

Preparation of personnel, expendable and non-expendable equipment is executed by PDC.

Each course includes theoretical lectures using slides, overhead-sheets and samples, practical work of each participant at the machines and instruments of PDC, plant visits to relevant companies and experimental stations near Alexandria and one day with public discussion or seminar ("workshop") with Egyptian managers up to 50 participants.

6.2. Work-Plans for Industrial Training Programmes

6.2.1. Industrial Plastics Technology for Middle Management

Code Number: TP 1
Title: Industrial Plastics Technology
Language: English/Arabic

Participants: Technologists, engineers in plastic processing companies with practical experience (mechanical, chemical, electrical engineering, quality control)

Objectives: The Training Programme help to bridge the gap between specific requirements of quality consciousness and the theoretical knowledge and the practical experience of the participants. Middle management staff should be motivated to increase productivity by quality consciousness and to motivate their staff to intensive training.

Content: Thermoplastic and thermosetting materials - properties and structure - compounding - processing - finishing - recycling - new applications in agriculture.
Mould design - die design - control engineering - maintenance.
Viscolelastic behaviour of plastics - rheology - morphology - mechanical, thermal, optical, electrical behaviour - stability, ageing, stress crazing, creep - flammability - chemical resistance - test methods - standardisation - specifications.
Techno-economic aspects of quality control - statistics.
Learning and teaching methods.

Method: Multi-media lectures including group discussions - slides, overhead sheets, films - supporting lecture notes - processing data forms - test report forms - exchange of experience with company managers - demonstrations - practical group training in the test laboratory, in the pilot plant and in the workshop - simulation of industrial problems - case studies - plant visits - visits to experimental stations.

Schedule: Duration: 2 weeks
36 hours lectures
4 hours seminar ("workshop", exchange of experiences)
40 hours practical work including plant visits
Sat. - Wed. 8.30 - 14.30, Thurs. 8.30 - 12.30

Date: Saturday, 20 March 1982 - Thursday 8. April 1982

Place: PDC Alexandria

6.2.2. Industrial Plastics Engineering for Middle Management

Code Number: TP 2

Title: Industrial Plastics Engineering

Language: English / Arabic

Participants: Technologists, engineers, middle management staff in plastic processing companies with practical experience (mechanical, chemical, electrical engineering)

Objectives: The Training Programme help to bridge the gap between specific requirements of cost consciousness and the theoretical knowledge and the practical experiance of the participants. Middle management staff should be motivated to increase productivity by consciousness in protective maintenance and to motivate their staff to intensive training.

Content: Thermoplastic and thermosetting materials - properties and structure - processing - finishing - recycling - new applications in agriculture.
Quality control - test methods - specifications - standards.
Mould design - mould repair - mould protection - die design.
Principles of control engineering - measurement of pressure, temperature and speed.
Scheduled maintenance of processing machines - electrical and electronic maintenance - principles of trouble shouting.
Selection criterias for processing machines - cost estimation - rentability - finance controlling.
Techno-economic aspects of process analysis.
Learning and teaching methods.

Method: Multi-media lectures including group discussions - slides, overhead sheets, films - supporting lecture notes - processing data forms - Test report forms - exchange of experiance with company managers - demonstrations - practical group training in the pilot plant and in the test laboratory - simulation of industrial problems - case studies - plant visits - visits to experimental stations.

Schedule: Duration 2 weeks
36 hours lectures
4 hours seminar ("workshop", exchange of experiences)
40 hours practical work including plant visits
Sat. - Wed. 8.30 - 14.30, Thurs. 8.30 - 12.30

Date: Saturday 28. August 1982 - Thursday 9. September 1982

Place: PDC Alexandria

6.2.3. Vocational Training in Plastics Processing I for Foremen

Code Number: TP 3

Title: Plastics Processing I

Language: Arabic (English lectures are translated)

Participants: Technicians and foremen in plastic processing companies with practical experience.

Objectives: The training programme gives a basic knowledge on plastic materials and processes.

Content: Thermoplastic and thermosetting materials - elementary methods of identification - additives - compression moulding - injection moulding - extrusion - finishing - principles of machine adjustment - plastics applications - learning methods.

Method: Multi-media lectures including group discussions and translations - slides, overhead sheets, films - supporting lecture notes - processing data forms - demonstrations - group training - plant visits.

Schedule: Duration 2 weeks
28 hours lectures including seminar
52 hours practical work including plant visits
Sat. - Wed. 8.30 - 14.30, Thurs. 8.30 - 12.30

Date: Sat. 4. Dec. 1982 - Tues. 18. Dec. 1982

Place: PDC Alexandria

6.2.4. Vocational Training in Plastics Processing II for Foremen

Code Number: TP 4

Title: Plastics Processing II

Language: Arabic (English lectures are translated)

Participants: Technician and foremen with the PDC-certificate of the training programme Plastics Processing I

Objectives: The training programme gives a basic knowledge on mould design and maintenance.

Content: Repetition of plastic materials - repetition of processing methods - principles on mould design and mould repair - machine adjustment - elements of trouble shouting - plastics application - evaluation of learning experiences.

Method: Multi-media lectures including group discussions and translations - slides, overhead sheets, films - supporting lecture notes - check lists - processing data forms - processing reports - demonstrations - group training - plant visits.

Schedule: Duration 2 weeks
28 hours lectures including seminar
52 hours practical work including plant visits
Sat. - Wed. 8.30 - 14.30, Thurs. 8.30 - 12.30

Date: Jan./Feb. 1983

Place: PDC Alexandria

6.2.5. Vocational Training in Plastics Processing III for Foremen

Code Number: TP 5

Title: Plastics Processing III

Language:	Arabic (English lectures are translated)
Participants:	Technician and foremen with the PDC-certificate of the training programme Plastics Processing II.
Objectives:	The training programme gives a comprehensive knowledge of plastics processing and maintenance. The participant is stimulated to a certain quality and training consciousness.
Content:	Repetition of plastics materials - repetition of processing methods - repetition of mould design and mould repair - maintenance scheduling - principles of quality control - plastics application - test methods - specifications - evaluation of learning experiences - on-the-job training.
Method:	Multi-media lectures including group discussions and translations - slides, overhead sheets, films - supporting lecture notes - check lists - processing data forms - test report forms - demonstrations - group training - plant visits and visits to experimental stations.
Schedule:	Duration 2 weeks 28 hours lectures including seminar 52 hours practical work including plant visits Sat. - Wed. 8.30 - 14.30, Thurs. 8.30 - 12.30
Date:	March/April 1983
Place:	PDC Alexandria

6.3. PDC - staff: Training by Teaching

The main purpose of the project is to establish an operationally active and effective PDC. The best method of learning is learnig by doing. Therefore the whole PDC staff has to conduct the training programmes from the first beginning with support from LKT senior staff members. Following the sister-institute agreement (item 2.2.3) a check-list (manual) for preparation, performance, evaluation, feed-back and follow-up has to be prepared and discussed step by step with involved PDC-staff. PDC staff members are involved in preparation of lecture notes, machine operations, demonstrations, discussions, lectures and plant visits.

7. General Remarks and Recommendations

- The strengthening and expanding of the Egyptian Plastics Industry needs an irreversible change of behaviour of management, technicians and workers.
  PDC and its whole staff has to act as model institution for Plastics Technology in technical and organisational accuracy and efficiency.

- PDC staff is well recruited and gives a very respondent and well motivated impression.

- Top urgent completion of building and communications facilities is required.

- Preparation of training programmes has to start latest in September 1981.
  The finalisation of the programme with Dr. O.A. Zeid is planned for 24. September 1981 in Vienna.
  This date cannot be postboned without severe risk for the first training programme.

- The experience of the Egyptian Plastics Industry shows the importance of the interaction between theory and practice. This close correlation has to be considered throughout all training programmes.

- PDC training programmes have to be announced to the whole Egyptian Plastics Industry in time, latest at the end of 1981.

- Apart from training activities the specification of water pipes and fittings according to DIN and ISO (see item 3.4 and 3.5) is urgently required.

Appendix A

مركز تنمية صناعات البلاستيك
PLASTIC DEVELOPMENT CENTRE
VICTORIA - ALEXANDRIA
فيكتوريا - اسكندرية

PLASTIC DEVELOPMENT CENTRE
EGY/77/004 PDC

PROGRAMME MISSION DR. H. HUBENY
TRAINING ASSESSMENT IN PLASTICS INDUSTRY

JULY 1981

Tuesday	I4 July	Discussions with PDC Staff
Wednes.	I5 July	Middle East Company
Thurs.	I6 July	Egyptian Plastics and Electrical Industries
Friday	I7 July	OFF
Saturday	I8 July	National Plastics Company
Sunday	I9 July	Drug Packing Company
Monday	20 July	El Sherief Company for Plastics

DR. OSMAN ABUZEID
DIRECTOR GENERAL

TEL NO. 60914 - 61664
CABLE - EGYPLASTIC
TELEX 54223 EGYPLAS UN

تليفون : ٦٠٩١٤ - ٦١٦٦٤
تلغرافيا : ايجيبلاستيك
ص . ب :

Appendix 3

مركز تنمية صناعات البلاستيك

PLASTIC DEVELOPMENT CENTRE

VICTORIA - ALEXANDRIA

فيكتوريا - اسكندرية

PDC STAFF WORKING WITH DR. I.S. BHARDWAJ

Mr. Mohamed Abdel Halim
Graduated from High technical school 1961
About 19 years experience in installation of equipment, repairing and maintenance and operation.
Joined PDC 19/4/1981

Eng. Magdy Gharib Farag
Graduated from Faculty of Engineering Electrical Department 1973
3 years experience in repairing and maintenance and operation of marine power machine.
Joined PDC on 11/7/1981

Eng. Mohamed Kamal
Graduated from Faculty of Engineering 1979 Electrical Department
1.5 year experience in car maintenance workshop during military service.
Joined PDC on 1/7/1981

Eng. Nagwa El Mnawey
Graduated from Faculty of Engineering Chemical Department 1980.
Joined PDC on 11/7/1981
No previous Experience.

PLASTIC DEVELOPMENT CENTRE
EGY/77/004

TEL. NO. 60914 - 61664
CABLE EGYPLASTIC
TELEX. 54223 EGYPLAS UN

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ص.ب :

Appendix C

مركز تنمية صناعات البلاستيك
PLASTIC DEVELOPMENT CENTRE
VICTORIA - ALEXANDRIA
فيكتوريا - اسكندرية

LIST OF EQUIPMENT FOR LABORATORIES

QTY.	DESCRIPTION
1	OLYMPUS STEREO MICROSCOPE MODEL X-TR COMPLETE
1	35MM PHOTOMICROGRAPHIC CAMERA PM-6
1	EXPOSURE METER EMM-7
1	ULTRASONIC SEALER USP1-WITH US-GENERATOR SG-7-300 AND REPAIR MATERIAL
3	SONOTRODES FOR WELDING, RIVETTING, ETC.
1	PENDULUM IMPACT TESTER ZWICK 5101 SERIAL NO. 76940 WITH ACCESSORIES
1	CLASH AND BERG TESTER FOR PVC AND ACCESSORIES
1	ELECTRIC MIXING MACHINE COMPLETE WITH ACCESSORIES
1	INSTRON FLOOR MODEL UNIVERSAL TESTING INSTRUMENT 100KW COMPLETE WITH ACCESSORIES
1	MELT FLOW INDEXER MODEL 111 SERIAL NO. 3/2641 COMPLETE WITH 3 INDICATING THERMOMETERS
1	INFRARED RADIATION THERMOMETER
1	HYDRAULIC TEST PUMPS FIG. 53 + FIG. 122
1	PLASTIC TESTING/PROCESSING EQUIPMENT: 8143 ELECTRONIC PLASTI-CORDER PLE 330 TORQUE RHEOMETER AND MIXERS WITH ACCESS. AND SPARE PARTS
1	SHAW-ROBINSON 150 (6") X 300 (12") LABORATORY MILL COMPL. WITH ACCESSORIES.

TEL. NO. 60914 - 61664
CABLE : EGYPLASTIC
TELEX: 54223 EGYPLAS UN

تليفون : ٦١٦٦٤-٦٠٩١٤
تلغرافيا : ايجيبلاستيك
ص.ب :

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Appendix E

Schedule

11. July 1981	Transfer Vienna - Cairo
12. July 1981	Briefing to UNDP Cairo, transfer to Alexandria
13. July 1981 to 17. July 1981	PDC Alexandria, training assessment Plant visits to Middle East Cie., Egyptian Plastics,
18. July 1981	Transfer Alexandria - Cairo
19. July 1981	Alsharif Plastics Factory
20. July 1981	Medical Packing, UNDP Debriefing
21. July 1981	Transfer Cairo - Vienna