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PREPARATORY ASSISTANCE - TEXTILE DYEING AND FINISHING INDUSTRY SERVICE CENTRE

DP/ROK/82/027

REPUBLIC OF KOREA

Terminal report*

Prepared for the Government of the Republic of Korea
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

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* This document has not been edited.

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I. Development Problem and Immediate Problems Attacked

A. Development Problem

The importance of textile industry to Korean economy has been very solid and still is. The export of the Korea textile goods is steady, though facing growing competition in the world market.

It is critical to raise the quality of Korean textile products and to move up to higher quality market, to maintain the present status, because it is inevitable to give away the lower quality market to the coming developing countries.

Korean dyeing and finishing industry is composed of mainly small and medium size plants and their ability in research and development activity is inadequately low compared to the production size. Therefore it is crucial to establish a research function in textile dyeing and finishing area to lead and supplement the research and development needs of the Korean textile industry.

B. Immediate Objectives

The immediate objectives of the project was the establishment of a Dyeing and Finishing Research Center to provide assistance to small and medium industry and related textile services.

The Center has

1. A chemical synthesis and formulation laboratory.
2. A routine chemical analysis laboratory.
3. A dyeing and finishing laboratory.
4. A textile testing laboratory.
5. A textile information library.
6. An open R&D laboratory

II. Outputs Produced and Problems Encountered

A. Establishment of Textile Dyeing and Finishing Center

Textile dyeing and finishing laboratory was named officially and took over the activity in the January of 1987. There are 19 staff members (16 chemists, 1 chemical engineer, 1 microbiologist, 1 administrative secretary), 7 of them had UNDP supported fellowship training. Training and Education of the staff member is continued by the UNIDO and Korean experts through seminars, lectures, and plant tour. In addition to the education by the foreign experts, training in Korea and at-the-mill is valuable and necessary.

Office and laboratory space was provided by KRICT in the existing building. However, the Center will be accommodated in a new building by early 1989 with a more adequate arrangement. Net area of 1000 square meters is assigned for the Center.

All of the laboratory equipment proposed has been procured, and the equipment is adequate for small scale batch experiments and tests. Since many of the industrial processes are continuous, the next step for the Center will be to simulate continuous mill processes.

In addition to the KRICT's central library, many of the information booklets, reference books, technical literature, and periodicals that are essential for the textile dyeing and finishing are obtained and collected at the Center's information room.

During 1987, lectures were held at four of the industrial areas, Seoul, Pusan, Jeonju, and Taegu, to introduce the Center and its activity, in addition to the information on recent trend in dyeing and finishing. Information book, "Basics in Dyeing and Finishing(I)," was handed out to some 170 companies. This kind of activity seems necessary for-the-time-being to initiate the participation of the textile mills.

Five of the dyeing and finishing companies of small and medium in size were selected for technical consultation on regular basis. Till now suggestions and discussion were the major activity and some valuable contributions have been made.

Chemical analysis and textile testing laboratory is busy to acquire and establish the methodology for the analysis of textile chemicals and quality of textile products. The main purpose of the testing laboratory is to support the research activity of the Center.

Wet processing laboratory is for developing of dyeing and finishing conditions on a lab scale. At the present time, small scale experiments can be done, but samples larger than one square foot are difficult to prepare and this will be the subject of further development.

Whenever there is sufficient demand by the textile companies, project funding is feasible. Problems of that sort will be the ones with urgent need where timing is very important or of very high future expectation. Because the Center is not fully ready for this kind of projects, funds for more development work are essential, and naturally, the Center is suffering from the shortage of such funds.

b. Objectives Achieved or Likely to be Achieved in the Near Future

The Center has been established as first planned and is ready to function. More space for the Center will be available by early 1989.

The KRICT is a very suitable location for a dyeing & finishing research center, because the personnel is already doing research in dyes and has an adequate understanding of dyes and their properties. The institute has a very modern, very well-equipped analytical laboratory needed to support R & D effort in dyeing & finishing. The institute also has a very ample technical library.

The first phase of the project has been successfully completed, equipment has been procured, installed and it is now operational. Personnel has been trained to operate the equipment.

The Dyeing & Finishing Center is now entering the second phase with the following objectives:

- . Improve the technical skills of the personnel for operating the equipment, some of which is complex and sophisticated.
- . Increase the knowledge and know-how.
- . Develop the R & D capability to support the Korean textile industry and respond effectively and timely to its needs.

Since second phase is critical for the viable functioning of the center, funding of technical assistance by the government and UNDP/JNIDO is essential.

The KRICT is basically funded by contract research. The Center will be fully ready for contract research and self-sufficient towards the end of a successful second phase, even though some projects are already active at the present time.

The Center has to pass the second phase as soon as possible to support Korean textile industry's effort in improving the quality of the products.

C. Findings and Conclusions

At the beginning of the project, it was difficult to choose the proper organization for it. It is our conclusion that for dyeing and finishing research chemists with no textile background can be adequately trained whenever textile chemists are not available, which is generally true for a developing country like Korea.

To train a chemist for the textile chemist specialty, training-in-the-country (at her textile mills or related institutes) prior to foreign fellowship is of great help and saves funds, time and effort, in addition to producing better results.

Sending three fellows to a study tour abroad at the same time seemed to give a better result because they can learn more with a secure mind, and support each other.

To catch up with the state of art technology and information, which is vast and much interdisciplinary, support of funds and experts for three years for this kind of task is much too short to initiate a healthy second phase.

D) Recommendation

The first phase of the project, the establishment of the Textile Dyeing and Finishing Center, has been completed successfully. For the healthy second phase, i.e. for the efficient technical lead for the related industry, more UNIDO/UNDP support is essential and highly desirable.

For a similar project in other developing countries, we would glad to share our experience we learned with this project.

ANNEX : PROJECT SUMMARY

I. Foreign Experts

A. Dr. Ahmed Hassan

1st Visit : March, 1986

Helped to select equipments and library, fellowship scheduling, and laboratory planning. Visits of textile mills and technical discussions.

2nd Visit : October, 1987

Lectures on new ideas and advancement in textile machinery, trouble shooting and quality control in the plant operation and energy saving processes.

B. Dr. Erik Kissa

1st Visit : April, 1986

2nd Visit : April, 1987

3rd Visit : April, 1988

Lectures on dyes, dyeing, dyeing mechanisms, coloristics, quality control of chemicals and textiles, finishing and its fundamentals. Training of laboratory personnel. Visits of textile mills and technical discussions.

The Center will use a written record of Dr. Kissa's lectures for future education.

These lectures bridge the theoretical and practical aspects of dyeing and finishing, and it is valuable and helpful, for this kind of lecture is not easy to get.

Since large part of the content is from Dr. Kissa's own work, we could appreciate it very clearly and thank Dr. Kissa for his sincere effort to help us.

C. Mr. Brian Eastwood

November, 1987

The Center personnel joined Mr. Brian Eastwood, a UNIDO expert to SHIPC, on his consultation trip and lecture on printing silk, polyester and cotton. Mr. Eastwood was also invited to the Center to give lecture and discussed on the areas that the Center can contribute.

This was a very valuable opportunity for the Center to learn the printing techniques in theory and practice.

II. Fellowships

Study Tour

Nov. 1986 : SEA-WHA OH

Switzerland : Ciba-geigy, ETH
Germany : BASF, Hoechst
England : ICI, Shirley Institutes

May, 1988: planned of SEA-WHA OH and Jinsoo Kim

Japan : Sumitomo Research Institutes,
Kato Genko, Ueno Company

USA : AATCC,
Jackson Lab (DuPont)
Gaston County Dyeing Machine Co.,
North Carolina State University
Fashion Institute

Fellowships

A. September - November, 1986

England : Shirley Institute
Switzerland: Ciba-Geigy

Shin, Jong Il
Kim, Dong Man
Suk, Il-Gon

Lectures and lab training on Dyes, Dyeing, Finishing, pretreatment, and printing. Visits of the textile mills and machine manufacturers.

B. January - February, 1987

USA: Applied Color System
Analect Instrument
Gaston County Dyeing Machine Co.
Imperial Chemical Industries
Sandoz Chemicals
North Carolina Textile School

Kim, Young-Suk
Mo, Jung-Hwan
Park, Hee-Moon

Trained for the maintenance and application of CCM and FT/IR.
Visits of the textile mills.

III. Equipments

UNDP/UNIDO Purchased

Delivered Dates	Equipment
9/86	FLAMMABILITY TESTER
9/86	BRUSHING DEVICE
10/86	PERSPIROMETER
10/86	SPRAY RATING TESTER
11/86	ABRASION TESTER
12/86	CREASE RECOVERY TESTER
12/86	RUBBING FASTNESS TESTER
12/86	THERMO TESTER
11/86	SPECTRALIGHT COLOR MATCHING BOOTH
2/87	FTIR SPECTROMETER FX-6160
4/87	TWO BOWL SWIVEL PAD MODEL BVHP
6/87	MATHIS LABORATORY STEAMER
6/87	WEATHER-OMETER MODEL 25/18-WT
6/87	LAUNDER-OMETER AND DYEING SYSTEM
6/87	SOFTNESS-STIFFNESS
6/87	MODEL CS-66 ELECTROSTATIC VOLTMETER

Others Equipments

- . TUBOCOLOR
- . TEXOMAT
- . POLYMAT
- . SAND-MILLING MACHINE
- . SCREEN PRINTING MACHINE
- . PRINTING PAPPER
- . PAPPER
- . HOMOMIXER
- . VISCOMETER
- . CCM
- . TEXTILE MOISTURE METER
- . Q-UV WEATHERING TESTER
- . TEXTILE-TESTING OVEN

IV. Research Project

Government funded

		(in ₩1,000)
D & F Preparatory Research	11/84-7/85	80,000
	8/85-8/86	100,000
	9/86-9/87	139,555

Industry project

(7 Companies)	12/87-11/88	219,841
	To be continued.	

There are several projects going on supported by the industries of synthesis of dyes and intermediates and analysis of textile chemicals.

V. Personnel

OH, SEA-WHA	Prinple Scientist	Org. Chem., Ph.D.
Kim, Young-Suk	Senior Researcher	Chemistry, B.S.
Shin, Jong IL	"	"
Mo, Joong Hwan	Researcher	Chemistry, B.S.
Park, Hee Moon	"	"
Kim, Jin Soo	"	"
Kim, Dong Man	"	"
Park, Soo Youl	"	"
Choi, Jin Il	"	"
Kim, Tae Kyoung	"	"
Suk, Il-Gon	Technologist	"
Jeong, Pil Seung	"	Chem. Eng. B.S.
Jun, Kun	Researcher	Org. Chem. M.S.
Jaung, Jae Yun	"	Chemistry B.S.
Kang, In Sug	"	"
Yeo, Eun Young	"	"
Kim, Joo Hae	"	"
Lee, Eun Young	"	Microbiology B.S.
Eun, Gum Sug	Administrative Assistant	