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ASSISTANCE TO CANACINTRA'S FURNITURE INDUSTRY SECTOR

SI/MEX/88/802

MEXICO

Terminal report*

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

Based on the work of a team of five consultants

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* This document has not been edited.

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1. INTRODUCTION

On 16 January 1988 CANACINTRA (the Mexican National Confederation of Manufacturing Industries), requested, through the Mexican authorities and the United Nations Development Programme (UNDP), technical assistance to be provided by the Untied Nations Industrial Development Organization (UNIDO) to its furniture sector. A project, entitled: "Assistance to CANACINTRA's Furniture Industry Sector" (SI|MEX|88|802) was approved and a sum of US$ 48,000 earmarked for its execution. It foresaw the provision of 3 man|months of expert services and US$ 2,000 worth of quality control demonstration equipment.

A team of five experts was fielded in August|September 1988 to provide ad hoc assistance to industry and to complement it by lectures on selected topics, deemed to be specially relevant. It was composed of:

Antoine V. Bassili, a UNIDO staff member, who was team leader and consultant in furniture production technology, who was in Mexico City from 21 August to 5 September 1988; José Luis Albaladejo, a staff member of the UNCTAD|GATT International Trade Center, consultant in marketing of furniture for export, who was in Mexico City from 25 July to 6 August 1988; Pietro Borretti, consultant in design and use of jigs, who was in Mexico City from 22 August to 7 September 1988; Arto Juva, consultant in value analysis, who was in Mexico City from 22 August to 2 September 1988; and Pekka J. Paavola, consultant in production planning and control in furniture plants, who was in Mexico City from 22 August to 2 September 1988.

They undertook a total of 39 individual factory visits, visiting a total of 27 different factories (some were visited by more than one consultant, hence the difference in the two numbers). The assistance given was of an ad hoc nature, each in his own field of competence. The list of these factories, giving names, addresses, range of products manufactured and persons met is given in Annex I.

Furthermore, CANACINTRA organized lectures at its headquarters for owners, production and export managers of their member firms. These were attended by

some 25-35 participants from industry. Lectures by Pietro Borretti on furniture design aspects were also attended by designers and students of the Industrial Design Department of the National Professional Study School, affiliated to the Autonomous University of Mexico. The programme of these lectures is given in Annex II.

The list of equipment purchased from project funds is given in Annex III.

Pietro Borretti also provided assistance in selection of hardware fittings for knockdown furniture and in selection of tools for woodworking machines. The material compiled and advice given were issued as a separate technical report: "Selection of Cutting Tools, Machine Accessories and Hardware for the Furniture Industry" (DP|ID|SER.A.1105).

2. FINDINGS

The 27 factories visited differed enormously in type of products manufactured, intended markets (local and export), quality of product and size of batches, etc., making it difficult to generalize. The following findings apply to the majority of the factories visited:

Buildings:

Their suitability ranged from excellent to very poor. Some had benefitted from foreign consultants, and their buildings and layout were consequently better. Many of the managers of plants having poorer buildings realized their shortcomings and were intending to move to more suitable locations.

Layout:

The same applies, as to buildings. As can be expected, plants specializing (producing a narrow range of products) tended to have a better layout than those producing a wide range of products. The consultants gave advice on modifications to layout and the correct methodology for planning a plant's layout.

Equipment:

By and large it was appropriate to the needs. In the cases where it was not, the most common fault was the use of "hobby" type equipment for industrial uses.

This was either basic woodworking machines or sewing machines suitable for the clothing industry, but not for upholstery work, which uses heavier fabrics.

In a few of the factories visited, management had invested in equipment that bore no relation to their product range at the time of the visit (e.g. a curtain coater in a plant producing melamine faced office furniture, and an automatic lathe in a plant producing panel furniture). It was recommended to dispose of the former by selling it, and to consider producing formed components (as a sub-contractor) to employ the latter.

By and large the choice was appropriate, and the equipment installed was of a similar level of sophistication, but exceptions existed.

In practically all cases productivity could have been enhanced with increased use of jigs, power tools and low cost automation.

In some cases surface finishing equipment was inappropriate. This applied also to the ancilliary equipment (spraying booths, racks for transporting and storing the freshly painted components, etc.).

V-folding of panels was not used, yet many panel furniture factories could benefit from this technology.

Internal Transport:

Plants did not give this topic the importance it deserves. Cases existed where it was used haphazardly, i.e. not all components were on pallets, etc., while the few smaller firms visited had little or no internal transport.

Safety:

This too was not given much importance in some of the plants visited. The importance of balancing cutterblocks that rotate at high speed was not recognized in some of the firms. Not only is it dangerous, but it wears out the bearings of the spindle prematurely.

Maintenance:

Tool maintenance was good in most of the plants visited. Machine maintenance on the other hand seemed to be done irregularly. Some plants requested advice on lubrication schedules - and received it. This indicates that real preventive maintenance is not practiced.

Jigs:

By and large this is another field where improvements are needed. It calls for experience to identify where jigs can be used, and then design and produce them. The UNIDO Manual 1/ contains useful examples which firms can introduce.

Assembly Work Stations:

These are more the exception than the rule. Even when they do exist they are not designed ergonomically and productivity is consequently lower.

Low Cost Automation:

Minimal use is made, in many plants, of Low Cost Automation (LCA). They have not realized that by adding LCA to existing standard woodworking machines their productivity can be greatly increased.

Wood Drying:

Most plants visited purchase kiln dried sawnwood. The impression the mission got is that in those rare cases where timber is dried in the plant, the technicians were not understanding what happens when wood is dried, resulting in poor operating practices of the few existing kilns.

Raw Materials:

By and large, raw materials were appropriate and correctly used.

Designs and Product Development:

By and large, this was good, though some technical deficiencies (due to lack of knowledge of correct technologies in furniture production) affected the designs and strength of the products. Another shortcoming in some firms was poor ergonomics.

1/ Manual on Jigs for the Furniture Industry by Pekka J. Paavola. UNIDO document No. ID/265.

Furniture Production Technology:

The following shortcomings were identified:

- Lack of knowledge of wood processing technology sometimes resulted in poor tool selection.
- Not enough importance was given to machine setting, resulting in additional costs in hand sanding, hand fitting during assembly, etc.
- The technology of dowel joints was not understood, resulting in low density softwood dowels being used in denser hardwoods.
- Need for serrations, chamfers, using dry dowels, etc., was not recognized and resulted in poor joints.
- Quality (precision) of tenons in the smaller firms was often poor.

Quality Control:

This ranged from good to poor, but overall tended to be adequate.

Costing:

This too varied from firm to firm, but in some of the plants visited producing serially, the costing methods used were rudimentary, resulting in potentially unrecognized losses.

Marketing:

1. Despite the advantage of being physically next-door to the largest furniture market in the world (the United States), the Mexican manufacturers have traditionally concentrated on a captive and more profitable domestic market, and have largely ignored the tremendous potential of the export market.
2. Operating within a captive market and closed (and uncompetitive) environment, the furniture industry has not felt compelled to make any significant efforts towards product innovation and updating of manufacturing processes and technologies, which have resulted in a generally poor offer of furniture products of outdated design and mediocre quality and unsuited to the stringent fashion and quality requirements demanded by the export market.

3. Until recently, and because of the reasons mentioned above, no attempts have been made to rationalize the industry and put it on a competitive international level. It is only now, in the midst of the economic recession caused by the external debt problem, and faced with the potential threat represented by competitive imports which have been liberalized following the accession of Mexico to GATT, that the industry has realized the situation and is slowly thinking of the export market as a serious alternative to a declining domestic market.

4. No systematic efforts have been made to properly study the U.S. market, identify the potential demand, establish appropriate distribution channels and undertake the necessary upgrading of production facilities and quality standards required to penetrate that market. Although several Mexican firms have occasionally attended - either individually or in groups - the major U.S. furniture markets, such as Dallas and High Point, the results have been, but for a few exceptions, negative. A major reason for this failure has been the short-sighted mentality of the Mexican exporter who usually thinks of the export market as a quick and marginal operation: i.e. trying to sell whatever he is already producing on-the-spot at a fast profit, and without having made the adequate preparations to study the demand and identify suitable business contacts. In other words, they have not yet understood that exporting is a medium-to long-term business which requires careful planning and a minimum of investment.

3. RECOMMENDATIONS

(A) Involving only CANACINTRA:

1. CANACINTRA should entrust INIREB-LACITEMA in Xalapa (Ver.) with conducting a 2-day course on wood drying for production technicians, covering how and why wood dries, effects of poor drying, shrinkage, etc. in furniture construction, etc. as well as basics of kiln drying, as well as an enumeration of the various artificial drying systems, the pros and cons of each, and advise on equipment selection.

2. A similar course, lasting probably a week should be organized by the same bodies addressed specifically to kiln operators. It should cover the

above, in greater depth, as well as operation of kilns, maintenance and calibration of meters and other controls, etc.

3. CANACINTRA should organize - possibly with the help of or at INFOTEC - a documentation centre to compile and diffuse information on all aspects of furniture production.

4. CANACINTRA should pursue, with the national standards body, a policy to create a complete range of national standards for furniture, and their major inputs.

(B) Involving CANACINTRA and UNIDO:

1. CANACINTRA, with UNIDO's assistance should provide technical assistance in the design, construction and use of jigs. This could comprise assistance at plant level and the conduction of courses.

2. A similar approach should be carried out in introducing Low Cost Automation (LCA) in the existing plants. This would also involve either a technical school equipped with a pneumatics LCA laboratory, or the training facility of a large manufacturer and/or an importer of such components.

This would comprise first (a) a short course for managers to familiarize them with the idea of LCA and its applicability to their firms; and (b) a longer course for technicians to familiarize them with aspects of LCA, including identification of circuit design and construction and enable them to design and then implement LCA on their existing basic machines.

As a second phase, the services of a consultant to assist the firms in the construction of the LCA applications identified will be provided.

3. CANACINTRA, again with UNIDO's assistance should organize a refresher course on tool maintenance for saw doctors and tool maintenance specialists of the various factories. This would widen their horizons, improve their skills and introduce better practices in the industry.

4. Similarly, CANACINTRA and UNIDO should organize a course encompassing all aspects of quality control in furniture production, from controlling the quality of the inputs, to control of quality in manufacture and assembly, leading to the control of quality of the finished products.

5. The export marketing of high-quality furniture would be greatly facilitated if there existed a testing facility that could test prototypes. UNIDO could provide assistance in the establishment and initial operation of such a facility.

6. The above facility could lead to the establishment of a national quality label for furniture that would again facilitate entrance on export markets.

7. A longer term programme of technical assistance, that would involve UNIDO and ITC, would be the following, addressed to upgrade firms that could potentially become exporters. It would comprise:

- Identifying a selected small number of enterprises (up to five) with compatible product ranges that have significant export potential, and whose management is willing and committed to undertake the necessary production upgrading and investment, with the help of an international assistance project, that will be required in order to penetrate the export markets to be targetted.

- The approach is thus to concentrate all international assistance efforts on the selected enterprises which will be provided with adequate expertise in factory layout, production technology, quality control, design and product development, costing, packaging, marketing, etc., as may be required as per their identified needs.

- The duration of such a project is normally three years. The success of the project would be measured in terms of easily quanitifiable results, i.e. export turnover achieved. The project would be divided into the following main phases:

Phase I. : Supply and export potential survey in Mexico in order to (i) identify the best-suited and most promising firms offering a sound export potential; (ii) make an in-depth evaluation and manufacturing audit of the firms selected; and (iii) make a detailed inventory of their technical assistance needs together with a timetable of inputs that will be provided through the project.

Phase II. : Provision to each individual firm selected of the requisite expertise inputs identified in Phase I. In parallel with this, a tailor-made demand study will be undertaken on the U.S. market in order to

provide each individual firm with suitable marketing-cum-product policy guidelines based on the requirements identified on the target market. This would be followed immediately with provision of expertise in design and product development and finishing, in order to comply with the necessary product adaptation requirements.

Phase III. : This phase would cover the necessary marketing actions required to penetrate the target market and eventually achieve or increase export turnover. This would be effected through the undertaking of market orientation missions, market tests in selected fairs, and promotional events with selected U.S. distributors and|or manufacturers|importers of wooden furniture. Particular emphasis would also be made on the possibility of identifying potential U.S. partners who may be interested in setting-up joint venture or joint distribution arrangements with Mexican exporters in order to take advantage of the large facilities existing in the Mexico|U.S. border-free zones known as "Maquiladoras".

ANNEX I.

LIST OF FACTORIES VISITED

A. By José Luis Albaladejo (1 to 4 August 1988)

	Name and Address	Main Products manufactured	Persons met
1.	MUEBLES DIXY Carlos B. Zetina No. 9 Fracc. Ind. Xalostoc Escatepec de Morelos (Mex.)	"Early American" furniture	Mr. Victor Urquiza Rui + Board of Directors
2.	CLASICOS DEL VALLE S.A. 1/ Patricio Sanz No. 1609-4 Esq. Felix Cuevas Col. del Valle Mexico (D.F.)	"Period" furniture	Mr. Vicente Escobar Zapiain
3.	INDUSTRIA MUEBLERA EMEX Estaño No. 18 Fracc. Industrial Col. Esfuerzo Nacional Xalostoc (Mex.)	Mainly panel, but also solid wood furniture	Mr. Luis Baquedano Meza
4.	INTERMOBEL S.A. Av. Ferrocarril de Cuernavaca No. 645 01780 Olivar de los Padres Mexico (D.F.)	Metal office furniture	Mr. German Quiroga Santelices
5.	STYLOS Av. Santa Ana No. 2 Parque Industrial Lerma 52000 Lerma (Mex.)	Panel furniture for office and domestic use	Mr. Jaime Martinez Negrete
6.	IMULER S.A.	Wooden furniture	Mr. José Reza
7.	MUEBLES FYLI Calle 4, No. 261 Local 1 y 2 Granjas San Antonio 09070 Mexico (D.F.)	Wooden office furniture, also "country" style	Mr. Francisco Sobrino Becerra
8.	INDUSTRIAS RIVIERA S.A. Javier Rojo Gomez No. 386 Col. Guadelupe del Moral 09300 Mexico (D.F.)	Office furniture	Mr. Luis Magidin M.
9.	BANCOMEXT (Banco Nacional de Comercio Exterior) Periferico Sur Esq. Camino a Santa Teresa Mexico (D.F.)	--	Mr. E. Portas Cabrera

1/ Showroom, plant is in Veracruz

B. By Antoine V. Bassili (22 to 29 August 1988)

10.	INTERMOBEL S.A. (see No. 4.)	Upholstered metal office and institutional chairs	Mr. German Quiroga Santelices
11.	INDUSTRIAS GUILLECON S.A. de C.V. Oriente 158, No. 54 Col. Moctezuma (D.F.)	Wooden furniture (artisanal)	Mr. Gillermo Trujano Rios Mrs. Maria Cristina Trujano
12.	MUEBLES DIXY (see No. 1.)	Wooden household furniture (mainly in pine, occassionally also in caoba)	Mr. Victor Urquiza R Mr. Cesar Barcenas S. Mr. Jesus Rula Mr. Rafael Lopez
13.	PRODUCTOS METALICOS STEELE S.A. de C.V. Largo Alberto 282 11320 Mexico (D.F.)	Metal office furniture	Mr. Alfonso Rosas Arellano
14.	INDUSTRIAS RIVIERA S.A. de C.V. (see No. 8.)	Metal furniture	Mr. Israel Gitlin
15.	MADERAS PERFILADAS S.A. de C.V. Av. Centenario No. 1811-C Col. Atzacoalco 07040 Mexico, D.F.	Metal chairs, furniture, hardware and bases for office chairs	Mr. Roberto Sarmiento Mr. Mario Tapia Mr. Jesus Muñoz
16.	CLASICOS DEL VALLE S.A. de C.V. Fabrica Zage S.A. de C.V. Via Muerta y Art. 27 Col. Obrera Veracruz (Ver.)	"Classical" reproduction furniture, mainly for households, but also for offices	Mr. Javier de la Rosa Quezada Mr. Vicente Escobar Zapiain

C. By Pietro Borretti (22 August to 7 September 1988)

17.	D.M. NACIONAL Calz. San Juan de Aragon 544 Bis Mexico 14 (D.F.)	Contemporary style office furniture	Mr. Rafael Jaime Cerpa Ms. Maria Guadaloupe Lopez Calderon Ms. Lilian M. Velez
18.	STYLOS (see No. 5.)	Panel furniture for office and domestic use	Mr. Jaime Martinez Negrete
19.	UNITEC-BOLLHOF S.A. de C.V. Avenida Santa Ana 35 Parque Industrial Lerma 52000 Lerma (Mex.)	Furniture hardware	Mr. Roberto Gaspari B.
20.	UTEMEX S.A. Norte 45 No. 803-B Col. Industrial Vallejo 02300 Mexico (D.F.)	Woodworking and metalworking tools	Mr. Ruben Razo Prieto Mr. Javier Rosales Zuniga

21.	FORMNOVA S.A. & CAME S.A. San José de los Cedros No. 150 A & E Col. San José de los Cedros 05200 Cuajimalpa (D.F.)	Office chairs with metal base	Mr. Alberto Reynaud R. Mr. Patricio Reynaud
22.	INDUSTRIA DE MUEBLES Lerma S.A. (IMAUER) Mk 54 Car. Mexico-Toluca Lerma (Mex.)	Melamine-faced panel office furniture	Mr. José Reza Guevara
23.	ARTEFORM DISTRIBUDORA S.A. de C.V. Andromaco 17 Miguel Hidalgo 11520 Mexico (D.F.)	Metal office furniture	Mr. Arcibaldo Hope
24.	INTERMOBEL S.A. (see No. 4.)	Upholstered metal office and institutional chairs	Mr. German Quiroga Santelices
25.	COCINAS PROVEL Blvd. P. Adolfo Lopez Mateos 160 San Pedro de los Pinos Mexico 18 (D.F.)	Kitchen cabinets (75% metal, 25% melamine coated particle board)	Mr. Jaime Velasquez del C. Mr. Juan Antonio Vega
26.	MUEBLES FYLI S.A. de C.V. (see No. 7.)	Wooden "classic" style office and residential furniture	Mr. Francisco Sobrino Becerra Mr. F. Castro Becerra Mr. J. Arturo Mugica Garcia
27.	CONFORTABLES DE MEXICO S.A. Calz. Guillermo Prieto No.39 Col. Magdalena Mixhica 15850 Mexico (D.F.)	Upholstered dining room sets with wooden frames (Louis XV style)	Mr. Ramon Torá Gib
28.	ENSEMBLADOS DE MADERA Y MUEBLES S.A. Alce Blanco No. 36 Fracc. Alce Blanco 53370 Naucalpan (Mex.)	Contract furniture and joinery, mainly for hotels	Mr. Jorge Morales Rivera Mr. Miguel Valenzuela
29.	DISMA S.A. de C.V. Blvd. Adolfo Lopez Mateos 958 San Pedro de los Piños Mexico (D.F.)	Rustic type pine furniture (artisanal production)	Mr. Javer Suarez

D. By Mr. Arto Juva (22 to 29 August 1988)

30.	FORMANOVA S.A. (see No. 21.)	Office chairs with metal base, components	Mr. Patricio Reynaud R Mr. Javier Sanchez Ramos
31.	FUMSA (Fabricas Unidas de Muebles S.A.) Calle Juarez 173 Col. Maria Esther Zuno de Echeverria Mexico 13 (D.F.)	Upholstered furniture	Mr. Jose Luis de la Fuente Mr. Alfonso de la Fuente
32.	INDUSTRIAL MUEBLERA EMEX S.A. de C.V. Estando 18 Fracc. Esfuerzo Nacional Xalostoc (Mex.)	Panel furniture	Mr. Luis J. Baquedano Meza
33.	"PRINCIPE" KROEHLER S.A. de C.V. (DIXY Group) Offices: Norte 3 A No. 36 Del. Gustavo A. Madero 07720 Mexico (D.F.)	Upholstered furniture (30%), matresses (70%)	Mr. Emilio Perez Lopez Mr. Salvador Saldivar Velez
34.	CONFORTABLES DE MEXICO (see No. 27.)	Upholstered living room sets with wooden frames	Mr. Ramon Torá Gil
35.	MUEBLES FYLI S.A. de C.V. (see No. 7.)	Solid wood office and residential furniture	Mr. Francisco Sobrino Becerra Mr. Francisco Sobrino Castro Mr. Arturo Mugica Garci

E. Mr. Mr. Pekka J. Paavola (22 to 29 August 1988)

36.	MUEBLES FYLI S.A. de C.V. (see No. 7.)	Solid wood office and residential furniture	Mr. Francisco Sobrino Becerra Mr. Francisco Sobrino Castro Mr. J.Arturo Mugica Garcia
37.	PRODUCTOS METALICOS STEELE S.A. de C.V. (see no. 13.)	Metal office furniture	Mr. Alfonso Rosas Arellano Mr. Diaz
38.	MUEBLES DIXY	Wooden household furniture (mainly in pine, occassionally also in caoba)	Mr. Victor Urquiza R. Mr. Cesar Barranas S. Mr. Jesus [illegible] Mr. Rafael Lopez
39.	CORPORACION IBARRA (MUEBLES ALFA DE MEXICO and MUEBLES LEONARD) Calle Uno 328 Col. Pantitlan Mexico 9 (D.F.)	Alfa: Dining room and bedroom furniture Leonard: Solid wood furniture	Mr. Sergio J.Aguilar Mr. Efren Vega B.

ANNEX II.

TIME TABLE OF LECTURES GIVEN

Wednesday, 24 August 1988	18.00-20.00	Production of Upholstered Furniture Arto Juva
Thursday, 25 August 1988	09.30-13.00	Technical Design of Furniture Pekka J. Paavola
	16.00-19.30	Value Analysis Arto Juva
Friday, 26 August 1989	09.30-13.00	Production of Furniture Pekka J. Paavola
	16.00-19.30	Rationalization of Production Arto Juva
Monday, 29 August 1988	16.00-18.30	Quality Control Pekka J. Paavola
Tuesday, 30 August 1988	10.00-13.00	Principles of Plant Layout and Modern Trends Pekka J. Paavola Arto Juva
	16.00-19.30	Development and Start-up of Production Plants A.V. Bassili
Wednesday, 31 August 1988	10.00-13.00	Production Planning A.V. Bassili
	16.00-18.30	Round Table Discussion Arto Juva Pekka J. Paavola
Friday, 2 September 1988	10.00-13.00	Design and Use of Jogs for Furniture Productior Pietro Borretti
	16.00-19.30	Round Table Discussion Pietro Borretti A.V. Bassili
Monday, 5 September 1988	09.00-13.30	Low Cost Furniture of Social Interest Pietro Borretti
	16.00-19.30	Furniture Design Pietro Borretti

ANNEX III.

LIST OF EQUIPMENT PURCHASED FROM PROJECT FUNDS

1. GANN Hydromette H 65
   Electronic wood moisture meter with digital LCD read-out, measuring range 4-60% M.C. with 4-position wood species selector for automatic species correction of the readings, for battery operation including 9 volt dry battery, complete with drive-in electrode M 20, measuring cable MX-8, ram-in electrode M 18 and carrying case (larger case, ref. 2200 3500 5082) ready for service.

2. 1 pkg. each of 10 Teflon insulated electrode pins 40 and 60 mm in length ref. nos. 4500 and 4550.

3. Dial caliper 200 mm reading 0.05 mm code 13-01284.

4. Dial depth gauge reading 0,01 mm range 0-100 mm code 40-4511.

5. Model 3084 Wolff-Wilborn Hardness Pencil Test supplied with 17 leads from 6B to 9H.