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ENGLISH

Workshop on the Production of
High-Quality Cotton Knitgoods*

Seoul, South Korea
15-18 September 1987

REPORT**

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* Organized by the International Institute for Cotton (IIC) and the United Nations Industrial Development Organization (UNIDO).

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BACKGROUND

Cotton accounts for almost half of world consumption of major textile fibres. It is grown in about 70 developing countries and for many of these countries, it is a key commodity providing foreign exchange and generating economic activity and employment. It is also a major source of cooking oil and cattle food.

The growing, processing and exporting of raw cotton and cotton products thus provides an almost ideal means of social and economic progress and it is therefore not surprising that the development plans of many developing nations are based on the assumption that cotton and cotton textiles will remain a major growth factor in their economies.

However, since the 1960's, cotton has been faced with extremely vigorous competition from a variety of synthetic fibres including rayons, polyesters and nylons.

In order to defend its position, the International Institute for Cotton (IIC) was established in 1967 by a group of cotton exporting countries. The Technical Research Division of IIC carries out programmes which are directed generally to improving the performance of cotton products and especially those where potential exists for market growth or where there are problems which, unresolved, could lead to loss of markets.

One of the areas which offers considerable growth potential for cotton is knitted outerwear. There is a strong consumer demand for garments which combine comfort and fashion appeal and which conform to the more relaxed lifestyle of today. Cotton has always enjoyed great popularity in knitted underwear. The production process and performance standards for underwear are relatively undemanding but the production of high-quality, dimensionally stable cotton outerwear in attractive colours and fashionable styles introduces completely new considerations. The cotton processor is often faced with unacceptable uncertainties in attempting to produce in volume for the new market.

About ten years ago IIC's Technical Research Division, with substantial financial support from the Overseas Development Administration of the UK Government, embarked on an in-depth programme involving extensive full-scale trials and development work, aimed at putting the manufacture of knitted cotton fabrics on a sound technical base, to encourage the production of high quality products by a larger number of companies.

The project established quantitative relationships between the knitting parameters, the finishing routes and the final product performance for the most important cotton knit constructions. The enormous body of data which was generated (over 1,700 separate fabric samples were produced) has been converted into user friendly programmes which can be handled by semi-skilled personnel on inexpensive computers. Thus, for example, whenever there is a change either in customer specifications or in the finishing process, the knitter can quickly calculate, without resorting to trial and error, what his new knitting parameters should now be. In this way manufacturing risks,

development time and cost can be very much reduced and new markets can now be opened up in knitted outerwear from which cotton has hitherto been excluded.

During the course of its work IIC also acquired a great deal of experience and know-how on many aspects of knitgoods production including quality control, test methods, selection of machinery, specifications, etc.

Implicit in the agreement with the ODA was the obligation to disseminate this new knowledge as widely as possible in both developed and developing countries so as to create new markets for cotton and thereby increase cotton utilisation to the benefit of the producing countries. Cotton processors in many countries began to show a keen interest in this work and the time was opportune to make this knowledge available to processors in the developing world.

Financed by the UK Government's Special Purpose contribution to UNIDO, the IIC organised, in April 1984, a seminar in Manchester to discuss recent developments affecting quality and efficiency in the processing of cotton knitgoods. These include the results of recent research and development work by IIC and demonstrations of the Institute's computerised predictive models, designed to reduce time spent on empirical trials and to ensure greater consistency of product quality.

As a follow-up of the seminar a workshop was held at the South India Textile Research Association (SITRA) in Coimbatore, India from 15th to 19th October, 1984. It was conducted by two IIC experts, Mr. R.D. Leah and Mr. J.T. Eaton. SITRA was responsible for the organisation of the workshop and its technical staff assisted in the practical demonstrations that formed part of the workshop.

A second workshop was held in Mexico City from 19th to 23rd November, 1984 at the premises of the Camara Nacional de la Industria Textil (CANAINTEX). It was also conducted by Mr. Leah and Mr. Eaton.

Because of savings accrued from the seminar and the two workshops sufficient project funds remained to consider holding a third workshop. It was agreed by the UK Government and UNIDO that the location of this extra workshop should be in Brazil which has a large cotton knitting industry.

The staff of Centro de Tecnologia da Industria Quimica & Textil (CETIQT) in Rio offered full cooperation to IIC and one of their representatives visited the IIC laboratories for two weeks in February 1986 in order to become familiar with all aspects of the IIC knitgoods work including the use of the computer programmes.

The workshop was held from 2nd to 6th June, 1986 in the facilities of CETIQT and was attended by about 25 senior technical staff from the major knitgoods producers in Brazil. Two directors from SENAI and the UNIDO representative from Brasilia also attended the opening session. The workshop was again conducted by Mr. Leah and Mr. Eaton from IIC Manchester.

In the later months of 1986, ODA agreed that additional funds from the UK contribution to the UNIDO Industrial Development Fund could be made available

for further dissemination of IIC's data and know-how on manufacture of knitted cottons.

Following discussions between UNIDO, ODA and IIC, an extension project was developed which included three elements:

- a workshop in Manila, Philippines
- a workshop in Seoul, Republic of Korea
- preparation of "packages" of information for use by knitting mills in developing countries.

The workshop in Manila took place in March 1987 at the Philippines Textile Research Institute. It was attended by 27 senior technical staff from the local textile industry.

WORKSHOP IN THE REPUBLIC OF KOREA

Following a preliminary visit in January 1987 by the Director of the Technical Research Division of IIC, the Korean Textile Inspection and Testing Institute (KOTITI) was confirmed as a suitable venue for the workshop. It had the necessary testing, lecture and computer facilities and enjoyed good links with the Korean textile mills. Furthermore, the Director General had indicated his interest in holding the workshop and had offered full cooperation.

In February, Mr. Y.S. Ryou spent one week at the Technical Research Division in Manchester to become more familiar with the technical matters to be presented at the workshop and to agree on the arrangements (selection of delegates, timing, involvement of KOTITI staff, visits, etc). This was an extremely valuable visit because it highlighted some of the difficulties which might be encountered, notably the problem of language. It was agreed that KOTITI would translate much of the IIC material into Korean and that Mr. Ryou would visit several knitting mills prior to the workshop in order to familiarise himself with the technical and commercial factors involved in the production of cotton knits.

The workshop was held in Seoul between September 15th and 18th, 1987 and was attended by 21 delegates. Of these, 10 came from the Seoul area and the others from Taegun, Pusan and elsewhere. A list of delegates is attached.

The workshop was conducted by Mr. R.D. Leah and Mr. J.T. Eaton of IIC. The programme is attached.

Because of language problems, the presentations were largely visual, based on the use of slides, overhead projections and blackboard. The commentaries were broken down into short phrases which were translated into Korean by Mr. Ryou. This was a slow process but it worked extremely well and judging from the questions, the main points of STARFISH had been understood by the delegates.

As in previous workshops, the talks were supplemented by extensive practical demonstrations in the laboratories of KOTITI. Here the language was entirely Korean except for an occasional question to clarify some point.

Each delegate was given a STARFISH calculator containing 10 inserts and the IIC experts worked through several examples of how it can be used to solve practical problems. A demonstration of the IBM pc version of the STARFISH computer programme was also given and this generated considerable interest.

CONCLUSION

Discussions after the workshop with the Director General of KOTITI and Mr. Ryou confirmed that the workshop had been a success and that the delegates had greatly benefitted by their attendance.

The knitting industry in Korea appears to be well equipped with up-to-date equipment including devices for controlling stitch length (although at present they do not monitor it) and relaxed dryers. Thus the possibility exists for rapid implementation of the STARFISH know-how although it seems that a high percentage of knitgoods production is not 100% cotton but polyester/cotton blends for which STARFISH data is not appropriate. Nevertheless, most of the basic STARFISH concepts - reference state, test methods, need for control of yarn count and stitch length etc. - are applicable to blends as well as pure cotton.

At the time of writing it is not clear just what follow-up actions will occur. KOTITI clearly invested a great deal of time and money to ensure that the workshop was a success and there is no doubt that they will add STARFISH technology to their current training courses. The Director General said he would be holding talks with all the delegates to see what other joint activities would be possible.

As in the case of the Philippines, it may be necessary to provide additional industrial training to one or two of the staff of KOTITI in order to give them the confidence and experience to provide a technical service to the knitgoods producers in the industry.

Finally, the outstanding contributions from the Director General, Mr. Ryou and other members of the staff of KOTITI must be mentioned. Their cooperation, hospitality and assistance was excellent and cannot be criticized in any respect.

THE DELEGATES OF THE STARFISH WORKSHOP

NO	NAME	POSITION	NAME OF COMPANY	FULL ADDRESS
1	CHANG SIK NAM (소장)	LABORATORY DIRECTOR	HOE JUN KNIT GOODS. CO., LTD.	42-87, Ihyeon-dong, Seo-gu, Daegu, 636-00, South Korea
2	HO HYUN CHO (연구원)	RESEARCHER	HOE JUN KNIT GOODS. CO., LTD.	42-87, Ihyeon-dong, Seo-gu, Daegu, 636-00, South Korea
3	JOO IN KIM (부장)	DYEING SECTION CHIEF	TAE CHANG CO., LTD.	806-12, Shinbeung-dong, Iri, Jeon-book, 510-00, South Korea
4	CHAE HAN KIM (대리)	PLAYING PART PRO-MANAGER	CHEIL TEXTILE INDUSTRIAL CO. LTD.	420-6, Taajung-dong, Buku, Taegu, 630-61, South Korea
5	SUCK GYU KIM (대리)	DYEING PRO-MANAGER	CHEIL TEXTILE INDUSTRIAL CO. LTD.	420-6, Taajung-dong, Buku, Taegu, 630-61, South Korea
6	JAE SOK KIM (차장)	ASSISTANT MANAGER	BANG MI INDUSTRIAL CO., LTD.	577, Koje-dong, Dongrae-gu, Busan, 607-00, South Korea
7	NAM SUN KIM (계장)	SUPERVISOR	BANG MI INDUSTRIAL CO., LTD.	577, Koje-dong, Dongrae-gu, Busan, 607-00, South Korea
8	JUNG WOO LEE (차장)	ASSISTANT MANAGER	DAE SHIN TRADING CO., LTD.	680, Garibong-dong, Kuro-gu, Seoul, 152-00, South Korea
9	JONG LAE KIM (차장)	ASSISTANT MANAGER	DAE SHIN TRADING CO., LTD.	680, Garibong-dong, Kuro-gu, Seoul, 152-00, South Korea
10	MUN ONE YANG (대리)	ASSISTANT CHIEF	DAE SHIN TRADING CO., LTD.	680, Garibong-dong, Kuro-gu, Seoul, 152-00, South Korea
11	SUK SOON LEE (계장)	ASSISTANT CHIEF	SSANG BANG WOOL LTD.	827, Shinbeung-dong, Iri-si, Jeon-book, 510-00, South Korea
12	CHANG HEE KANG (사원)	EMPLOYEE	SSANG BANG WOOL LTD.	827, Shinbeung-dong, Iri-si, Jeon-book, 510-00, South Korea
13	TAE CHEOL KIM (계장)	ASSISTANT CHIEF	SSANG BANG WOOL LTD.	827, Shinbeung-dong, Iri-si, Jeon-book, 510-00, South Korea
14	WHAH TAE PARK (대리)	ASSISTANT MANAGER	SHIN SUNG COMMERCIAL CO., LTD.	C.P.O. BOX 10256, Seoul, South Korea
15	SEEM JOON AHN (계장)	R & D SECTION CHIEF	SHIN SUNG COMMERCIAL CO., LTD.	37-1, Jangam-dong, Uijeongbu-si, Kyunggi-do, 130-30, South Korea
16	YONG SOG KIM (계장)	ASSISTANT CHIEF	WON CHANG CO., LTD.	637-3, Deungchon-dong, Kangseo-gu, Seoul, 150-52, South Korea
17	MYUNG CHUL KIM (실장)	MANAGER	ASICS SPORTS CORP.	27-2, Yeouido-dong, Youngdeungpo-gu, Seoul, 150-00, South Korea
18	SOO WAN CHUNG (고문)	CONSULTANT OF KNITTING	SINHWANG KNITTING CO., LTD.	178-91, Geoyeo-dong, Kangdong-gu, Seoul, 134-00, South Korea
19	YBONG SHIN RYU (대리)	ASSISTANT CHIEF	K O T I T I	819-5, Yeoksam-dong, Kangnam-ku, Seoul, 135-00, South Korea
20	KYUNG NAM LEE (주임)	SENIOR STAFF	K O T I T I	819-5, Yeoksam-dong, Kangnam-ku, Seoul, 135-00, South Korea
21	HO GI SUN (사원)	TECHNICIAN	K O T I T I	819-5, Yeoksam-dong, Kangnam-ku, Seoul, 135-00, South Korea

WORKSHOP PROGRAMME

DAY 1

Opening Ceremony

Address by KOTITI Director General
Mr. Chul Sik Chang

Introduction of Delegates

Introduction to IIC - R. D. Leah

Outline of the IIC approach to the production of high quality
cotton knitgoods - R. D. Leah

Terminology - J. T. Eaton

Adjustments and monitoring fabric quality on the knitting
machine - J.T. Eaton

PRACICAL SESSION

- measurement of yarn count on cone
- measurement of yarn count from fabric
- measurement of stitch length from fabric

KOTITI Staff

Discussion

DAY 2

Knitting to Specification - J.T. Eaton

Outline of useful yarn tests - J.T. Eaton

An assessment of Korean yarns - KOTITI staff member

PRACTICAL SESSION

- measurement of courses and wales
- measurement of weight
- measurement of spirality
- measurement of shrinkage
- measurement of yarn strength
- measurement of fabric strength

KOTITI laboratory personnel

The setting of realistic finishing targets - R. D. Leah

Discussion

DAY 3 Achieving the finishing targets in practice
 R. D. Leah

 The starfish predictive system -
 Description and outline - R. D. Leah
 Practical application - J. T. Eaton

 Demonstration of computer programme

 Discussion

DAY 4 The starfish fabric property calculator
 J. T. Eaton

 Fabric mercerisation - R. D. Leah

 Final Discussions

 Closing ceremony and presentation of certificates.

 Director General of KOTITI, Mr. C.S. Chang