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FINAL REPORT FOR TEXTILE TECHNOLOGIST
WOOLLEN INDUSTRY ^{1/}

SI/HUN/74/805/11-01/31.7.B.

by

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INTRODUCTION.

1. In order to be able to make an appreciation of the wool textile industry in Hungary it is necessary to understand its structure and classifications.

- 1.1. The industry is old established, in factory form about 100 years. Very much older as a domestic industry. There are now six main enterprises formed by concentrating together a number of smaller companies. They include the manufacturing of both combed worsteds as well as carded woollens within the same vertically organised enterprises. Ancillary processes such as wool sorting, washing, dyeing and all types of finishing form part of these larger companies. In addition to the large factories about fifty small craft industries work as co-operatives, or independently.
 - 1.1.1. The four main classifications :-
Combed worsteds. 1. Fine worsteds (All wool, gaberdines).
2. Commercial (55/45 Pc/wool).
Carded wool. 1. Best quality (Velours, tweeds).
2. Commercial & lower. (From wastes).

 - 1.1.2. The wool textile industry exports about 50 % of its total production as made up garments, finished or unfinished cloth, and yarns, to Western Europe, Canada, the COMECON countries and the middle east. Hungarotex, the central agency for textile imports and exports, purchases raw materials and carries out the export marketing for the finished goods.

 - 1.1.3. Parts of the industry, particularly for carded yarn production, are being considered for re-development. Under the terms of the current five year financial plan of the Hungarian Government, 1976-80, there is provision for re-equipping of the textile industry. It is intended that this programme will continue into the 1981 -85 period.

- 1.1.4. Technical consultancy for improved product development and for improved methods of process technology have been implemented by the UNIDO expert in accordance with the terms of reference contained in his Job Description. Detailed summaries are given in the Appendices to this report.
- 1.1.5. The project has been carried out between two of the larger wool textile enterprises. The first four months being spent with Magyar Gyapjufonó és Szövőgyár for which the work programme is described in the introduction to Appendix I of the "Intermediate and Final Report". It includes the development of a carded wool cloth for the award of the IWS "Woolmark" and a 60/40 wool and polyester cloth for the award of the "Blended Woolmark".
- 1.1.6. Following a visit to TEXIMEI, the Institute for Quality Control for the Textile Industry, the expert was asked to make a report with recommendations for more effective in-plant control of quality. These recommendations are summarised in Appendix II.
- 1.1.7. For the second half of the project the expert worked with the enterprise Hazai Fésűsfontó és Szövőgyár. The work programme included a survey of the manufacturing technology for carded wool products and for the marketing of these products. The plans for the proposed restructuring of the carded wool spinning mill was studied and a report with recommendations is included. This part of the assignment is summarised in Appendices III, IV and V.

1.1.8. In order to maintain its level of exports and to keep abreast of improved technologies for the manufacture of wool textiles the Hungarian industry is faced with making major decisions for reorganisation and re-equipping.

Factors which are influencing these decisions include :-

- (a). Difficulty in obtaining and keeping employees.
- (b). Replacing old machinery with plant of a specification appropriate to the manufacture of contemporary raw materials and product types.
- (d). Profitable use of indigenous raw materials (Hungarian wools).
- (e). Modern marketing methods.

1.1.9. The reports of the UNIDO expert have included recommendations intended to assist the Hungarian textile industry resolve problems related to those listed under paragraph 1.1.8.

SUMMARY.

2. Following the initial survey of the enterprise Magyar Gyapjufonó és Szövőgyár the expert identified the yarn manufacturing operation, both carded woollen and combed worsted, as being a basic cause of problems experienced in subsequent processes, this particularly applied where considerable investment had already taken place in new high speed automatic weaving and winding machinery.
- 2.1. Many of the problems in spinning were assigned to a lack of trained and experienced supervisors, quality controllers and skilled operatives. M.G.Sz is a company in the third category of Hungarian quality classification it being chiefly concerned with the recycling and using of large quantities of waste. The yarns manufactured include a 36 km combed worsted spun yarn from a blend of Hungarian wool, Australian wool and coloured waste to 45 % with 55 % polyester. Carded yarns are manufactured in the 10 and 12 km count from garnetted coloured wastes with up to 40 % Viscose and also polyester.
- 2.1.1. At a meeting with the Ministry of Light Industry in January 1977 the enterprise M.G.Sz agreed that the products of the company should be developed to a level where they could qualify for the award of the IWS "Woolmark" and the "Blended Woolmark".
- 2.1.2. Following the first survey of the enterprise the expert submitted a work programme intended to improve process technology, quality control and in-plant training, with the object of preparing a more substantial foundation for the development of a better quality of product. However, the management of the enterprise were anxious to implement the "Woolmark" trials without delay and the revised work programme was agreed accordingly. Yarn counts and fabric specifications to be in accordance with current market demands.

- 2.1.3. On account of a long history of low class woollen manufacturing M.G.Sz is strongly productivity orientated. This was very much the policy with the spinning mill where premiums were paid for production and little account was paid to the need for the observation of quality standards and economy of waste. In the circumstances it was difficult to obtain co-operative understanding and an attitude of mind sympathetic to achieving the improved levels of quality necessary for the "Woolmark" award.
- 2.1.4. The terms of reference for the work programme agreed with the expert specifically included the use of the indigenous Hungarian wool for the development of the new categories of yarns and fabrics. The blend developed for the combed "Sixty" quality includes 50 % of indigenous wool in the wool part of the blend. For the carded "Viktor" quality there is 40 %.
- 2.1.5. Other restrictions to product development are on account of age and specifications of plant and the absence of certain essential processes which affect the possibility of obtaining good yarn regularity through the presence of neps and slubs. In the report for Appendix I these problems are identified and recommendations for improvement are given.
- 2.1.6. The expert was pleased to obtain good co-operation from the technologists in the weaving and finishing departments of M.G.Sz. All the trials were successfully accomplished.
- 2.1.7. The wet finishing process for the "Viktor" carded all wool cloth included an experiment for a saponification type scour. The correct routine is described in para 2.8.8. page 26 of the Final Report for enterprise M.G.Sz. The experiment was successful, but on account of the spinning oil used not being an "Oleine", and not containing sufficient free fatty acid, the trial had to be conducted with added soap.

- 2.1.8. It has been recommended in the Final Report for enterprise M.G.Sz that the saponification method of fabric scouring, with its well known benefits for quality and economy, should be used.
- 2.1.9. Altogether five finishing trials in different weights and types of finish were completed for the "Viktor" carded wool quality and four trials in the combed worsted flannel, including the non-pilling gas finish. All are described in detail in the M.G.Sz report.
- 2.1.10. The expert subsequently recognised that in the process of development for the "Viktor" quality carded cloth he was not receiving all the available information from enterprise M.G.Sz. Further experiments led to the conclusion that during the trials for the "Viktor" fabric the factory wanted to use the production development capacity for copying some successful fabrics of other factories instead of developing an original design.
- 2.2.1. Following a visit to TEXIMEI, the quality control laboratory for the textile industry, a report was made with recommendations for an improved and more effective system for in-plant quality control. The report was made for the spinning mill of enterprise M.G.Sz, but is intended for the whole industry. All the recommendations made are of a practical nature and can be implemented as part of the normal shop floor working routine. The whole purpose of this report is to detect bad work and correct it before the yarn is spun. Once spun, particularly if coloured, it is more difficult and costly to recycle for reuse.

- 2.3.1. The second half of the assignment was carried out with the co-operation of the enterprise Hazai Pesusafono es Szovogyar. As this enterprise has already been granted the award of the "Woolmark" and the "Blended Woolmark" it was agreed that the programme of work should be for the development of carded woollen yarns and fabrics. Reports for this part of the project are given in the summaries in Appendices III, IV and V.
- 2.3.2. A survey of the carded woollen products for piece goods and yarns was made with the assistance of the Chief of the Carded Development Section, Mr Kalman Szeker. The survey included the spinning mill at Vac, the weaving factory at Pomaz and the finishing, warehousing and despatch departments at Angyalfoldi.
- 2.3.3. In the course of this three week survey practical recommendations were made in respect of problems identified for quality and production. The results of the survey have been reported and discussed with the Technical Director,
- 2.3.4. Appendix IV summarises the proposed re-equipment plan for the H.F.es Sz carded woollen spinning mill at Vac. A programme has been made and equipment quotations received which are under consideration. A new building is planned in order to relieve the severe congestion within the existing buildings.
- 2.3.5. With the assistance of Mrs Magda Sahby, Chief Technologist for H.F.es Sz, a meeting was held with Commercial Consultant Mr Florian Schaeffer to discuss the re-equipment plans and machine specifications obtained. The expert has put forward recommendations which are detailed in the separate report under the heading "Reconstruction" and which is summarised in Appendix IV.

2.3.6. During the final meeting of 22 September 1977 at the head office of enterprise H.F. Les Sz. The Technical Director, Mr Niklos Szabo, asked the expert to give his opinion on the alleged production rate from two Luesberg Boisson carding machines being equal to that of the four machines intended for inclusion in the reconstruction programme for the carded yarn spinning mill. The expert confirmed that this could be possible with two machines having the following specification :-

A. greater width.

Dynamically balanced cylinders.

Roller bearings throughout.

Double hopper.

Large scale pan.

Independent drives to :-

Hopper.

Doffing combs.

Condenser.

More powerful motors and appropriate driving pulley sizes.

Metallic wire as an alternative to fillet which is liable to lift at high speeds.

Carding production by weight is governed by slubbing count

2.3.7. The expert further gave his opinion to the meeting that the ability of the card to build large packages to obtain longer runs between doffing at the card and creeling up on the frame contributes to improved production. For this the specification includes :-

Interior drives for the condenser drums to allow larger flanges (355 mm dia) on the condenser bobbins.

A traversing creel type condenser will enable wider cheeses of slubbing to be built and so reduce the necessity of having to splay out the ends of slubbing at acute angles on the frame, thus reducing the risk of "false draft" and allowing a wider and larger package to be built which will run longer between doffing and creeling on the frame.

- 2.3.8. The expert was asked to give his opinion on the relative merits of the peralta roller and the loose wool carbonising process for the removal of impurities in consideration of the reputation of the peralta roller for fibre breakage. The expert replied that in the case of the Hungarian wool carbonising was necessary for the removal of the large amount of burrs and other vegetable matter. The peralta rollers are envisaged as being used to crush out the carbonised matter and any residual vegetation. Also the peralta rollers should be used for blends containing small amounts of impurities for which carbonising would not be economic. It was agreed that the use of peraltas contributes to broken fibre and the expert suggested that details of the Haigh-Bonser Web Clearer (Made by Haigh Chadwick) should be obtained as the system claims to crush out impurities without fibre breakage.
- 2.3.9. Following his meeting with Dr Andras Boda the Marketing Director, the expert was asked to give his opinions on the best marketing policy for the carded woollen products. He confirmed that in consideration of the demand for such products as carpet yarns, yarns for h no knitting and the continuous success of the clear finish "tweed" type carded cloth, the marketing policy should recognise and take advantage of this situation, but should not be tempted to extend the range of products beyond the already well established profile, count range and construction. Recommendations included the manufacture of yarns for all wool tufted carpets and that the wool hand knitting yarn should be packaged and distributed by the enterprise in their own name.
- 2.3.10. Selling should be as direct as possible, the importance for each enterprise to develop its own profile is re-emphasised. A good relationship should exist between manufacturer and customer for early intelligence of styling and colours to save time in producing new designs for the next season. Speed of order execution and the accurate fulfilment of delivery promises is essential.

- 2.3.11. An important decision related to future restructuring and marketing policies is for the re-development of the site of the present finishing mill for the enterprise H.F es Sz, at Angyalfoldi. The expert emphasised that the enterprise should have control over the finishing operations for the carded wool fabrics and that the present plan to have the cloth "commission" finished by another company was undesirable for the following reasons :-
- (a). No direct control over finishing processes for quality of finish applied.
 - (b). No control over production priorities.
 - (c). Possibility of fabrics being copied by competitors.
 - (d). Extra cost of transportation.
 - (e). Loss of well built and equipped factory with trained workers at Angyalfoldi.
- 2.3.12. At the request of the enterprise the expert made available his systematic in-plant training programmes for power loom weaving and for ring spinning.

CONCLUSIONS.

3. The following conclusions are intended as a general assessment for the benefit of the industry as a whole, as well as the two enterprises, Magyar Gyapjufono es Szovogyar and Kasmai Fesusfono es Szovogyar.
- 3.1. Quality control must be more effective and have equal parity with the parameters for production. Quality control standards must be defined and observed. An effective in-plant system for testing, reporting and inspection must be introduced and strictly supervised through a Q.C manager reporting direct to the Technical Director of the enterprise.
 - 3.1.1. To obtain a proper understanding of quality standards for all levels of employee, training for operatives, supervisors and management is essential. Quality responsibilities should be emphasised in all job descriptions for in-plant training programmes. A manual of systematic training in weaving and ring spinning has been made available to the enterprise by the expert.
 - 3.1.2. A good knowledge of process technology has been demonstrated by most of the technologists encountered working in the industry, but a greater breadth of information for new developments and processes should be made available. Application of management aides such as work and method study, measurement of day to day production efficiencies, production planning and programming, etc.
 - 3.1.3. A wider knowledge of process technology will enable the technologist to apply it to obtain a greater variety of products and for the development of new methods of production.

- 3.1.4. The best use for the Hungarian wool and the combed wastes from the finer "A" and "A1" merino qualities of the indigenous wool poses certain problems on account of dirt, the colour and the fine-ness of the fibre. It has been suggested that the introduction of breeding rams from a strain with stronger and whiter wool with the object of obtaining wool with a more versatile end usage and produce a breed with better meat potential. Meantime it has been shown in this report that carded wool cloths can be developed with export potential using up to 40 % of A/B quality wool from Hungary in the blend with imported wool. Also velour finish fabrics are being successfully manufactured from blends containing the finer "A" quality and with combing wastes. Due to the specialised finishing processes for this type of fabric it is recommended that manufacture should be confined to a factory where the finishing department has the proper range of processes.
- 3.1.5. It is recommended that the planned re-equipping programme for the enterprise H.F.es Sz should include a wider range of specifications and quotations for new plant and that considerations of quality as well as productivity should be kept in mind. The planned closing down of the Angyalföldi finishing mill and the problems in obtaining employees for the textile industry, particularly in the Budapest area go towards reinforcing the argument for a complete new factory for carded woollen production sited in a provincial town where there is a known source for employees.
- 3.1.6. Specific recommendations have been given to the enterprise H.F.es Sz for the expansion of its product range within the framework of the present policies, but at the same time to confine the manufacturing specification in terms of yarn count and fabric construction in the interests of economic productivity. By contrast the enterprise M.G es Sz, which aspires to a similar level of export trading is not yet in a position to market an acceptable range of cloths on account of the already stated deficiencies in quality control, training and technological versatility.

- 3.1.7. On a more general level it has been recommended that each enterprise should develop an individual profile, particularly for the carded cloths. Under the circumstances of being represented by one agency, Hungarotex, it is important that a small industry of six companies should be able to market a well balanced range of products.
- 3.1.8. Providing attention is centred more closely on quality standards, styling, colour and contemporary design, the future for the Hungarian carded woollen cloth trade should be favourable. In consideration of the present tendency for the European woollen textile industry to become more concentrated and more specialised there is opportunity for a medium to better class of product that can fulfill contemporary fashion taste at a competitive price.
- 3.1.9. There are five research and quality control institutions serving the wool textile industry in Hungary. It is important that these institutions provide a practical and constructive service to the industry through research and development work geared to the needs of the industry and a consultancy extension service with up to date dissemination of information. To accomplish this more successfully it is recommended that an association representing all the woollen manufacturers should be formed to help guide the work programmes of the research institutes in such a way that they are continuously orientated onto the needs and interests of the textile industry. This can be accomplished by committees formed from representatives of each section of the industry (spinners, weavers, finishers, etc), who should liaise with the technologists from the institutes at regular intervals to formulate the research programmes.

JOB DESCRIPTION.

SI/HUN/74/805/11-01/31.7.B.

Post Title. Textile Technologist in the Woollen Industry.

Duration. 8 months.

Duty Station. Budapest.

Purpose of Project.

To assist a Hungarian enterprise in developing woollen cloth production for fashionable ladies and mens clothes. The improved production method will serve as an example to other Hungarian enterprises.

Duties.

The expert will be attached to the Ministry of Light Industry and to the enterprise Magyar Gyapjufono es Szovogyar, an integrated woollen plant, Specifically the expert advise on the activities and recommendations of yarn characteristics, product types and finishing techniques to facilitate the manufacture of modern mens suiting, ladies wear and other types of fabrics.

The enterprise has been engaged in woollen manufacture for decades. Nevertheless, the quality of goods has not reached the demand set by the home market and the international fashion. Woollen production, on account of inferior product, has been cut back by half. The demand of the Hungarian market requires inexpensive but fashionable woollen overcoating and suiting clothes. There is a proper production capacity available, however, adequate knowledge in this field is needed to solve all the existing problems.

Appendix 1.

Summary of
Intermediate Report and Final Report
for Magyar Gyapjufono es Szovogyar.
27/1/77.

1. This enterprise is classified into category 3 by the Hungarian Textile Standards Institute (Texime1), the company recycles yarn wastes from a large accumulation sited at the back of the spinning factory.
- 1.1. The policy of the company has hitherto been to manufacture cheaper quality fabrics for the inland market and for export to the COMECON countries and the middle east.
 - 1.1.1. In recent years and coincidentally the enterprise M.G.es Sz have heavily invested in the re-equipping of the winding, weaving and finishing departments with new high production automatic machinery.
 - 1.1.2. From the foregoing it is assessed that a combination of heavy investment costs, low quality products having to be sold in highly competitive markets and rising raw material prices have contributed to a lack of profitability.
 - 1.1.3. Recognising the need to obtain improved profit margins the Directors of the enterprise decided to upgrade the quality of their cloths through the development of a 100 % new wool range for which a proportion of the indigenous Hungarian wool would be used. The ultimate intention being to apply for the award of the "Woolmark" of the International Wool Secretariat.
 - 1.1.4. The terms of reference of the UNIDO expert being to assist the enterprise to improve the production and quality standards of its cloths it was agreed with the Ministry of Light Industry and the General Director of enterprise M.G.es Sz that "Woolmark" development trials would be initiated.

- 1.1.5. The expert carried out a preliminary survey in which he identified certain problems. The yarn manufacturing at No 2 mill being the source of many. It was agreed with the enterprise that he should investigate these problems whilst observing the "Woolmark" trials.
- 1.1.6. The development trial for the carded yarn and fabric was based on a 750 gram/running meter cloth for which a good export demand was anticipated. The blend was composed of 40 % Hungarian wool and 60 % imported. The yarn count was 6 Nm.
- 1.1.7. The "Blended Woolmark" trial for the combed yarn and fabric was based on a 380 gram worsted cloth with a flannel type finish. The blend contained 60 % wool and 40 % polyester. The wool proportion was composed of 30 % Australian Merino and 30 % Hungarian AA quality.
- 1.1.8. Whilst the trials were conducted successfully many technical problems require to be resolved before they can be regarded as commercially viable. For example :-
- (a). Age, condition and specification of the woollen carding and spinning plant.
 - (b). A single passage of melange and no recombining plant for the 60/40 trial spun to 44 Nm.
 - (c). No predetermined standards for yarn quality and no effective in-plant control of quality.
 - (d). A high labour turnover with low standards of operative skills. An urgent need for improved systematic training methodology for supervisors and skilled operatives.
 - (e). No awareness of quality control responsibilities by line management and skilled workers
 - (f). The spinning mill is production orientated and all premiums are paid for achieving the pre-determined production targets (as defined in the 5 year plan). There are no pre-determined standards for quality, targets or premiums for waste economy or good work standards.

1.1.9. More than eighty firm recommendations for the practical resolving of technical and management problems were given to the technologists and management of the enterprise M.G.es Sz whilst observing the "Woolmark" development trials. The recommendations were listed in an "Activity Diary", translated into Hungarian and given to the industry and the Ministry of Light Industry. The recommendations form the basis of a question and answer session at a subsequent meeting.

1.1.10. Other reports made whilst working with enterprise M.G.es Sz :-

- (a). Technical Report No 1, 25 April 1977. Discussed with question and answer session between expert, enterprise and Ministry.
- (b). Technical Report No 2, 29 May 1977. Expert discussed with Ministry and Technical Director of Enterprise.
- (c). During meetings with the Technical Director the expert was asked to provide information about the following :-
 1. Full specification for new woollen carding machine.
 2. Full specification for high production woollen ring spinning frame.
 3. Advice for resolving problems for high speed warping.
 4. Advice for resolving problems for high speed weaving on Sulzer automatic looms.
 5. Advice on improved performance on new Schlarthorst automatic winders and Loepfe yarn clearers.
 6. A specification for a multiple cropping machine.
 7. Detailed advice for improved package build for spinning and winding with diagrams to illustrate proper parameters.

In all the above cases practical advice was given and beneficial results obtained.

1.2. The final assessment for the development trials is that they were successful subject to the recommendations of the expert being implemented. For the trials the expert was required to stipulate the choice of raw material, the blend composition, specifications of count, twist and fabric construction. Manufacturing routines for spinning, weaving and finishing. He also observed the request that a proportion of Hungarian wool should be used. In this last connection certain characteristics of the indigenous wools must be recognised :-

- 1.2. (Cont'). (a). The Hungarian wool has a natural yellow colour and cannot be dyed into pale pastel shades or used for a good white. It contains a high proportion of vegetable matter which has to be removed during the combing of tops. For the carded yarns and fabrics the impurities are removed by loose wool carbonising or piece carbonising.
- (b). Hungarian wool comes into the following categories of fineness :- A/B, A and AA. The A/B (For the carded qualities) is only available in small quantities.
- (c). Problems are experienced with a high nep formation following the carbonising of roil from the AA quality. Efforts to use combed waste from the Hungarian top making in blends for the carded cloths has been restricted due to the difficulty in removing the neps.

1.2.1. Altogether the trials observed by the expert included five "Woolmark" for the carded wool quality in two weights for a "Shetland" type tweed. And seven trials for the combed worsted flannel which involved three different finishing routines and a non-pill finish.

1.2.2. It is concluded that subject to the recommendations described in the Final Report for enterprise Magyar Gyapjufono es Szovogyar a "Woolmark" quality of product could be achieved, but on account of the many deficiencies described considerable time and financial outlay would be required to achieve commercial viability.

Appendix II.

Summary of
Quality Control Report Factory 2
Magyar Gyapjufono es Szovogyar.
16/7/77.

- 1.1.1. With the agreement of the Ministry of Light Industry the UNIDO expert visited TEXIMEI, the Institute for Quality Control in the Textile Industry, on 23/6/77. During this visit the expert met the Director of the Institute and was able to discuss the type of services rendered by the Institute to the textile industry.
- 1.1.2. TEXIMEI functions under two main headings :-
(a). Well equipped laboratories providing all types of tests on request for industry.
(b). A Quality Control department used to monitor the pre-determined quality standards for clothing, knitwear, piece goods and yarns for the industry.
TEXIMEI advises industry on methods for quality control through the issuing of a "General Instruction for Managers". Factory systems are regularly inspected, but at an interval of years.
- 1.1.3. The institute does not measure the quality of fibres, slivers and tops, it confines itself to yarns, fabrics and clothing as a form of consumer protection. During the discussion it was agreed that many factories test correctly, but only record the results as a statistic. The results are not communicated in such a way as to be able to facilitate prompt action in correcting faulty goods or to help in maintaining and improving quality standards. The Director of TEXIMEI asked the expert to provide a report with recommendations for a system of effective in-plant quality control.
- 1.1.4. The yarn manufacturing mill carries the greatest responsibility for the maintenance of quality standards and it was on this account that the No 2 factory (Spinning) of enterprise N.G.es Sz was used for this report.

- 1.1.5. An important consideration is to clearly understand who is responsible for the maintenance of quality standards and the relationship between the quality controllers and the production staff. It will be shown how methods of practical quality control can be exercised by production employees as a normal part of their working routine.
- 1.1.6. Standards of quality attainable have to be considered in relation to :-
 - (a). Cost.
 - (b). Production.
 - (c). Existing plant.
 - (d). Employees.
 - (e). Management structure.
- 1.1.7. In the Hungarian textile industry cost is strictly controlled and categorised according to proportions of man made fibre content in blend.
- 1.1.8. Production standards are pre-determined and conform to the targets for the current five year plan. Premiums reward targets achieved.
- 1.1.9. Considerations of age and maintenance are factors inhibiting the attainable quality standards at No 2 mill, for both carded and combed yarns.
- 1.1.10. When constructing training programmes for employees the quality control responsibility must be always emphasised. An Appendix gives an example.
- 1.1.11. The management organisation structure in factory 2 is not effective for good quality control. A better alternative is described and illustrated with a chart.
- 1.1.12. The formation and composition of "Quality Control Groups" is recommended for regular appraisal of quality standards and to investigate complaints and maintain and improve quality standards.

2. The recommendations made in the report for Quality Control are summarised as follows :-
- (a). Have pre-determined quality parameters for all standard yarns spun by the enterprise and purchased for use by the enterprise.
 - (b). Re-organise the Quality Control department and have Quality Inspectors working as testers in the production departments on shift.
 - (c). Introduce use of Control Charts for yarn counts.
 - (d). By having measured lengths for sliver and yarn packages use as spot check for calculating counts.
 - (e). Have regular machine inspections by Q C staff using check sheets.
 - (f). Have Job Descriptions for all levels of employee describing their quality control responsibilities.
 - (g). Have regular Quality Control Group meetings at factory level and enterprise level.
 - (h). Re-organise the management structure at No 2 factory to give the chief of Quality Control a more effective role and direct access to the senior executive.

Appendix III.

Summary of
Technical Report for
Hazai Fesusfono es Szovogyar.
20/8/77.

1. This company employs about 4,500 people in the wool textile industry. There are six branch mills in the group. It is well established in the first category of quality classification and already possesses the awards for the "Woolmark" and the "Blended Woolmark" of the I W S.

1.1. Field of activity :-

Combed sliver production.	1140 tons per year.
Recombing.	300 " " "
Combed yarn production.	3600 " " "
From above for sale.	2300 " " "
Own cloth manufacturing.	1300 " " "
Carded yarn production.	1180 " " "
Carded cloth manufacturing.	650 " " "
Carded yarn for sale.	530 " " "
Worsted cloth production.	4800,000 sq m/yr.
Carded cloth production.	1300,000 " " "
Carded "grey" cloth for sale.	400,000 " " "
Worsted "grey" cloth for sale .	500,000 " " "

1.1.1. Raw materials used for the manufacture of the carded products are in two categories, (a). Imported. (b). Indigenous.

(a). Australian "A" and "B/C" types.

South American "E/C".

New Zealand "C/D".

Mongolian "C/D".

Imported synthetic wastes.

Imported synthetic fibres.

Imported broken top, noil and sliver.

1.1.2. (b). Indigenous.

Hungarian Merino wool of carded staple 45 mm maximum.

Qualities "A/AA", "A" and "A/B".

Man made Viscose.

Synthetic fibres, staple, PA & PE.

- 1.1.3. The imported wools are mainly used to manufacture the heavier counts of yarn in the range 4's Nm to 10's Nm which includes the carpet types and yarns for the tweed type cloths which have gained the award of the I.W.S. "Woolmark".
- 1.1.4. The indigenous Merino type wools are used to spin finer counts, 12 to 14 Nm, to manufacture velour type cloths, in small quantities it is being successfully introduced into the tweed type cloths and provides a better performance during yarn spinning.
- 1.1.5. The expert has recommended a strengthening of the raw material range by including a better variety of cheviot types of wool such as Welsh or Irish, U.K. regional crossbreeds of the C/C/D category. The expert also recommended that the count range for the carded fabrics should be confined in the 4 to 10 Nm limit in keeping with the contemporary manufacturing policy.
- 1.1.6. Details of the fourteen standard carded yarns and for the thirty two standard cloths, with the experts comments have been given in separate appendices to this technical report.
- 1.1.7. The manufacturing plant for spinning, weaving and finishing has been surveyed. Discussions have taken place and recommendations given to the plant management for resolving the problems identified by the expert. Many of these problems concern important details frequently assigned to human error at operative level.
- 1.1.8. Among the larger problems the congestion of plant at the Vac carded yarn spinning mill, the age of the machines and the admitted labour turnover of 33 % per annum were relative. Such problems can only be resolved in the longer term. Meanwhile the expert has given concrete recommendations to the senior management for new plant layout, specification and for a technical training scheme.

- 1.1. . Due to modifications to the carding machines and the installation of ring frames capable of spinning larger size packages, the Vac mill produces an acceptable quality of yarn considering the site and disposition of the plant (the same advice on modifications was previously given to enterprise M.G.es Sz by the expert). In order to maintain and improve quality and to effect urgent improvements in productivity the restructuring of the spinning mill at Vac should be top priority.

- 1.2.1. The weaving mill at Pomaz has problems affecting the quality and production of the carded woven fabrics. These problems can be quickly improved by giving better attention to important details in the winding department. Most of the faults occur at operative level and can be improved through implementing the experts recommendations.

- 1.2.2. The storage of yarn received from Vac is very bad. The building is open sided and frequently floods. Due to poor planning and programming of work the yarn can remain in store for many months meantime deteriorating badly before going into work.

- 1.2.3. The question of the limitations of the STB weaving machine and its lack of versatility for weaving carded type cloths particularly with fancy knop yarns and many colourways will require further research into the specifications being offered by the loom makers. The expert has given recommendations for three makes of rapier loom, but many conventional shuttle looms with automatic weft supply are still running successfully all over the world.

- 1.2.4. The disposition of the branch mills in the overall organisation of the enterprise does not lend itself to good communication, this affects the success of the production programme. Orders for the same cloth are woven simultaneously at Pomaz and Bodaajk, but due to lack of production capacity orders are frequently transferred between branch mills. Another problem is the lack of blending capacity leading to many small lots which become mixed up during the transfer of orders between branch mills. Short term recommendations have been given for methods of better identification and work programming, but for a permanent improvement restructuring and management reorganisation is necessary.

- 1.2.5. An important section for which recommendations have been given is for more effective quality control operating on the "shop floor" at the Vac spinning mill. Recommendations have been given for a central (enterprise level) quality control monitoring section reporting direct to the Technical Director.
- 1.2.6. There is a difference in methods for the wet finishing of woollen cloths practised between the Hungarian textile manufacturers and the U.K. industry. Local conditions may be responsible for the different technologies, but the experts report recommends that trials should be made using the saponification method, in the interests of quality and economy.
- 1.2.7. In connection with the recommendations given for finishing procedures it is planned to close the Angyalfoldi finishing mill within a few years in conformity with a city redevelopment plan. A later section of the report deplores this idea for good reasons.
- 1.2.8. Training for supervisors and skilled operatives is required to help control labour turnover and to operate the newer and more complex machinery. Accepting that there is an adequate two year apprenticeship scheme run by the industry for school leavers, training for the more mature employees entering the industry is inadequate, in terms of job knowledge, quality awareness and fault recognition. The expert has made available his systematic training methods to the Directors of the enterprise as examples of up to date training methodology.
- 1.2.9. Following completion and translation of all reports covered in Appendices I to V of the UNIDO experts final report, a meeting took place between the enterprise, the Ministry of Light Industry and the expert. It was confirmed to the expert that all his recommendations made in the reports were accepted by the enterprise and that further meetings with the Ministry would take place for the implementation of the recommendations. It was recommended that the expert should be asked to return to Hungary to assist in implementing his recommendations for training and for management organisation.

Appendix IV.

Summary of
Reconstruction report for
Spinning Mill. Hazai Fesusfono es Szovogyar.

1. This report gives recommendations in connection with proposed reconstruction plans for the carded woollen spinning and manufacturing section of the enterprise Hazai Fesusfono es Szovogyar. Financed from the current five year plan and continuing into the next five year period.
- 1.1. At the present time items of plant are being considered and pre-determined production targets made for the restructuring of the spinning mill at Vac. The expert was given every facility to examine and recommend the proposed plans for the new factory and the items of equipment under review. Details of manning schedules for operatives and the productivity per count and quality of yarn have all been taken into consideration during the structuring of the new plans.
- 1.1.1. In his report the expert has given his opinion for the relative merits of the plant already being considered by the enterprise. He has made recommendations for added refinements to improve the efficiency of the plant and he has given recommendations for alternative makes and types of plant under the headings of efficiency and economy. In particular for the oiling method for the blending plant and a full specification for the woollen carding machine.
- 1.1.2. Additional equipment has been recommended by the expert for servicing the cards and for anti-static devices to be fitted to vulnerable parts of the high production plant. Expected production figures for the alternative equipment are quoted by the expert, based on UNIDO sources.

- 1.1.3. Another recommendation by the expert is to have electronic yarn clearing devices on the new winding machinery, being essential for machine knitting yarns and yarns for tufted carpets.
- 1.1.4. For the overall replanning of the spinning and weaving factories the expert has recommended that all the winding and doubling operations should be sited at the spinning mill, both for yarns intended for internal or external usage. This operation should come under the direction and be the responsibility of the technical manager of the spinning mill at Vac.
- 1.1.5. An essential part of the experts report are his recommendations for the reorganising (See technical report) and re-equipping for the quality control department at the spinning mill where there are two laboratories. The report includes additional methods of test and the appropriate equipment.
- 1.1.6. Two appendices to the report give detailed specifications for a high production carding machine and a contemporary wollen ring spinning frame.

Appendix V.

Summary of
Report on Marketing.
Hazai Pesusfono es Szovogyar.

1. Towards the end of his assignment the expert was requested by the Technical Director of the enterprise K.H.es Sz to provide recommendations for the export marketing of the company's products to the western European countries.
- 1.1. Hungarotex is the central agency which represents the textile ~~agencies~~ enterprises of Hungary for exporting world wide. It works on a commission basis and makes agreements for five years coincident with the government's production plan for industry. Hungarotex exercises credit control and account insurance.
 - 1.1.1. An export marketing plan is made for the year by the management of the enterprise, it is fully detailed and costed down to the last detail, firm quotations for the Hungarian market are possible due to price control of indigenous raw materials. On fashion the Hungarian market is one year behind, the COMECON countries two years behind.
 - 1.1.2. Most of the exports from the textile industry are in the form of made up garments. Of the carded production 40 % is exported, half of this to western Europe. Two collections are made each year based on market intelligence from the market itself.
 - 1.1.3. The expert has listed ten problems facing the marketing of cloth by the Hungarian textile industry, from these problems the important fact to emerge is the necessity to provide a better quality and a better variety of product for both home and export markets. The expert recommended that improved and more effective control of quality standards and a more effective policy for training are basic to the fulfillment of these aspirations.

- 1.1.4. In the course of his report the expert has commented on the imbalance between the firm demand for carded woollen products and the overproduction of carded worsted products. Also the considerable recent investment in modern high production machinery for combed worsted manufacturing and the lack of any re-equipping for carded products for more than twenty years. (Now beginning to be rectified).
- 1.1.5. The expert has recommended improved marketing and selling procedures through :-
- (a). Closer and more frequent co-operation with the customer to obtain up to date details of stylings, colours, weights and textures. The enterprise and its designers should work closely with the customer. As much time as possible should be allowed for developing and showing the new ranges. A good working relationship should be established with the customers.
 - (b). Quote dependable delivery dates and fulfill them accurately. Always be ready to make quick repeat deliveries
 - (c). Each of the larger enterprises should be encouraged to develop an individually styled range of cloths with which it can become well known and identified.
 - (d). Lungarotex should assist the industry to market its products by assembling a balanced range representative of the industry as a whole and by insisting on having all pattern collections ready on a certain date and that all the companies can provide sample lengths and deliver orders and repeat orders as required.
- 1.1.6. The expert recommended that the existing system of taxation should be reviewed and revised in favour of an export orientated policy for the textile industry and improved quality and variety for the home market. The expert also recommended that the five research and quality standard institutions could provide a more practical service to the industry through a closer working relationship.

1.1.7. The expert included a comparative analysis between the Hungarian and a typical U.K. company marketing organisation :-

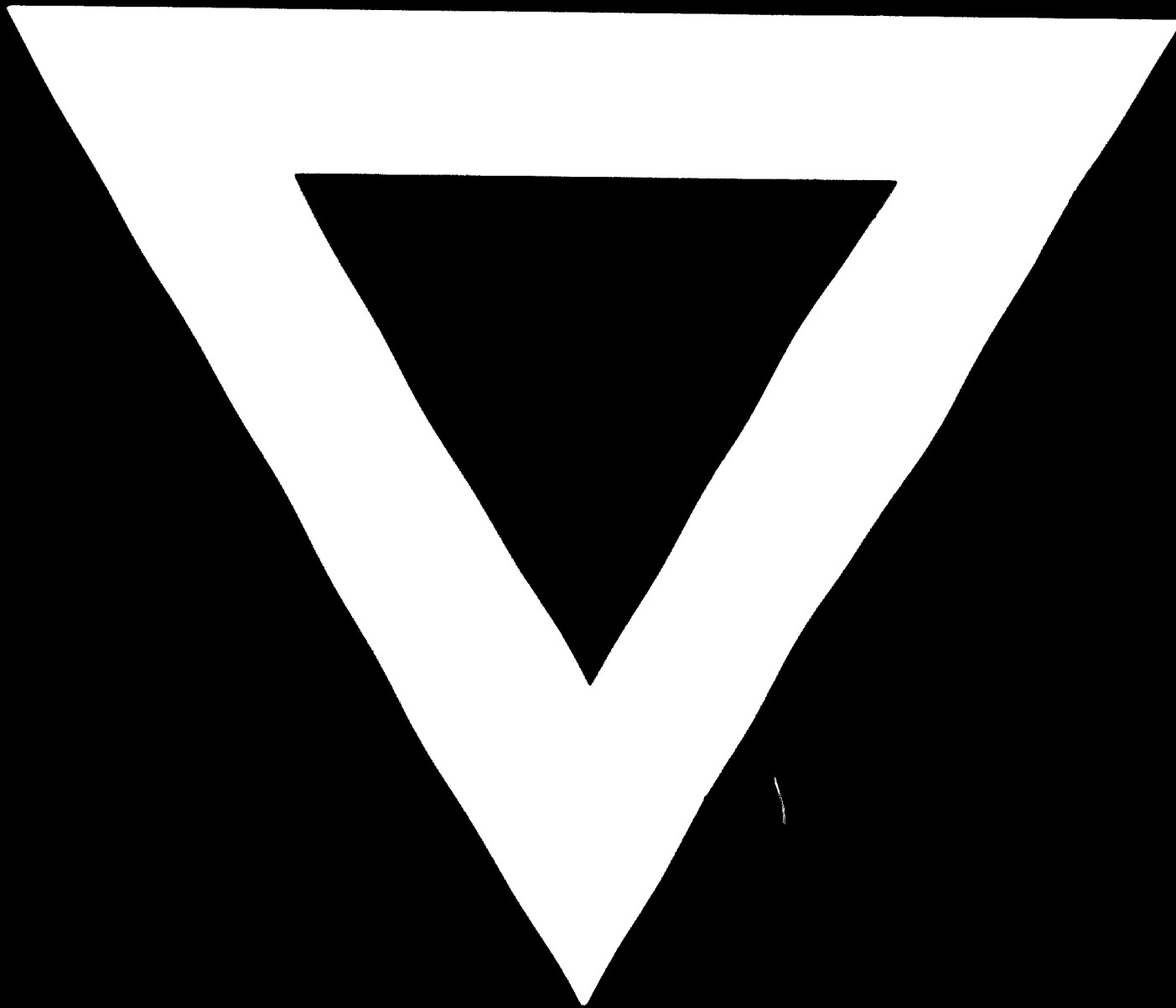
- (a). Design.
- (b). Converting (Wholesaling).
- (c). Marketing.
- (d). Production.
- (e). Financial.
- (f). Advertising.

Described under section 5 of the report. The production and financial parts are not included within the responsibility range of the Commercial Director of the enterprise H.F. es Sz. Advertising for the home market comes within his function.



We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

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