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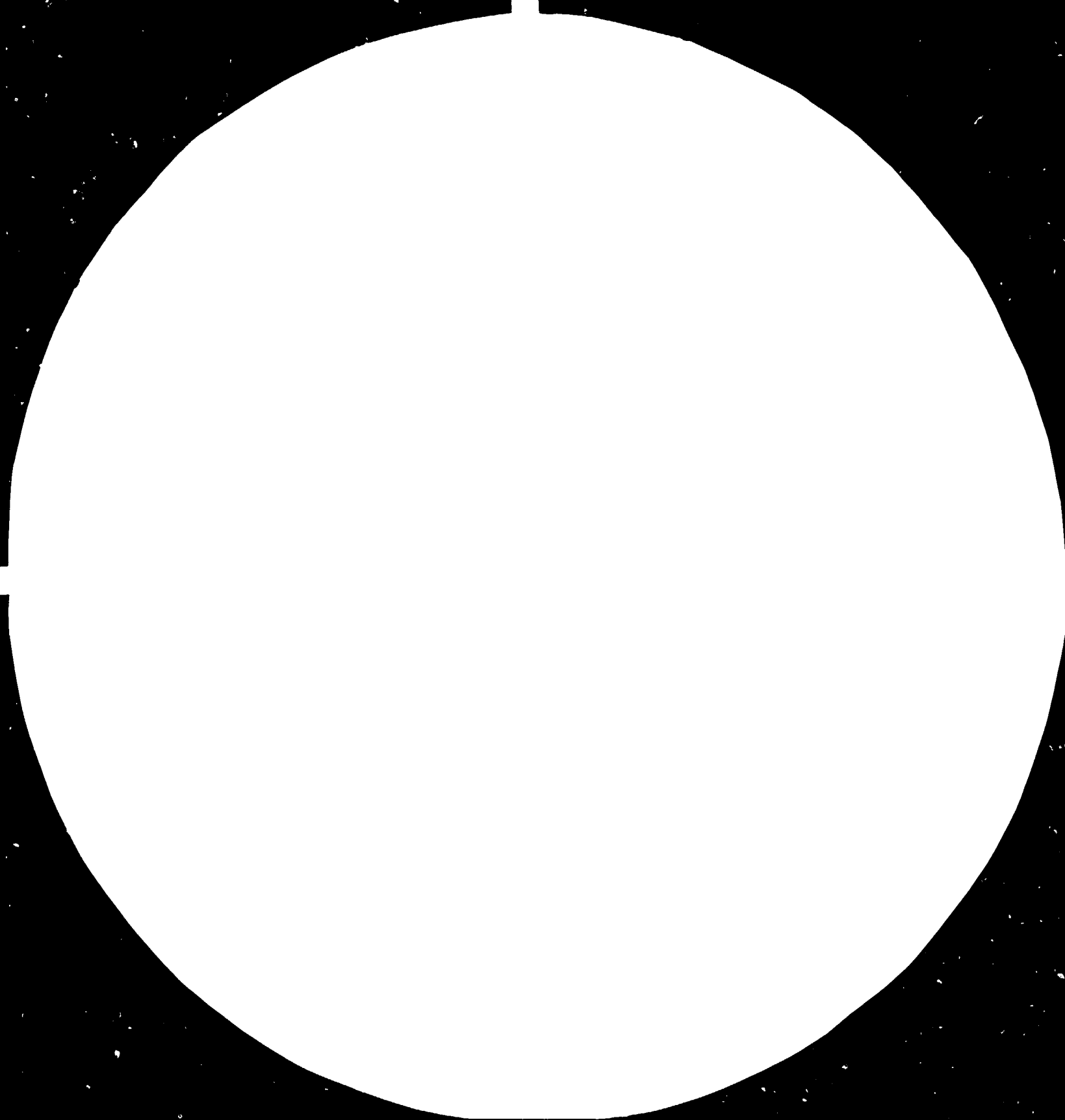
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DEVELOPMENT OF HOSIERY AND KNITWEAR INDUSTRY,
LUDHIANA, PUNJAB (PHASE II)

DP/IND/82/006

INDIA.

Technical Report: Design and Manufacture of Woollen Knitwear*

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

Based on the work of Kirpal Marwaha,
Knitwear Designer

United Nations Industrial Development Organization
Vienna

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1. INTRODUCTION

Having read all the material of the Indian Knitwear Industry and in particular the role of the Facility within the structure of the Ludhiana Woollen Knitwear industry, I shall not reiterate statistical and technical facts already available and will simply concentrate on points relevant to design factors and garment quality. However, some of the design factors have direct implication on technical resources and marketing.

On my arrival, the counterpart staff had already a sufficiently high level of competence as regards the formation of knit structures. However, further advice was necessary on tensions and gauges of machines need to achieve softness, stability and good quality knitwear.

In the two months, I advised and assisted the staff to achieve the following:-

- To produce a knitwear Sample Collection based upon research of various international Colour Forecast for Autumn Winter 1985/86.
- Instructed the K.F. staff in designing and interpreting from fashion sketches so that samples could be made of an acceptable and high quality standard.
- Assisted with new styles of Pattern Cutting
- Provided advice on how to set up a workable design studio.
- Advised on marketing.
- Visited and advised the local Knitwear Industry to improve their existing ideas.
- Lectured to Industry

2. SUMMARY OF FINDINGS

2.1 Raw Materials

The current use of merino wool and synthetic acrylic yarns so far, has tended to knit up into a hard finished garment, due to the tensions and gauges of the machines used - Merino garments are also disadvantage by shrinkage and therefore require expensive dry-cleaning as they will not withstand the common household/spin washing machines. To overcome this, shrink resist treatment is necessary.

2.2 Spinning

The softness of yarns is essential whether worsted spun or woollen spun. Elasticity, looseness, softness and textures are key notes in Knitwear in Europe and USA Fashion trends. The above points have clear implications for the facilities spinning capacity, as new machines are just being commissioned and coming into use. I have not yet been able to judge what quality of yarns they will produce. English and Italian yarns which are market leaders have all included ranges with slubs, doubling fancy yarns etc., this gives the garment a hand knit look and increases softness and texture accordingly.

2.3 Dyeing

Consistency of colour matching for repeat export orders are essential. Having Computer Colour Matching equipment at the Facility would be of tremendous help to dyers who wish to reproduce shades which are new to them, but essential for Export market. In India it would be impractical to dye batches in the quantity yarn manufacture would require. Therefore, repeated batch dyeing requires absolutely accurate records of times, temperature, content etc. Human falliability is unavoidable without new technology.

2.4 Machines

Throughout the industry the Knitting process is carried out on hand flat machines or on automatic power flat-beds. Knitting operators, although technically quite competent, need to elaborate more on the tensions used for achieving a soft look fabric.

On these machines the operators could achieve the following variety of fabrics: fancy structures, pattern designs, cables, turnover cables, collars, bands and tapes, pockets, single and double jacquard, fancy stitch. Now intarsia and plush can be made if the correct attachments are made available.

2.5 Cut and Sew Knitwear

Panels of fabrics are knitted on the hand flat and power flat-bed and then cut to the appropriate and style of the garment.

2.6 Fully-Fashioned Knitwears

To eliminate waste in cutting, fully fashioned fabric pieces are knitted to shape on automatic machines. This method could also be applied to the hand flat, and give more variety in patterning with different gauges of machines used.

2.7 Pattern Cutting

The pattern maker at the Knitwear Facility, Mr. S.S. Pathania is trained in garment technology mainly for woven garments. However, through his experience of the past 18 months with the Knitwear Facility he has achieved some valuable result. There are still certain important aspects of knitted garment designing which he required to know e.g before finalizing a design concept it is essential to first originate the fabric sample on a machine. The fabric should be of sufficient size to demonstrate the draping and other qualities of the intended garment. Only when all this has been determined can the style most suitable be determined.

By taking the above points into consideration, I and Mr. Pathania developed new and improved paper-patterns, according to the variation of the fabrics samples e.g looser fitting, bigger arm holes, more generous sleeve width and neck-lines, as per western trends.

2.8 Making-up

The Facility Making Up department is fairly well organised although some of the machines should be better maintained (some of them were out of order). Greater improvement could easily be made by adopting the methods used in Europe, although it already demonstrates most of the techniques, further improvement can be made. I understand that an Expert in making-up techniques is to be provided, so this point should be adequately covered.

2.9 Design Section

I understand that two Knitwear designers had gone to the USA for training in Knitwear design and haven't yet returned. In their absence the available staff i.e. Mr. Manjit Singh, who is in charge of the Knitting Workshop and is a knitting technologist, and Mr. S.S. Pathania, who is a garment manufacturing technologist, have been trained and introduced to new concepts of knitwear designing. It seems possible that the two designers away for training may not return to the Facility. To fill this gap I would recommend that Mr. Pathania, who is very anxious to train in this field, should be given the opportunity to do so.

2.10 Finishing

The Finishing department is acquainted with most of modern finishing technology, but due to the expense of solvent used for dry cleaning, the machine was not in operation. Also the steaming table, a process which is required every day in sample garment production was only available every third day. This delayed the production of the collection as the finishing processing manager had to get this work done by outside agencies upon my request.

2.11 Industry

The Facilities relationship with local industry could be improved by spending more time on Public Relations with industrialists. More advice, technical training and good working practices could improve the value of the relationship tremendously.

The industrialists' attitudes are changing quite rapidly regarding exports to European countries. The Facility could play a crucial role in guiding these firms, by providing the assistance in design and colour forecasting and marketing advice.

The lecture on Design Concepts in European Fashion and Textiles on the 26th January 1985 was well received by the industrialists at the Knitwear Club and they responded well to the information offered. Further appointments were made for advice and subsequent visits were made to ten industrial units. This meeting and its effect illustrates how well the industry will respond to practical Public Relations exercises.

3. RECOMMENDATIONS

Garments currently being produced, whether from wool or acrylic fibres tend to be too hard, and such fabric is not suitable for the target market. In fact it is doubtful if they could compete in the lower end of the mass market, where competition from Far East countries is sharp, and profit margins low. In those countries production runs are large to provide economies of scale and designs are usually restricted to poor copies of higher market garments.

The middle markets are dominated by "soft" woollens in pure wool i.e. Shetland, Lambswool, Angora, Cashmere, or by wool mixtures i.e. fancy yarns of wool/cotton mixes or wool/acrylic, or wool/silk mix. Here the blend of expensive and cheap yarns can create natural textures and patterns which disguise the fact that inexpensive materials are being used. By using two yarns of varying qualities and properties in two compatible colours, it is possible to create an expensive looking garment of good textures and quality at a reasonable price.

Single acrylic yarn garments tend to be of supermarket standard or the cheaper department stores (i.e. C+A in UK) in the case of slightly better quality finished garments.

It is suggested to increase the purchase and production of better quality yarns and extend the capacity to use fancy yarns and mixed quality yarns. This will allow medium and small scale Indian producers to have a greater impact and market penetration, giving a far better rate of return which will more than cover the increased investment cost.

The increase in profit margin for middle and upper markets is drastically greater than for that of the bottom end of the market.

3.1 Recommended Machine Gauges

For softer looks and thicker yarns to produce "chunky" knits and "cable" with hand look knits, 4 gauge machines are essential. Shetland yarns, or doubled yarns and mohairs could then be fully exploited.

Medium 8 gg is necessary for lighter garments also using merino wools but still achieving the "soft" look by using looser tensions. 10/12 gauge for fine angoras and cashmere for the real "high" quality warm soft look. This type of high quality garment should be plain and not patterned as the expensive look is provided by the combination of wook quality and styling.

In the industry the most popular machine gauge is 8 gauge. They should consider the purchase of an additional range of gauges to maximise production flexibility and meet market demands.

3.2 Colour Forecasting

Colour forecasting is absolutely essential for European and USA markets. Colour forecasting research should be undertaken 16 months in advance and completed 10/12 months before production commences.

3.3 Forecast Cycle for Summer Season

Research in June/July Colour and design prediction.
A collection of design sample and technical notes to be completed by August/September ready for International Textile Shows, starting with Pret and Fabrex in October.

Order to be accepted in October/November for delivery by the end of April for the Summer season.

3.4 Forecast for Winter Cycle

Colour research and design prediction undertaken in December/January, with design collection completed by early March ready for International Textile shows in March/April. Orders to be completed by the end of August for Winter Season.

- (i) The colour research and design should be undertaken in Europe with designer visits to London, Paris and Milan to co-ordinate colour, design and over-all look for maximum market appeal. Time period of four to six weeks.
- (ii) Information, designs and technical notes should be brought to Ludhiana for assessment and discussion with the management as to the best use the Facility can make of information gathered for the benefit of the industry i.e. what market to aim for, what styles to concentrate on and how to match the Facility's capacities with market demand.

Note: It is essential the designer is fully aware of the technological capacity and skills plus scale of production of the industry.

- (iii) Designer liaison with technical production of the collection could be completed in 6/8 weeks.

4. CONCLUSION

According to the Job Description the preparation of men's, ladies, and children's knitted outerwear for European and USA markets was required.

I have covered men's and ladies collection sufficiently, but there was insufficient variety and shade of yarns suitable for children's wear. Therefore, I worked in close collaboration with a leading manufacture in children wear, who is currently in Europe selling his range of children's garments based on the work done in conjunction with myself.

As a Designer with a specialist background in knitwear technology and constructed textiles, I have found it advantageous to, not only produce a drawing or pattern, but to be able to produce the design on the machine necessary or show the technician the necessary stitch or needle configuration to achieve a specific result. I believe this ability to translate designs into products, combined with my knowledge of Punjabi and Hindi has allowed me to develop a close and constructive relationship with staff at the Facility. This has allowed for a more efficient use of my time. I have enjoyed what proved to be a challenging project.

5. FUTURE PLAN FOR A DESIGN CENTRE

Certain assumptions have been made in proposing this plan. These include the selection of the market where the impact of Indian Knitwear will have most effect, and the plan has been based on my own views of the market area which are in broad agreement with the ideas of both N.P.D. and C.T.A. There is no reason why the plan cannot be modified if subsequent market intelligence dictates that this was not the best assumption.

In addition it has been prepared to suit the nature of the local industry and suggests a limited market penetration initially thus allowing the industry time to develop technically at what seems to be a reasonable rate.

It also implies that the Design Centre at the Facility will be involving in assistance work in the domestic market, at times when their attention to export matters is not so pressing.

In collaboration with the proposed Marketing Cell of the Facility, I would recommend that joint efforts are made to promote the designs and themes, both locally and abroad. This idea has not been developed other than at the discussion stage due to the lack of suitably qualified Marketing staff.

5.1 Mechanism for input of designing skills

Assuming that we select two market areas in say Western Europe and we limit activities in the first instance to one selling season per year. Both these figures we would expect to increase as the exporting capabilities of the industry improves. Thus the most obvious season would be Autumn/Winter in these countries for which preparation for sampling should begin June/July/August of the previous year.

The following gives an outline of activities involved:

Begin research into target markets and fashion trends and colour forecasts etc. - 2 weeks in period June/July. Develop ideas and designs and prepare prototype samples working at K.F. and also with specific firms who are taking part in the exporting exercise - 6 weeks Sept/Oct. Prepare bulk samples along with any further developments in preparation for actual selling (K.F. staff plus firms - Nov/Dec/Jan). Finalise preparation of collection and shipment of samples by industrialists and K.F. staff - Jan/Feb. Exhibition, selling proper - March/April. Thereafter all production of orders will need to take place for shipment and distribution by end of July for opening of selling season in September.

5.2 Inputs needed to implement above scheme

Because the two designers have not returned from Training this leaves a serious gap which must be filled. Mr. Pathania is basically a pattern-cutter and garment technologist with training on woven fabrics, but he has gained a great deal of experience by being exposed to Knitwear technologists and Experts in his work at the Facility. He should receive training to extend his capabilities.

Another designer who is more artistically inclined, and who has a knowledge of fashion and can appreciate and develop colour concepts, should be appointed as a permanent staff member.

These two would form the nucleus of the Design Centre taking care of domestic design consultancy and acting as the channel through which the export orientated designs are transcribed into working samples.

Initially it may be that local companies acting in collaboration with others and under the guidance of the Facility, produce composite ranges at the outset.

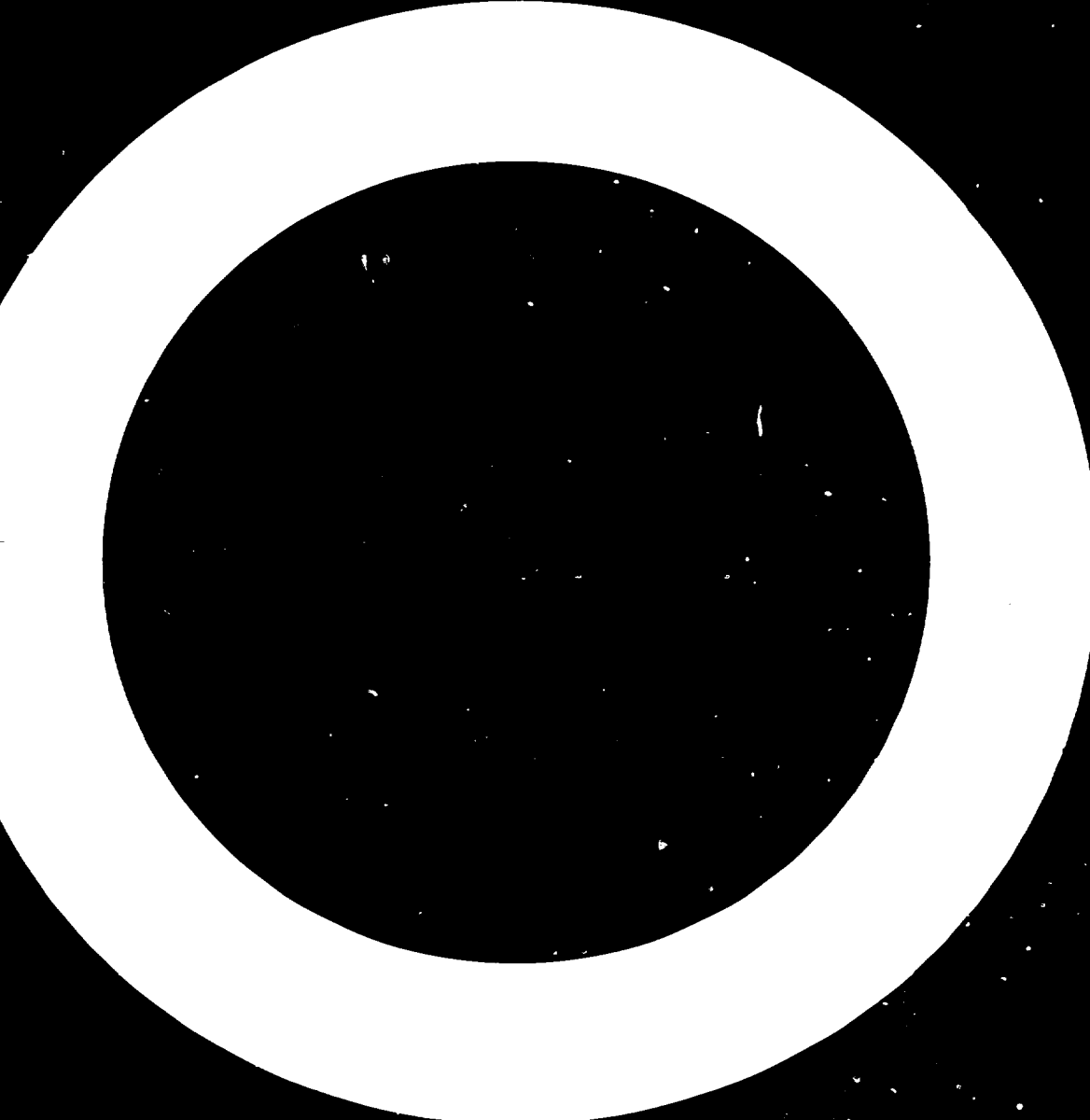
After sustained success in the market place it is reasonable to expect they will want to develop independently as exporters. Bearing in mind the size of the companies involved, the cost of hiring their own designer could be prohibitive and there is a definite role for a Design Co-ordinator working in Western Europe whose function would be to originate design work and also select designs from the designers working in these markets and assemble the designs into a form which can be transmitted to the companies involved. The companies could then develop their own collections taking help if needed from the Facility Centre.

For example, a collection of childrens wear designs could be assembled from the work of several freelance designers and this could be co-ordinated into a collection specifically for a local firm which specializes in childrens wear. This way the designs are tending towards an element of exclusivity which in time must be the overall desire. The person co-ordinating the design efforts will need to be familiar with both the conditions prevailing in the local industry, and these will be constantly changing, as well as those in the target markets.

6. A NOTE ON MARKETING

Recommendations

1. Promote export sales
2. Encourage and promote activities i.e. Trade Fairs and Exhibition
3. Public Relation work - Idea of Facility promoting a Knitwear Fashion Magazine. Costs to be met by the industrialists through advertising
4. Publicity is necessary to educate the market demands
5. Study to be undertaken with reference to identify the optimum markets
6. Market research - on the chosen market



ANNEX I

List of Companies Visited

1. Mr. Kapoor
Ludhiana Wool Syndicate (LWS)
Near Chand Cinema
Ludhiana
2. Mr. Puri
Teeknit Knitwear
56-E Kartar Singh Sarabha Nagar
Ludhiana
3. Mr. Jaswant Lal
Oslo Knitwears
Chawal Bazar
Ludhiana
4. Mr. Dumra
Greatway Pvt. Ltd.
G.T. Road
Ludhiana
5. York Knitwears
Civil Lines
Ludhiana
6. Mr. B.M. Kalra
Rosy Knitwears
Civil Lines
Ludhiana
7. Mr. Harjit Singh
Elson Knitwears
127/XII Shahpur Road
Ludhiana
8. Mr. D.K. Oswal /Mr. J.c. Sehgal
Managing Director/Production Manager
Vardhman Spinning & General Mills Ltd.
(Export Wing) Knitwears
G-1 Industrial Area-A
Textile Colony
Ludhiana
9. Mr. Khosla
Rajah Hosiery Mills
Deep Nagar, Civil Lines
Ludhiana

10. Mr. Ajay Dewan
Deesons Knitwears
Near Bharat Nagar Chowk
Opp. Telephone Exchange
Civil Lines
Ludhiana

11. Mr. K.K. Adya
Prop. Raibahadur Knitting Works
(Knitwear Manufacturer)
Rai Bahadur Road
Ludhiana

12. Mrs. I.M. Chhabra
Prop. Saroj Hosiery
No. 3 Industrial Area
Chambha Ghat
Solan (H.P.)

ANNEX II





