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

This report covers my activities and evaluations obtained during my second visit to the Knitwear Facility, Ludhiana in November 1985-January 1986. As many of the points raised in this report reiterates and extend upon points already made in my previous report (January 1985) I recommend the two reports are read in conjunction and regarded as a whole.

Although my area of expertise is design, and design development it is my firm belief that good design informs at all levels and all stages of the knitwear industry, from conception, through production and into market analysis and marketing. Therefore my comments on raw materials, machinery and export strategies are given from the view point of my experience as a designer.

The report emphasises the role of a designer as a central and integral figure in the industry and not as an optional luxury, and all comments are made in good faith with this role in mind.

## 2. OBJECTIVES AND OBSERVATIONS

In the two months of my visit, following consultations with the Chief Technical Adviser and Managing Director, I have advised and assisted in the following manner:-

- 2.1 The main task was to build on the base established in last years mission (1984/85) to produce a collection of 24 mens and womens sample knitwear garments, designed for export to the European middle market for the Winter Season 1986/87.
- 2.2 To prepare the above collection ready for a Project Team to visit Europe in February/March 1986 to demonstrate the potential of the Indian Knitwear industry.
- 2.3 During the preparation of the collection the Project staff and industrial personnel have been provided with guidance through talks and 'hands on training' in the following respects:-

Current European design developments:-

- (i) advice on new fashion styles and shapes
  - (ii) technical assistance on sampling
  - (iii) advice on making up
  - (iv) advice on design presentation for marketing
- 2.4 Further advice on how to analyse European market trends in design, shape, form and colour including the use of prediction charts to produce an appropriate garment range for the chosen market.

## 3. KNITWEAR MANUFACTURERS

- 3.1 Visited and advised ten knitwear manufacturers, who wish to further improve the design aspects of manufacturing and most of whom are likely to participate in the export marketing programme of the Corporation. Four manufacturers assisted in the preparation of my designs.
- 3.2 Manufacturers current designs in production were critically examined and suggestions for new design modifications incorporated. Often small changes in styling for looser fitting and softer look fabrics made considerable improvement.
- 3.3 Further suggestions to be taken into consideration for improving quality and styling were:-
  - (i) colour choice and consistency
  - (ii) yarn type and quality
  - (iii) pattern and stitches
  - (iv) machine gauge and tension
  - (v) garment style
  - (vi) design and pattern cutting
  - (vii) making up

### 3.4 Colour

Colour is central to design and the importance of taking note of the seasons colour is essential for export. For a collection to be acceptable to European retailers, it is necessary to examine European prediction charts, e.g Nigel French, Informoda, Promostyle, Orilandi etc. The charts indicate, not only colour, but the look and feel for the season. Garments based on these colour ranges will be more tempting to potential purchasers as they will 'mix and match' with other co-ordinated garments ie. dresses, trousers, jackets.

#### Colour for Winter Season 1986/87

Bold brights, worked in combination with sombre darks for the volume market. Rich, warm tones of red berry, fuschia, and rust will be important as will a resurgence of purple, used with deep shades of red and blue. Also, sophisticated neutrals mixed with each other and accentuated by one bright colour.

### 3.5 Yarns

#### Spinning and Dyeing

Having chosen the appropriate colour range it is equally important to achieve the right quality and feel of yarn. Research on yarns could be done a year prior to manufacture by visiting various yarn fairs in Europe. The yarn fairs predict the future look of garments. Although the Knitwear Facility has a working spinning department, it does not produce a wide range of yarns and the emphasis of the advice in my report of 1985 regarding the importance of soft yarns has gone unheeded. However, the European market continues to demand soft yarns and it remains essential for the elasticity, looseness, texture and overall look which is the key note to European knitwear.

The desired feel and texture can often only be achieved by use of slubs, fancy yarns, and angoras. Although these yarns are available they tend to be overpriced and very expensive, therefore my recommendations for the seasons requirements are: unusual yarn mixes, a revival of chenille boucle, tweed, high twist, and iridescent yarns, combined with flatter yarns for textural interest. Luxury blends, superkid, mohair, alpaca, cashmere, and lambswool mix with wool to update classics.

All the above are possible and advantageous, but all that are currently available at the Knitwear Facility is merino's and shetland.

### 3.6 Pattern and Stitches

Pattern and stitches should be considered in comparison with fashion trends in Europe in order to co-ordinate with other textile clothes. Market research remains a crucial factor at all stages of design.

Although patterns produced on advance technology machines using computer electronics are popular in Europe, it is still possible for industry in India to compete with labour intensive hand flat machines and the gradual introduction of power machines capable of producing large jacquard patterns such as the "Shiema" machine at the facility.

The larger manufacturers have already invested in power and electronic machinery.

#### Pattern and Stitches for Winter Season 1986/87

Rich, ethnic, jacquards and intarsia with geometrics, quality mosaics, medallions and file work patterns. Whimsical, conversational motifs are also important in argyles, stripes and foulards, are re-scaled and re-coloured for the traditional market. Abstract leaves and foliage provides a fresh new alternative to florals. Overall patterns are most directional while placed and engineered motifs work for the junior market.

#### Stitches

Classic diagonal ribs, create surface interest, along with new twists on traditional cables and pointelle stitches. Flame and crewel work stitches are also evident combined with neo-hippy patterns.

### 3.7 Styles

For reasons of mass production and simplicity industrial manufacturers have to adopt cut and sew methods rather than attempt fully fashioned garments which are more easily made on hand flat machines. The making up of cut and sew garments requires improvement on current standards and necessitates stricter quality control.

The cost of fully fashioned garments is higher because of the slowness of production involved in manufacture.

The styles I have designed for 1986/87 are mostly cut and sew with only a few fully fashioned garments for comparison.

#### The Styles 1986/87

Simple, roomy shapes, reflective of plain and provincial living. The unkempt tweedy look. Also knitwear interpreting the sleek modern look, characterised by structure,

turtle neck, v-neck, off the shoulder line, padded shoulders. Elements of couture at its most extreme, flamboyant, dramatic and luxurious detailing and styling. Patchwork looks.

Finally, rich and elaborate jacquards and intarsia taking inspiration from persian carpet motifs. Colourful intarsia sweaters with panels and yokes.

### 3.8 Design and Pattern Cutting

The Knitting Facility pattern cutter has continued to make progress and develop the necessary skills. There are certain aspects to knitted garment designing which requires further attention e.g. before finalising a design concept it is essential to first originate the fabric samples on the knitting machine as a test prior to production. The fabric sample should be of sufficient size to demonstrate the draping characteristic of the material and other qualities of the intended garment. Only when all these factors have been satisfactorily determined can the style most suitable for manufacture be determined.

### 3.9 Making Up

Although the Knitwear Facility has all the machinery required for making up, further improvement in the necessary reliability of skill is required before a consistent standard of quality finish can be achieved. The planned visit by a making up expert to provide advise and technical support is necessary to cover this area adequately.

## 4. DESIGN DEVELOPMENT

The Knitting Facility designer is scheduled to undertake a three to six month training visit to the Winchester School of Art in the U.K. in 1986. I have tried to prepare him as far as possible in order to allow him to gain the most from this visit. A course of this kind should be an invaluable experience, but on its own can provide no more than an insight into the European design scene and unless investment in technical development is seriously matched by the investment in design, an integrated approach cannot be achieved and market demands will not be successfully met.

India is not only isolated from European and North American markets by distance but also by life style. Design reflects the fashions of urban society and social life which may well appear incomprehensible in Ludhiana. To fully understand the centrality of design and the continually evolving effect of market demands on manufacturing, it is necessary to immerse the designers in the society for which they design.

Such an understanding take considerable time to develop in such rapidly changing field as fashion design. However, since my 1984/85 mission, there has been an incorporation of aspects of European designs which have been successfully tested in the domestic market. This may indicate a beginning of the recognition of benefits provided by good design.

Some local manufacturers attitude towards export is changing tremendously even over a relatively short period of time and the recognition of the necessity of good design and quality control is emerging.

Some firms have taken the plunge, while others hover on the brink, afraid to leave the security of a soft home market that absorbs fluctuating standards and price levels.

The growing improvement in standards demanded by the Soviet market until now have not seriously had an impact on quality control.

This year I have used the experience gained in my 1985 visit to work with selected industrial manufacturers who have the capability and capacity to produce the export design available. These I have visited, discussed production, the nature of the European market, and advised on both design and marketing.

## 5. RECOMMENDATIONS

It must be noted that my recommendations for 1986 reiterate those of 1985, and remain essential for future developments.

### 5.1 Yarn Improvement

The drive for quality and variety must be continued. This is the very basis of the industry. The necessity of improving Indian quality yarns is urgent, for if manufacturers have to use imported yarns at high cost, foreign exchange profits will be diminished.

The spinning of soft yarns, for the European market cannot be avoided or Indian manufacturers will increasingly find themselves cast into the role of providers of contract manufacturers of cut and sew pieces using imported materials with little control over the design or the complete garment.

### 5.2 Machine Gauges

The tendency to purchase small gauge machines and knit on too high a tension is only slowly being overcome. The export market demand is leading to larger gauge machines and the lower tensions necessary to achieve softer textured garments.



5.3 Colour Forecasting

The importance of fashion colours, and understanding colour prediction charts cannot be over emphasised. The Export market demands seasonal colours for every season, every year and manufacturers who produce garments out of season will fail to achieve their price potential.

5.4 Fashion Prediction Charts

These are essential for manufacturers without designers or consultants based in Europe. They are necessary for preparing collections for export and require experience in analysing prior to reaching design decisions. Knitwear should not be produced in isolation from an overall co-ordinated fashion look.

5.5 Forecast Cycles for Seasons

The correct timing for initial research, prediction analysis design, development, and sampling prior to production, and the calculation from initial design stage to garment delivery requires considerable awareness and planning. Forecast and design cycles are crucial to having the right garments, in the right market at the right time.

5.6 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.

5.7 Forecast for Winter Cycle

Colour research and design prediction undertaken in December/January, with design collection completed by early Feb. ready for International Textile shows in Feb/March. 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 overall 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 to the best use the Facility can make of information gathered for the benefit of the industry ie. 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.

6. PLAN FOR A DESIGN CENTRE

In my last report I proposed a future plan for a design centre and I remain convinced that such a centre is even more desirable, given the cost of consistent market analysis and design research at European price levels.

The only method I can see to overcome such financial problems and foster a greater awareness of the necessity for design intelligence is for a design centre attached to the Facility and collaborating with a Marketing Unit to be initiated in partnership with industrial manufacturers who are leading the drive to export. Details of this proposal as submitted in my 1985 report are attached.

7. CONCLUSION

For the labour intensive knitwear industry to secure its long term future and develop a European or North American export market it must respond to and satisfy market demands.

The very necessary investment in new plant and modernisation of equipment must be matched by an equal awareness of the necessity of investing in good design. The two must develop in partnership. The cost of research and design development cannot be ignored or cheaply added on as an after-thought, it is central to an integrated knitwear industry. India is rich in raw materials and where necessary these can be supplemented by imported quality wools. If the wool spinners fail to offer the range of quality yarns and fail to develop new soft yarn mixes, the manufacturers will be compelled to purchase imported finished, pre-dyed yarns at premium prices and thus will reduce the flexibility of the industry and increase unit costs at the expense of valuable foreign exchange.

The recognition of the value of research and design development combined with improved yarns and stringent quality control will give an enormous boost to the international image of Indian knitwear and pave the way for higher profit margins and increased mark up that only the export market can yield.

Progress is being made but not as quickly as it could be. The urgent need for developing design and marketing skills is only just starting to be recognised and the investment by the industry is not yet sufficiently forthcoming.

8. POSTSCRIPT

A provision is already made in the Project budget for a third Designer Mission in 1986. In discussion with the Managing Director, I pointed out my concern that following my two missions, the Facility and manufacturers should have the opportunity to see a wider range of designer styles.

The M.D. pointed out that experience has shown foreign experts usually take considerable time to become familiar with local conditions and this should not be overlooked or underestimated.

The conclusion reached is a proposal that for the third mission, 1986/87 the designer should purchase a varied design collection on behalf of the project. The normal expected price would be £120/£150 each, a total cost of £2,400-£3,000 maximum.

The designer would spend at least one week in Europe to research and 2/3 weeks to produce the designs in India. The designer would continue to advise and support the Project staff and manufacturers as has been done by the Reporter in the past two missions.

If this proposal was to be accepted, and to be successful on such a tight schedule, the Project would have to extend every facility for the 2/3 week design production schedule.

EXTRACT FROM 1985 REPORT

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.

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.

### 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.

AIMS: - Collection Winter 1986/87 Mens' and Ladies  
Garment for European markets

24 Garments -

Design factors have direct implication on technical  
resources and marketing.

WORK PLAN

- 14/11/85-17/11/85 - Research in colour  
Research in the market
- 17/11/85-20/11/85 - Yarn Selection - design selection  
Dying preparation etc.  
Training to Pathania  
Yarn dying
- 21/11/85-23/11/85 - Design progression with samples  
Technical assistance and explanation  
Visit to selected industries
- 24/11/85-30/11/85 - Instruction for paper patterns  
Cutting, continuing sampling, using  
different gauges and various methods  
on machines  
Training to Pathania
- 31/11/85-27/12/85 - Visit to industries  
Making up garments  
Advice of shaping and styling  
Further sampling  
Fashion aims in industries and markets  
Report preparation and photos  
Market presentations

KNITWEAR MANUFACTURERS VISITED

MR. DEEPAK - Greatways Ltd, G.T. Road, Ludhiana

MR. AJAY DIWAN - Deeson Knitwear Ltd

MR. PURI - Teeknit International, Ludhiana

MR. KHOSLA - Rajah K/W

MR. BRAR. - Tulip K/W Gurdev Nager, Ludhiana

Mr. - Mohoni Hosiery, Ludhiana

MR. KHOSLA - Sutlej K/W

MR. GUPTA - Saah K/W

MR. J. OSWAL - Oswal Export Unit Ind. Area, Ludhiana

KNITTEX PVT LTD., Ludhiana