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17689

B C K
Bôr- és Cipôipari Kutató-fejlesztô Vállalat
Research Institute for the Leather and Footwear Industries
H-1041 Budapest, Baross u. 52., Hungary

Contract No.: 88/77

Project: UD/GLO/87/268

F I N A L R E P O R T

Development of Suitable Software for CAD/CAM Processes in the Footwear Industry

Budapest, January 1989.

Introduction

The objective of the UNIDO project UD/GLO/87/268 (implemented in close co-ordination with the project UC/GLO/87/268) is to prepare and introduce suitable personal computer programs for footwear manufacturing units in developing countries. To realize this target BCK was subcontracted to design the computer software and organize a seminar on their.

This Final Report gives an overview of activities carried out by BCK from May to December 1988.

1. Software development

In accordance with the Terms of References of the subject subcontract the following three computer programs have been developed in BCK:

- **GRAD:** Shoe pattern grading (a short description of the program features, the main menu and sample outputs are enclosed in Annex 1).
- **SHOECOST:** Shoe costing (the features, main functions and sample outputs are enclosed in Annex 2).
- **PRODCONT:** Production control (the features, the main functions and sample outputs are enclosed in Annex 3).

In the process of system analysis and program coding it became obvious, that to make the **SHOECOST** and **PRODCONT** more applicable an additional system would be useful, which has also been prepared:

- **CUTVAL:** Computing leather allowances for cutters (for the description of the program functions, the main menu and sample outputs refer to Annex 4).

Since the costing is equally (or in many respects even more) important for the tanning industry, an entirely different program was designed:

- **COSLEAT:** Leather costing (for a short description of the program features, the main menu and sample outputs refer to Annex 5).

As another byproduct of software development the **SHOECOST** has been slightly modified to be applicable in the leathergoods industry as well:

- **LG_COST:** Leathergoods costing (the functions and output structure of this program are the same as presented in Annex 2).

For SHOECOST and LG_COST installation utilities are provided to assist in customization of the main programs according to the particularities of the user company or factory.

All these programs run on IBM PC, XT, AT or PS/2 type personal computers or on their compatibiles/clones. The *minimum system requirement* is as follows:

- CPU with 512 Kbyte RAM,
- graphics adapter (CGA),
- monochrome monitor,
- one floppy disk of 360 Kbyte,
- parallel port (Centronics),
- dot-matrix printer (Epson compatible),
- operating system MS-DOS version 2.1 (or later).

In case of the GRAD grading program a digitizer (Summagraphics standard) and a plotter (using HP-GL), both connected via standard (RS-232) serial ports increase the system flexibility. Extra features such as hard (Winchester) disk, a higher resolution graphics adapter (Hercules, EGA, VGA), color display, ink-jet or laser printer contribute to more comfortable applications.

All the software developed are menu driven, extremely user-friendly, almost not requiring training in handling. Installation programs provide an easy way of the software customization according to the user's needs.

Sample outputs of the prepared computer programs are attached is Annexes 1 through 5. The programs together with their source codes and the respective User's Manuals were supplied to UNIDO IO/T/AGRO/Leather Unit in December 1988.

2. Seminar on software application

The seminar was organized in BCK from 14th trough 18th November 1988. All equipment (computers and accessories), computer programs and personnel (instructors, lecturers, assistance) have been also provided by Institute. The participants were given DSA in accordance with UNIDO regulations for the period of stay in Budapest plus travel but not more then ten days.

The programme of the seminar and the list of participants are enclosed as Annexes 6 and 7.

The seminar was well received what is reflected in the questionnaires filled up by all participants after the seminar was completed. (The questionnaire and the evaluation of responds are attached as Annex 8.) On the basis of reactions, comments and experiences accumulated during the seminar it is *strongly*

recommended to organize workshops on some related topics (e.g. theory of grading, costing systems and methods), since in many developing countries even the key professionals lack of this type of knowledge.

A special request was raised to provide all participants with a certificate. It was agreed with the UNIDO backstopping unit that such a document will be issued by BCK and sent by mail to all participants.

3. Software marketing

According to the contract and the terms of references the copyright of the GRAD program remains with BCK, but UNIDO is entitled the implement it through its technical assistance projects in developing countries. The right of free distribution of all other programs developed under this contract is given to UNIDO, which do not exclude BCK's right of selling then on any markets.

It is recommended to distribute technical information on all the available software for the leather and leather products industries of developing countries. For this purpose the one-page descriptions enclosed in Annexes 1 through 5 can be used.

Annex 1

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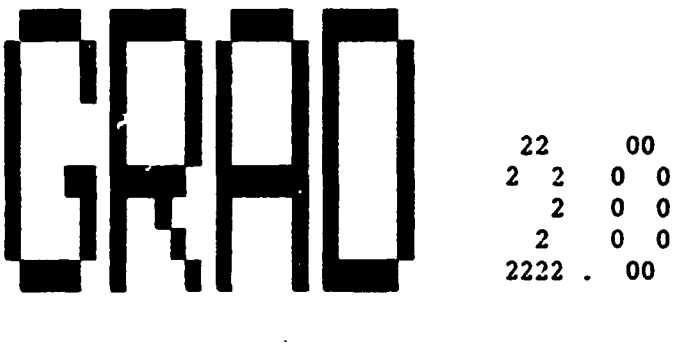

MICROCOMPUTER CONTROLLED SHOE PATTERN GRADING

The program package used in the technical preparation of footwear production, when the model size is designed by using one of the traditional techniques and the patterns of the size range is to be developed. The hardware configuration requires any microcomputer or terminal running MS-DOS operating system (e.g. IBM PC/XT/AT, PS/2, their compatibiles or clones) with a display and a (dot matrix, ink-jet or laser) printer; a digitizer and a plotter are options. The coordinates of pattern contours are the basic *inputs* for the system, while the *outputs* are the contours of the same in the required size range, as well as their perimeters and surfaces.

The system is fully interactive, extremely simple to operate, at the same time it provides the user with the accuracy required in CAD/CAM technology. The features are the following:

a) *low cost:* cheap, in many countries locally assembled microcomputers which can be used for other purposes such as production control, accounting etc. as well;
b) *versatility:* standard and special size systems and grading parameters may be used;
c) *simplicity:* no special education in computing is required for operate the system, all functions are invoked in a dialogue with the machine using normal footwear terminology;
d) *reliability:* once the range and grading parameters are input the whole grading process runs automatically ensuring the exact increments and shapes of components.

The grading system is open in the sense that outputs are available in digitized form for further use in the technological process or product preparation.

BCK - Budapest

C O M P U T E R

G R A D I N G

Ver. 2.3

Press ANY KEY to continue!

BCK, Budapest

M A I N M E N U

1 - Pattern digitizing (data input)
2 - Checking and preparation of data
3 - Grading

Database management:

4 - Print graded patterns
5 - Compotet surfaces and perimeters
6 - Set (standard) grading parameters
7 - Directory of styles and documentation

8 - End of program

Your choice

Grading parameters

Code	Size unit	Size increment by sizes CM unit	mm	Girth increment by sizes mm	by widths mm	Remark
1	mm	5.0	5.00	2.50	5.00	MONDOPOINT
2	fr. point	1.0	6.67	4.00	5.00	French point (= 6.67 mm)
3	Fr. point	1.0	6.67	4.00	6.00	French point (=6.67 mm) gent shoes
4	size	0.5	4.23	3.00	5.00	English size ladies shoes
5	.....	0.0	0.00	0.00	0.00	.....
6	.....	0.0	0.00	0.00	0.00	.....
7	.....	0.0	0.00	0.00	0.00	.....
8	.....	0.0	0.00	0.00	0.00	.....
9	.....	0.0	0.00	0.00	0.00	.....
10	.....	0.0	0.00	0.00	0.00	.....

1989.01.09.

Grading parameters

Code		2	6	60-17
Size unit		fr. point	Fr. point	Fr. point
MIDDLE SIZE:				
Size			37.0	37.0
Length of foot/insole	(mm)		235.0	235.0
Width			5	5
Girth perimeter	(mm)		220.0	220.0
GRADING PARAMETERS:				
Size increment		1.0		
Length increment - by sizes	(mm)	6.67		
Girth increment		1		
Girth increment - by sizes	(mm)	4.00		
- by widths	(mm)	5.00		
SIZE RANGE to be graded:				
Smallest size			32.0	
Largest size			42.0	
Width			5	

1989.01.09.

Size range parameters

Code	Size unit	Size	Middle (model) size Length	Width	Girth perimet.	Graded size range smallest size	largest size	width
			mm		mm			
1	mm	240.0	240	2	220	220.0	260.0	2
2	mm	270.0	270	2	240	260.0	310.0	2
3	French	42.0	280	6	240	38.0	47.0	6
4	English	8.0	286	6	241	5.5	11.0	6
5	English	4.0	238	5	217	2.0	8.0	5
6	Fr. point	37.0	235	5	220	32.0	42.0	5
7	Fr. point	37.0	235	5	224	34.0	41.0	5
8	.....	0.0	0	0	0	0.0	0.0	0
9	.....	0.0	0	0	0	0.0	0.0	0
10	.....	0.0	0	0	0	0.0	0.0	0
11	.....	0.0	0	0	0	0.0	0.0	0
12	.....	0.0	0	0	0	0.0	0.0	0
13	.....	0.0	0	0	0	0.0	0.0	0
14	.....	0.0	0	0	0	0.0	0.0	0
15	.....	0.0	0	0	0	0.0	0.0	0
16	.....	0.0	0	0	0	0.0	0.0	0
17	.....	0.0	0	0	0	0.0	0.0	0
18	.....	0.0	0	0	0	0.0	0.0	0
19	.....	0.0	0	0	0	0.0	0.0	0
20	.....	0.0	0	0	0	0.0	0.0	0
21	.....	0.0	0	0	0	0.0	0.0	0
22	.....	0.0	0	0	0	0.0	0.0	0
23	.....	0.0	0	0	0	0.0	0.0	0
24	.....	0.0	0	0	0	0.0	0.0	0
25	.....	0.0	0	0	0	0.0	0.0	0
26	.....	0.0	0	0	0	0.0	0.0	0
27	.....	0.0	0	0	0	0.0	0.0	0
28	.....	0.0	0	0	0	0.0	0.0	0
29	.....	0.0	0	0	0	0.0	0.0	0
30	.....	0.0	0	0	0	0.0	0.0	0

1989.01.09.

Style: 60-17

Size system: Fr. point

No.	Component	Size	Width	Perimeter mm	Perimeter m	Surface mm2	Surface dm2
1.	Leather lining	32.0	5	776	0.78	17185	1.72
		33.0	5	797	0.80	18083	1.81
		34.0	5	819	0.82	19002	1.90
		35.0	5	841	0.84	19943	1.99
		36.0	5	863	0.86	20905	2.09
		37.0	5	884	0.88	21889	2.19
		38.0	5	906	0.91	22895	2.29
		39.0	5	928	0.93	23922	2.39
		40.0	5	950	0.95	24971	2.50
		41.0	5	972	0.97	26041	2.60
		42.0	5	994	0.99	27133	2.71
2.	Interlining	32.0	5	1013	1.01	19921	1.99
		33.0	5	1042	1.04	20988	2.10
		34.0	5	1072	1.07	22081	2.21
		35.0	5	1102	1.10	23201	2.32
		36.0	5	1131	1.13	24346	2.43
		37.0	5	1161	1.16	25518	2.55
		38.0	5	1191	1.19	26716	2.67
		39.0	5	1221	1.22	27940	2.79
		40.0	5	1250	1.25	29190	2.92
		41.0	5	1280	1.28	30467	3.05
		42.0	5	1310	1.31	31770	3.18
3.	Vamp	32.0	5	766	0.77	15925	1.59
		33.0	5	788	0.79	16755	1.68
		34.0	5	810	0.81	17605	1.76
		35.0	5	831	0.83	18475	1.85
		36.0	5	853	0.85	19364	1.94
		37.0	5	874	0.87	20273	2.03
		38.0	5	896	0.90	21202	2.12
		39.0	5	918	0.92	22150	2.21
		40.0	5	939	0.94	23118	2.31
		41.0	5	961	0.96	24106	2.41
		42.0	5	983	0.98	25113	2.51
4.	Toe-cover	32.0	5	310	0.31	5192	0.52
		33.0	5	318	0.32	5471	0.55
		34.0	5	326	0.33	5757	0.58
		35.0	5	334	0.33	6050	0.60
		36.0	5	343	0.34	6349	0.63
		37.0	5	351	0.35	6656	0.67
		38.0	5	359	0.36	6969	0.70
		39.0	5	367	0.37	7289	0.73
		40.0	5	375	0.38	7616	0.76
		41.0	5	383	0.38	7950	0.80
		42.0	5	391	0.39	8291	0.83
5.	Counter-pocket	32.0	5	331	0.33	6612	0.66
		33.0	5	339	0.34	6967	0.70
		34.0	5	347	0.35	7331	0.73
		35.0	5	355	0.35	7704	0.77
		36.0	5	363	0.36	8085	0.81
		37.0	5	371	0.37	8476	0.85
		38.0	5	379	0.38	8875	0.89
		39.0	5	387	0.39	9282	0.93
		40.0	5	395	0.40	9699	0.97
		41.0	5	403	0.40	10124	1.01

6. Quarter	32.0	5	365	0.37	7747	0.77
	33.0	5	375	0.37	8142	0.81
	34.0	5	384	0.38	8545	0.85
	35.0	5	394	0.39	8956	0.90
	36.0	5	404	0.40	9377	0.94
	37.0	5	414	0.41	9807	0.98
	38.0	5	424	0.42	10246	1.02
	39.0	5	433	0.43	10694	1.07
	40.0	5	443	0.44	11151	1.12
	41.0	5	453	0.45	11617	1.16
	42.0	5	463	0.46	12093	1.21

1989.01.09.

DATABASES

No.	Style	Digitized	Prepared	Graded
1.	15-1515	1987. 9.21.		
2.	60-17	1987. 9.11.	1989. 1.09.	
3.	6017	1987. 9.11.	1988. 2.12.	
4.	GEOMET		1987.12.10.	
5.	INSOLE	1987. 9.15.	1988. 8.04.	
6.	VAMP	1987.11.20.	1987.11.20.	

1989.01.09.

Annex 2

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SHOECOST

COMPUTERIZED SHOE COSTING

Costing of leather products involves computing of material requirements, production costs and prices. It is used mainly at the production preparation stage to determine the viability (i.e. profitability) of and to set the price for styles to be manufactured, as well as in the negotiation with the customers.

The **SHOECOST** program is a compact tool to be used in footwear and other leather products industries. The installation utility customizes the outputs for the particular company. The *input* structure comprises components data such as denomination, material, color, clear and parallelogram surfaces, parameters of materials. Five variants of costing parameters (e.g. factory and administrative overheads rates, sales and forwarding costs) are stored as a database - they are updated by seasons or yearly. The computing process is fully interactive: the user conducts a conversation with a personal computer and may try various options by changing the kinds (and costs) of materials, profit rate, labour content etc. and see the impact of such changes. The *outputs* include a wide range of screen information, a complete style specification together with material requirements, wastes and costs by components, finally the standard costing sheet listing all the cost components.

The program runs on all IBM/PC/XT/AT or PS/2 and compatible personal computers. The user needs to know only the meaning of terms used in costing computations, while no specific education in computer sciences is required. The user benefits from the versatility, the speed, the accuracy and reliability of computations.

SHOECOST is recommended for material costing and price computations, but it is extremely useful in price negotiations and product range preparations.

Date: 09.12.1988.
Time: 16:15:51

U N I D O
Shoe Costing

Version 1.1 (SEUE-GW)

Local monetary unit:

U N I D O
Shoe Costing

Style: N o n e

M A I N M E N U

0 - Quit (exit)

1 - New style specification

2 - Style data check/modify/delete

3 - Costing parameters

4 - Costing computations

5 - Save data on disk

Choice:

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Division of Industrial Operation
Agro-Industries Branch
Leather and Leather Products Unit

Leather

COSTING PARAMETERS

Parameter	Unit	Parameter variants 1	2	3	4	5
Foreign currency		US$	US$			
Rate of exchange	AUS	12.900	1.000	1.000	1.000	1.000
Average wage	AUS/hour	20.00	15.00	0.00	0.00	0.00
Wage allowances	%	2.00	1.50	0.00	0.00	0.00
Social costs	%	8.00	6.50	0.00	0.00	0.00
Leasing costs	AUS/pair	1.00	0.50	0.00	0.00	0.00
Other (special) costs	AUS/pair	1.00	3.50	0.00	0.00	0.00
Manufacturing overheads	%	45.00	20.00	0.00	0.00	0.00
FACTORY COSTS						
Administrative overheads	%	33.00	15.00	0.00	0.00	0.00
Depreciations	AUS/pair	1.00	3.00	0.00	0.00	0.00
Allowances for rejects	%	10.00	2.00	0.00	0.00	0.00
Sales costs	AUS/pair	13.25	15.00	0.00	0.00	0.00
Profit	**%**	**19.00**	**50.00**	**0.00**	**0.00**	**0.00**
EX-WORKS PRICE						
Forwarding packaging	AUS/pair	2.00	5.00	0.00	0.00	0.00
Export incentive	%	16.00	20.00	0.00	0.00	0.00
F.O.B. PRICE						
Freight/Insurance	AUS/pair	10.00	5.00	0.00	0.00	0.00
Financial costs	%	3.50	15.00	0.00	0.00	0.00
C.I.F. PRICE						
Wholesale/retail margin	%	125.00	100.00	0.00	0.00	0.00
Computed retail price						
Suggested retail price						

Cutting value of leather grades:

1 ---> 80.00 %
2 ---> 75.00 %
3 ---> 65.00 %
4 ---> 60.00 %
5 ---> 50.00 %
6 ---> 40.00 %

Vienna, 06.01.1989.

UNIDO

Leather

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Division of Industrial Operation
Agro-Industries Branch
Leather and Leather Products Unit

COSTING SHEET

Style number/code: 85-001
Shoe type: Ladies boots

	AUS	US$
Materials (direct)	709.78	
Labour (direct)	24.73	
Wage allowances	0.49	
Social costs	2.02	
Leasing costs	1.00	
Other (special) costs	1.00	
Manufacturing overheads	11.35	
FACTORY COSTS	750.37	
Administrative overheads	8.32	
Depreciations	1.00	
Allowances for rejects	75.04	
Sales costs	13.25	
Profit	198.91	
EX-WORKS PRICE	1046.89	81.15
Forwarding packaging	2.00	
Export incentive	144.67	
F.O.B. PRICE	904.22	70.09
Financial costs	32.80	
C.I.F. PRICE	937.02	72.64
Wholesale/retail margin	1308.61	
Computed retail price	2355.50	
Suggested retail price	2390.00	

Vienna, 06.01.1989.

Remark: Basic variant (as per the specification before the costing was started)

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Division of Industrial Operation
Agro-Industries Branch
Leather and Leather Products Unit

STYLE SPECIFICATION

Style number/code: 85—001
Shoe type: Ladies boots

Labour content: 74.2 min/pair

No.	COMPONENT		MATERIAL	COLOR	UNIT	UNIT PRICE AUS	LEATHER AREA	GRADE	CUTTING ALLOW. %	CLEAR AREA	PARAL. AREA	No. Pcs.	MATERIAL REQUIR.	COSTS AUS
1	Upper	Vamp	Full grain 1.1 mm	Brown	sq.ft.	51.30	16.4	1	29.1	1.20	1.3	2	1.69	86.70
2	Upper	Legs	Full grain 1.1 mm	Brown	sq.ft.	51.30	16.4	1	33.5	2.10	2.4	4	3.02	154.93
3	Upper	Other upper comp.	Full grain 1.2 mm	Yellow	sq.ft.	57.30	14.5	2	23.9	0.65	0.7	6	0.93	53.20
4	Lining	Warm lining	Textile	White	dm2	3.50	0.0	0	18.3	40.00	43.0	6	52.63	184.21
5	Lining	Sock lining	Fur	White	dm2	4.63	0.0	0	26.3	6.28	7.1	2	9.63	45.07
6	Lining	Interlining	Thermo-textile	Natur	dm2	2.10	0.0	0	14.0	23.10	25.0	8	29.07	61.05
7	Reinforcement	Reinf. tape	Textile		m	6.32	0.0	0	3.3	0.00	0.0	0	0.84	5.31
8	Thread	Upper sewing	Dewlon 60	Brown	m	0.12	0.0	0	0.0	0.00	0.0	0	25.30	3.04
9	Fitting	Decoration	SPIDO	Gold	pair	12.50	0.0	0	0.0	0.00	0.0	0	1.00	12.50
10	Toe-puff		Thermoplastic		g	0.34	0.0	0	0.0	0.00	0.0	0	13.00	4.42
11	Stiffener		Leatherboard	Brown	pair	4.70	0.0	0	0.0	0.00	0.0	0	1.00	4.70
12	Insole		Texon		pair	12.40	0.0	0	0.0	0.00	0.0	0	1.00	12.40
13	Sole	Unit sole	PUR	Brown	pair	35.00	0.0	0	0.0	0.00	0.0	0	1.00	35.00
14	Heel	High heel 70 mm	Polyethylene	.	pair	15.20	0.0	0	0.0	0.00	0.0	0	1.00	15.20
15	Toppiece		PUR	Brown	pair	3.54	0.0	0	0.0	0.00	0.0	0	3.00	10.62
16	Auxiliaries	Other materials			pair	13.20	0.0	0	0.0	0.00	0.0	0	1.00	13.20
17	Packaging	Box	Paperboard	Blue	pc.	8.23	0.0	0	0.0	0.00	0.0	0	1.00	8.23

Total material costs: 709.00

Vienna, 06.01.1989.

Annex 3

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PRODCONT

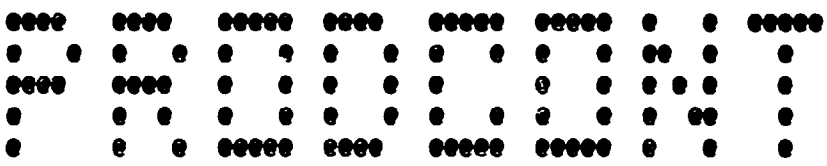
SHOE PRODUCTION CONTROL

Production control in the shoe industry means to maintain a list of booked and potential orders, scheduling the activity of workshops, keep an up-to-date record of work in progress, produce reports on outputs and stocks, monitor material availability and first of all *make decisions* regarding production processes. The success of shoe productions - as being directly related the ever changing fashion goods market - depend mainly on the reliability of information used for every day decision making.

PRODCONT is a useful assistant for keeping track with changing production conditions - with special reference to checking material availability and keeping track with the work in progress. The factory structure (i.e. the number and the denomination of production units can be adjusted to the particular company needs. The *input* structure comprises style specifications, order data, movement of production batches among workshops (production phases and material supply. *Outputs* provide screen and printed information on styles, booked orders, materials on stock and their expected deliveries, status of orders in production, stock and production reports. The special feature of the program that the requested outputs are grouped and sorted according t the commands given by the operator. The computing process is fully interactive: the user conducts a conversation with a personal computer and may ask questions concerning any statistical and status data of the ongoing shoe production.

The program runs on all IBM/PC/XT/AT or PS/2 and compatible personal computers. The user needs to know only the meaning of terms used in shoe production control (i.e. footwear manufacture); no specific education in computer sciences is required. The user benefits from the versatility, the speed, the accuracy and reliability of database management.

PRODCONT is recommended for small and medium size shoe factories.



(Ver. 1.1)

F O O T W E A R P R O D U C T I O N C O N T R O L

Made in BCK
Hungary

Footwear Production Control U N I D O

M A I N M E N U

1 - Basic data management

2 - Order management
3 - Material requirements
4 - Work-in-progress control
5 - Production reporting

0 - Quit program

Your choice

Selected orders

- - 0- 0

Style	Order	Upper	Lining	Sole	Heel	Last	Clos.	Make	Customer	pair	Del
7845A	0313	Side	Bla	Pigskin	PUR	PE-1A	Linda	3001	4004	Export	4400	6
		7845A	*SIDE*	*PUR*						*4400*	
		7845A								*4400*	
UNO-1	0314A	Side	Bla	Pigskin	Leather	Side	Adam	3001	4004	Bora	2050	5
UNO-1	0314	Side	Bla	Pigskin	Leather	Side	Adam	3001	4004	Delka	1030	5
		UNO-1	*SIDE*	*LEATHER*						*3080*	
		UNO-1								*3080*	
UNO-1A	0314	Side	Bla	Pigskin	Leather	Side	Adam	3001	4004	Bora	600	6
UNO-1A	0316	Side	Bla	Pigskin	Leather	Side	Adam	3001	4004	Delka	3060	4
		UNO-1A	*SIDE*	*LEATHER*						*3660*	
		UNO-1A								*3660*	
UNO-1B	0314C	Side	Whi	Pigskin	Leather	Side	Adam	3001	4004	Rapid	500	5
UNO-1B	0314B	Side	Whi	Pigskin	Leather	Side	Adam	3002	4004	Delka	750	6
UNO-1B	0314A	Side	Whi	Pigskin	Leather	Side	Adam	3002	4004	Delka	4500	5
		UNO-1B	*SIDE*	*LEATHER*						*5750*	
		UNO-1B								*5750*	
UNO-1P		Side	Bla	Pigskin	PUR		Adam			0	0
		UNO-1P	*SIDE*	*PUR*						*0*	
		UNO-1P	*SIDE*							*16890*	
		UNO-1P								*0*	
UNO-2	0313A	Shevro	Red	Sheep	Rubber	PE-A1	Betty			Delka	550	6
		UNO-2	*SHEVRO*	*RUBBER*							*550*	
		UNO-2									*550*	
UNO-21	REOR1	Shevro	Bla	Sheep	Rubber	PE-B4	Betty	3002	4004	Stock	3000	6
		UNO-21	*SHEVRO*	*RUBBER*							*3000*	
		UNO-21									*3000*	
UNO-3		Shevro	Red	Pigskin	Rubber	PE-1A	Betty				0	0
		UNO-3	*SHEVRO*	*RUBBER*							*0*	
		UNO-3	*SHEVRO*								*3550*	
		UNO-3									*0*	
		GRAND TOTAL:									*20440*	

1989.04.14.

Selected orders

- - 0- 0

Style	Order	Upper		Lining	Sole	Heel	Last	Clos.	Make	Customer	pair	Del
7845A	0313	Hide	Blc	Pigskin	PUR	PE-1A	Linda	3001	4004	Export	4400	6
UNO-1	0314	Hide	Bla	Pigskin	Leather	Side	Adam	3001	4004	Delka	1030	5
UNO-1	0314A	Hide	Bla	Pigskin	Leather	Side	adam	3001	4004	Bora	2050	5
UNO-1A	0314	Hide	Bla	Pigskin	Leather	Side	Adam	3001	4004	Bora	600	5
UNO-1A	0316	Hide	Bla	Pigskin	Leather	Side	Adam	3001	4004	Delka	3060	4
UNO-1B	0314A	Hide	Whi	Pigskin	Leather	Side	Adam	3002	4004	Delka	4500	5
UNO-1B	0314B	Hide	Whi	Pigskin	Leather	Side	Adam	3002	4004	Delka	750	6
UNO-1B	0314C	Hide	Whi	Pigskin	Leather	Side	Adam	3002	4004	Rapid	500	5
UNO-1P		Hide	Bla	Pigskin	PUR		Adam				0	0
UNO-2	0313A	Shevro	Red	Sheep	Rubber	PE-A1	Betty			Delka	550	6
UNO-21	REOR1	Shevro	Blc	Sheep	Rubber	PE-B4	Betty	3002	4004	Stock	3000	6
UNO-3		Shevro	Red	Pigskin	Rubber	PE-1A	Betty				0	0
		GRAND TOTAL:									***20440***	

1989.04.14.

Style: **UNO-21** Order: **REOR1**

		Color	Material	Requirement	Unit
Upper	*- A:*	Blu	Shevro	12.49	dm2
Upper	*- B:*			0.00	
Upper	*- C:*			0.00	
Lining:		Yel	Sheep	6.83	dm2
Sole:		Bla	Rubber	0.18	kg
Heel:		Bla	PE-B4	1.00	pair
Insole:			PE-1b	1.00	pair

Last: Betty

Ordered quantity: 0 *Closing:* 3002
Reserve (rejects): 0 *Making:* 4004
Production order: 0
Delivery (month): 0 *Last update:* 1989.04.14.
Customer:
Deliver to: **Modified style**

Style: **UNO-3** Order:

		Color	Material	Requirement	Unit
Upper	*- A:*	Red	Shevro	14.20	dm2
Upper	*- B:*			0.00	
Upper	*- C:*			0.00	
Lining:		Nat	Pigskin	3.58	dm2
Sole:		Bla	Rubber	0.17	kg
Heel:			PE-1A	1.00	pair
Insole:			PE-1b	1.00	pair

Last: Betty

Ordered quantity: 0 *Closing:*
Reserve (rejects): 0 *Making:*
Production order: 0
Delivery (month): 0 *Last update:* 1989.04.14.
Customer:
Deliver to: **Modified style**

Material rquirement

MATERIAL	COLOR	REQUIR.	UNIT	STYLE/ORDER
HIDE	**BLA**	57058.40	dm2	UNO-1/0314 UNO-1/0314A UNO-1B/0314C
HIDE	**WHI**	66000.00	dm2	UNO-1B/0314A UNO-1B/0314C
LEATHER		1696.80	kg	UNO-1/0314 UNO-1/0314A UNO-1B/0314C
NECK		1131.20	kg	UNO-1/0314 UNO-1/0314A UNO-1B/0314C
PE-B4	**BLA**	3000.00	pair	UNO-21/REGR1
PE-LB		3000.00	pair	UNO-21/REOR1
PIGSKIN	**NAT**	47025.60	dm2	UNO-1/0314 UNO-1/0314A UNO-1B/0314C
RUBBER	**BLA**	540.00	kg	UNO-21/REGR1
SHEEP	**YEL**	20490.00	dm2	UNO-21/REOR1
SHEVRO	**BLU**	37470.00	dm2	UNO-21/REOR1
SIDE		1616.00	kg	UNO-1/0314 UNO-1/0314A UNO-1B/0314C

1989.04.14

Material requirement

MATERIAL	DEL.	REQUIREM:	UNIT	STYLE/ORDER
HIDE	0	0.00	dm2	UNO-1P/
HIDE	4	46603.80	dm2	UNO-1A/0316
HIDE	5	123058.40	dm2	UNO-1/0314 UNO-1/0314A UNO-1B/0314C
HIDE	6	20560.50	dm2	UNO-1A/0314 UNO-1B/0314B
LBOARD	6	2046.00	dm2	UNO-2/0313A
LEATHER	4	642.60	kg	UNO-1A/0316
LEATHER	5	1696.80	kg	UNO-1/0314 UNO-1/0314A UNO-1B/0314C
LEATHER	6	283.50	kg	UNO-1A/0314 UNO-1B/0314B
NECK	0	0.00	kg	UNO-1P/
NECK	4	428.40	kg	UNO-1A/0316
NECK	5	1131.20	kg	UNO-1/0314 UNO-1/0314A UNO-1B/0314C
NECK	6	189.00	kg	UNO-1A/0314 UNO-1B/0314B
PE-1A	0	0.00	pair	UNO-3/
PE-A1	6	550.00	pair	UNO-2/0313A
PE-B4	6	3000.00	pair	UNO-21/REOA1
PE-LB	0	0.00	pair	UNO-3/
PE-LB	6	3000.00	pair	UNO-21/REOR1
PUR	0	0.00	pair	UNO-1P/
PIGSKIN	0	0.00	dm2	UNO-1P/
PIGSKIN	4	17809.20	dm2	UNO-1A/0316
PIGSKIN	5	47025.60	dm2	UNO-1/0314 UNO-1/0314A UNO-1B/0314C
PIGSKIN	6	7857.00	dm2	UNO-1A/0314 UNO-1B/0314B
RUBBER	0	0.00	kg	UNO-3/
RUBBER	6	639.00	kg	UNO-2/0313A UNO-21/REOR1
SHEEP	6	24246.50	dm2	UNO-2/0313A UNO-21/REOR1
SHEVRO	0	0.00	dm2	UNO-3/
SHEVRO	6	44339.50	dm2	UNO-2/0313A UNO-21/REOR1
SIDE	4	612.00	kg	UNO-1A/0316
SIDE	5	1616.00	kg	UNO-1/0314 UNO-1/0314A UNO-1B/0314C
SIDE	6	270.00	kg	UNO-1A/0314 UNO-1B/0314B

1989.04.14.

Summary of material requirement

MATERIAL	DEL	REQUIREM.	UNIT	STYLE/ORDER
HIDE	0-12	190222.70	dm2	UNO-1P/ UNO-1A/0316 UNO-1/0314 UNO-1/0314A UNO-1B/0314C UNO-1A/0314 UNO-1B/0314B
LBOARD	0-12	2046.00	dm2	UNO-2/0313A
LEATHER	0-12	2622.90	kg	UNO-1A/0316 UNO-1/0314 UNO-1/0314A UNO-1B/0314C UNO-1A/0314 UNO-1B/0314B
NECK	0-12	1748.60	kg	UNO-1P/ UNO-1A/0316 UNO-1/0314 UNO-1/0314A UNO-1B/0314C UNO-1A/0314 UNO-1B/0314B
PE-1A	0-12	0.00	pair	UNO-3/
PE-A1	0-12	550.00	pair	UNO-2/0313A
PE-B4	0-12	3000.00	pair	UNO-21/REOR1
PE-LB	0-12	3000.00	pair	UNO-3/ UNO-21/REOR1
PUR	0-12	0.00	pair	UNO-1P/
PIGSKIN	0-12	72691.80	dm2	UNO-1P/ UNO-1A/0316 UNO-1/0314 UNO-1/0314A UNO-1B/0314C UNO-1A/0314 UNO-1B/0314B
RUBBER	0-12	639.00	kg	UNO-3/ UNO-2/0313A UNO-21/REOR1
SHEEP	0-12	24246.50	dm2	UNO-2/0313A UNO-21/REOR1
SHEVRO	0-12	44339.50	dm2	UNO-3/ UNO-2/0313A UNO-21/REOR1
SIDE	0-12	2498.00	kg	UNO-1A/0316 UNO-1/0314 UNO-1/0314A UNO-1B/0314C UNO-1A/0314 UNO-1B/0314B

1989.04.14.

Work-in-progress

Style	Order	Prod. unit	Prod. phase	Input pair	Input date	Output pair	Output date	In-process pair	Delivery pair	Customer	Del.
UNO-1A	0314	Material stock	Material	600	89.03.15	600	89.03.15	0	600	Bora	6
UNO-1A	0316	Material stock	Material	3060	89.03.15	0	. .	3060	3060	Delka	4
UNO-1A	0314	1001 Cutting	Cut upper	600	89.03.15	600	89.03.15	0	600	Bora	6
UNO-1A	0314	2001 Prefabric.	Component	600	89.03.15	600	89.03.15	0	600	Bora	6
UNO-1A	0314	3001 Closing	Upper	600	89.03.15	0	. .	600	600	Bora	6
UNO-1A	0314	Transit stock	Component	600	89.03.15	0	. .	600	600	Bora	6
UNO-1B	0314A	Material stock	Material	4500	89.03.15	4500	89.03.15	0	4300	Delka	5
UNO-1B	0314B	Material stock	Material	750	89.03.15	750	89.03.15	0	750	Delka	6
UNO-1B	0314A	1001 Cutting	Cut upper	4500	89.03.15	4450	89.03.15	50	4300	Delka	5
UNO-1B	0314A	2001 Prefabric.	Component	4500	89.03.15	0	. .	4500	4300	Delka	5
UNO-1B	0314B	2001 Prefabric.	Component	750	89.03.15	0	. .	750	750	Delka	6
UNO-1B	0314A	Transit stock	Cut upper	4500	89.03.15	0	. .	4500	4300	Delka	5
UNO-2	0313A	Material stock	Material	550	89.03.15	550	89.03.15	0	530	Delka	6
UNO-2	0313A	1001 Cutting	Cut upper	550	89.03.15	0	. .	550	530	Delka	6
UNO-21	REOR1	Material stock	Material	3000	89.03.15	3000	89.03.15	0	2850	Stock	6
UNO-21	REOR1	1001 Cutting	Cut upper	3000	89.03.15	2983	89.03.15	17	2850	Stock	6
UNO-21	REOR1	3002 Closing	Upper	3000	89.03.15	2867	89.03.15	133	2850	Stock	6
UNO-21	REOR1	4004 Lasting	Assembled	3000	89.03.15	0	. .	3000	2850	Stock	6

1989.04.14.

Annex 4

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CUTVAL

COMPUTATION OF CUTTING VALUE AND REQUIREMENT OF GENUINE LEATHER

Genuine leather is the most valuable basic material used in the shoe and other leather products industries. The program is designed for computing the cutting wastes and the requirement in leather for a given style. The algorithm used is based on one of the *scientific leather measurement* systems widely adapted in the footwear leather costing.

The program offers the following options:

- computation of wastes and the quantity of leather needed for cutting one pair of upper or lining of middle size,
- computation of wastes and the material requirement of any sizes other than the middle size,
- calculation of net pattern areas, parallelogram areas and material requirement for a size range to be cut or produced,
- computation of the pairage to be cut from a given set of hides/skins,
- comparison of wastes and leather requirements of various style and leather parameters.

The inputs required and outputs produced by the menu driven program are exactly the same used in traditional manual production preparation. The printed outputs may be customized for the factory or production unit where it is introduced and can be used as documentation in production management. The program can also be used for training purposes.

No specific computer knowledge is necessary to run the program.

U N I B O - B C K
Leather requirement

Style number:
Size: 0.0/ 0
Average leather: 0 dm2
Grade: 0
Corr. factor: 0.0 %

Version 1.2

The unit of surface measurement: dm2

U N I B O - B C K
Leather requirement

Style number:
Size: 0.0/ 0
Average leather: 0 dm2
Grade: 0
Corr. factor: 0.0 %

1 - Leather parameters

2 - Style parameters

3 - One size costing

4 - Size range costing

5 - Cutting job assignment

6 - Cutting value of leather grades

0 - Exit (Quit)

Style number:	UNO-88/052
Middle size:	37.0 / 5
Average leather area:	174 dm2
Leather grade:	2
Correcting factor:	1.5 %

Style number:		UNO-88/052
Net pattern area	(dm2/pair):	12.50
Paralellogramma area	(dm2/pair):	13.90
Number of components	(pcs/pair):	8

Optimum efficiency:	89.93 %
(First waste:	10.07 %)
Side waste:	12.01 %
Foult waste:	5.00 %
Cutting efficiency:	2.92 %
Requirement:	17.50 dm2/pair

Style number:	UNO-88/052
Middle size:	37.0 / 5
Average leather area:	174 dm2
Leather grade:	2
Correcting factor:	1.5 %

Style data - size:		33.0
fit/width (1...12):		6

	37.0 / 5 (dm2/pair)	33.0 / 6 (dm2/pair)
Net pattern area	12.50	10.58
Paralellogramma area:	13.90	11.76
Allowances:	17.50	14.81

Style number: UNO-88/052
Middle size: 37.0 / 5
Average leather area: 174 dm2
Leather grade: 2
Correcting factor: 1.5 %

Size	Net area dm2/pair	Paralell. area dm2/pair	Allowances dm2/pair
32.0	9.81	10.90	13.73
33.0	10.32	11.47	14.45
34.0	10.85	12.06	15.18
35.0	11.38	12.66	15.94
36.0	11.94	13.27	16.71
37.0	12.50	13.90	17.50
38.0	13.08	14.54	18.31
39.0	13.67	15.20	19.13
40.0	14.27	15.87	19.98
41.0	14.88	16.55	20.84
42.0	15.51	17.25	21.71

Style number: UNO-88/052
Middle size: 37.0 / 5
Average leather area: 174 dm2
Leather grade: 2
Correcting factor: 1.5 %

Size	Pair	Allowances (dm2/pair)	Leather (dm2)
32.0	20	13.73	274.57
33.0	20	14.45	288.96
34.0	20	15.18	303.70
35.0	20	15.94	318.79
36.0	20	16.71	334.23
37.0	20	17.50	350.03
38.0	20	18.31	366.18
39.0	20	19.13	382.68
40.0	20	19.98	399.53
41.0	20	20.84	416.74
42.0	20	21.71	434.29
37.00		17.59	
Total:	220		3869.69

Style number: UNO-88/052
Middle size: 37.0 / 5
Average leather area: 174 dm2
Leather grade: 2
Correcting factor: 1.5 %

Size	Pair	Allowances (dm2/pair)	Leather (dm2)
32.0	2	13.73	27.46
33.0	6	14.45	86.69
34.0	8	15.18	121.48
35.0	11	15.94	175.33
36.0	14	16.71	233.96
37.0	18	17.50	315.03
38.0	17	18.31	311.25
39.0	13	19.13	248.74
40.0	7	19.98	139.84
41.0	3	20.84	62.51
42.0	1	21.71	21.71
36.87		17.44	
Total:	100		1744.00

Smith J.

Style number: UNO-88/052
Size: 35.0 / 5
Correcting factor: 1.5 %

Leather data:

No.	Surface (dm2)	Grade
1.	132.69	3
2.	172.72	4
3.	163.06	2
4.	129.41	2
5.	193.19	4
6.	153.69	3
Total:	944.76	
Average:	157.46	3.08

Utilisation: 46.74 %
Standard: 23.60 dm2/pair

Quantity to be cut: 40.0 pairs

Annex 5

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COSLEAT

MATERIAL AND CHEMICALS REQUIREMENT AND COST COMPUTATIONS IN LEATHER PROCESSING

The economic success of leather manufacturing is directly related to the costs involved by purchasing, processing and selling. The producer has to know *in advance* the magnitude of various cost components - with special reference to row materials (i.e. row hides or skins) and chemicals. In many cases the manufacturer may select the appropriate row material (e.g. green hides, dry-salted, wet-blue, crust) and/or decide on what type of end-product (e.g. wet-blue, crust or finished leather) to offer for the market.

The leather costing program is menu driven and needs the following inputs:

- row material data (price, origin) and yields (conversion factors between various stages of processing);
- costing parameters (overheads, profit rate, average wages etc.);
- recipe (kinds, quantities and unit prices of chemicals used in processing);
- technological data (number of coats in finishing, labour contents at production stages, the quantity to be produced, split ratio).

The program produces the following outputs:

- cost of row materials and chemicals;
- cost components and prices (i.e. complete costing sheets) for wet-blue, crust and finished leather production;
- basic and chemical material requirements in natural terms and value.

When the user enters or modifies data in the spreadsheet, all data are recalculated immediately. The costs and prices are computed both in local and foreign currencies. The program is very useful for comparing variants and options.

```
M39: F8 [W1]                                                    READY

      A     B     C     D     E     F     G     H     I     J
38                                                  LEATHER COSTING
39                  M A I N  M E N U                Copyright: CWIBO
40
41          Alt+
42            B  Basic data
43            C  Costing components
44            M  Raw materials
45            T  Recipe (technology)
46
47            R  Main results of costing
48            S  Costing sheets
49            P  Print data/results
50            G  Graphic presentation
51
52            L  Load (another) data from disk
53            W  Wright data on disk (save)
54            Q  Quit the program
55
56            H  Instructions (Help)
57
```

```
M53: F8 [W12] *                                                 READY

      A     B     C     D     E     F     G     H     I     J
59          * Use the 'Alt' key together with one of the letters
60            indicated beside the requested menu options.
61
62          * When one of the menu options are executed use the
63            arrow keys or the 'PgUp' or 'PgDn' keys to move
64            the cursor to the required position.
65
66          * To leave the recently used function press 'Alt'
67            together with 'O' (not '0'): you will be returned
68            to the MAIN MENU.
69
70          * Wait until the red 'WAIT' label flashes in the
71            upper right corner of the screen.
72
73          * Do not forget to save your worksheet after changes
74            you have made.
75
76        *** ******        Press 'Alt'-'O' to return to the MAIN MENU.
77
78
```

B A S I C D A T A

Local currency unit	Ksh	
Foreign currency unit	US$	
Exchange rate	Ksh/US$	16.7400
Measurement units - weight	kg	
- surface	m2	
Product name	Corrected grain	
Quantity to be produced	m2	800
Labour contents for products		
- wet-blue	hour/m2	0.150
- crust	hour/m2	0.200
- finished	hour/m2	0.300

Basic material to be used	Origin	Select
Green		0
Dried		0
Dry salted		0
Wet salted	Local	1
(Limed pelt)		0
(Shaved)		0
Wet-blue		0
Crust		0

Application of finishes	times	kg/m2
Impregnation	1	0.050
Base coat	2	0.040
Tipping colour	1	0.010
Intermediate coat	1	0.010
Lacquer	2	0.010

RAW MATERIALS

	FROM	TO Unit	Price Mat	Price USS	Split ratio %	Dried kg	Dry salted kg	Wet salted kg	Limed pelt kg	Shaved weight kg	Wet-blue m2	Crust m2	Finished m2
1	Green	kg	11.00	0.66	40	0.400	0.700	0.820	1.000	0.400	0.360	0.060	0.052
2	Dried	kg	0.00	0.00	0	1							
3	Dry salted	kg	3.00	0.00	0	0	1						
4	Wet salted	kg	15.00	0.90	0	0	0	1	1.220	0.360	0.150	0.120	0.105
5	Limed pelt	kg	0.00	0.00	0	0	0	0	1				
6	Shaved	kg	0.00	0.00	0	0	0	0	0	1			
7	Wet-blue	m2	1.00	0.00	0	0	0	0	0	0	1		
8	Crust	m2	0.00	0.00	0	0	0	0	0	0	0	1	

R E C I P E	x	Price Ksh/kg		Recipe qty.
BEAMHOUSE				
Cismollan BH		40.00	%	0.2
Baymol A		0.00	%	0.0
Sodium sulphide		16.00	%	1.0
Sodium hydrosulp.		20.00	%	2.5
Hydrated lime		5.00	%	3.0
		0.00	%	0.0
		0.00	%	0.0
		0.00	%	0.0
Subtotal:				6.7
TANNAGE				
Baymol A		50.00	%	0.2
Ammonium sulphate		10.00	%	1.2
Sodium bisulphite		35.00	%	0.5
Bating agent		40.00	%	0.6
Common salt		8.00	%	6.0
Formic acid		30.00	%	0.9
Sulphuric acid		10.00	%	0.9
Baychrome A		35.00	%	8.0
Preventol L		60.00	%	0.1
Sodium sulphite		0.00	%	0.0
Soda ash		10.00	%	1.0
		0.00	%	0.0
		0.00	%	0.0
		0.00	%	0.0
		0.00	%	0.0
		0.00	%	0 0
Subtotal:				19.4
RETANNAGE				
Chromosal B		20.00	%	3.0
Tanigan OS		30.00	%	2.0
Sodium bicarbonate		10.00	%	0.3
Mimosa extract		15.00	%	4.0
Coripol DXU		40.00	%	3.5
Curtisan TMK-E		40.00	%	2.5
Coripol ICA		40.00	%	1.0
		0.00	%	0.0
		0.00	%	0.0
		0.00	%	0.0
		0.00	%	0.0
		0.00	%	0.0
Subtotal:				16.3
IMPREGNATION	1	kg/m2		0.050
Euderm driver		80.00	pts	100
Eukanol Binder IM 45A		65.00	pts	250
Water		0.00	pts	650
Subtotal:				1000
BASE COAT	2	kg/m2		0.040
Eucanol Colours		160.00	pts	70
Euderm Fix GA		200.00	pts	
Euderm Driver PF		80.00	pts	20
Eukanol Filler 1060			pts	
Eukanol Binder IM 45A			pts	

R E C I P E		Price Ksh/kg	Recipe	qty.
Eukanol Binder AF			pts	
Eucanol Colours			pts	
Bayderm Bottom SM		80.00	pts	100
Dyestuffs A liq.			pts	
Bayderm dyestuff		500.00	pts	70
			pts	
			pts	
Water		0.00	pts	780
Subtotal:				1040
TIPPING COLOUR	1	kg/m2		0.010
Bayderm Dyestuff		500.00	pts	400
Euderm Driver PF		80.00	pts	200
Water		0.00	pts	400
Subtotal:				1000
INTERMEDIATE COAT	1	kg/m2		0.010
Baysin Lustre K		100.00	pts	80
Euderm Fix GA		80.00	pts	30
Eucanol Filler 1060		80.00	pts	100
Eukanol Binder IM 45A		65.00	pts	150
Eukanol Binder AF		65.00	pts	150
		0.00	pts	0
		0.00	pts	0
Water		0.00	pts	490
Subtotal:				1000
LACQUER	2	kg/m2		0.010
Isoderm Base HF		250.00	pts	300
Butyl acetate		100.00	pts	100
		0.00	pts	0
		0.00	pts	0
		0.00	pts	0
Water		0.00	pts	600
Subtotal:				1000

COSTING COMPONENTS

Parameter	Unit	Value
Foreign currency	US$	
Rate of exchange	Ksh/US$	16.74
Average wage	Ksh/hour	5.00
Wage allowances	%	20.00
Social costs	%	40.00
Leasing costs	Ksh/m2	0.00
Other (special) costs	Ksh/m2	0.00
Manufacturing overheads	Ksh/m2	0.80
FACTORY COSTS		
Administrative overheads	%	75.00
Depreciation	Ksh/m2	8.00
Allowances for rejects	%	2.00
Sales costs	Ksh/m2	8.00
P r o f i t	%	12.00
EX-WORKS PRICE		
Forwarding/Packaging	Ksh/m2	4.00
Export incentive	%	5.00
F.O.B. PRICE		
Freight/Insurance	Ksh/m2	24.00
Financial costs	%	3.25
C.I.F. PRICE		
Wholesale/Retail margin	%	8.50
NETTO PRICE		
Value added tax	%	20.00
INCLUSIVE PRICE		

MAIN RESULTS OF COSTING COMPUTATIONS

	Ksh/m2	US$/m2
Chemicals used in		
- beamhouse	7.74	0.46
- tannage	46.28	2.76
- retannage	14.09	0.84
- impregnation	1.21	0.07
- base coat	1.21	0.07
- tipping colour	2.16	0.13
- intermediate coat	0.38	0.02
- laquer	1.70	0.10
Chemicals TOTAL	74.77	4.47

PRICES

Wet-blue		
Ex-work price	207.58	12.40
F.O.B. price	201.20	12.02
C.I.F. price	231.74	13.84
P r o f i t	24.91	1.49
Crust		
Ex-work price	255.57	15.27
F.O.B. price	246.79	14.74
C.I.F. price	278.81	16.66
P r o f i t	30.67	1.83
FINISHED: Corrected grain		
Ex-work price	264.51	15.80
F.O.B. price	255.29	15.25
C.I.F. price	287.58	17.18
P r o f i t	31.74	1.90
Split (byproduct)	m2	0

MATERIALS REQUIRED	kg	Ksh	US$
Basic materials	6957	111304	6649
Chemicals total		59636	3562
- beamhouse		6191	370
- tannage		37023	2212
- retannage		11273	673
- impregnation		970	58
- basic coat		788	47
- tipping colour		1728	103
- intermediate coat		303	18
- laquer		1360	81
Materials TOTAL		170940	10211

R E C I P E	x	Price Ksh/kg		Recipe qty.	Costs Ksh/	Ksh/m2
BEAMHOUSE						
Cismollan BH		40.00	%	0.2	0.08	0.77
Baymol A		0.00	%	0.0	0.00	0.00
Sodium sulphide		16.00	%	1.0	0.16	1.39
Sodium hydrosulp.		20.00	%	2.5	0.50	4.35
Hydrated lime		5.00	%	3.0	0.15	1.30
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
Subtotal:				6.7	0.89	7.74
TANNAGE						
Baymol A		50.00	%	0.2	0.10	1.04
Ammonium sulphate		10.00	%	1.2	0.12	1.25
Sodium bisulphite		35.00	%	0.5	0.18	1.83
Bating agent		40.00	%	0.6	0.24	2.50
Common salt		8.00	%	6.0	0.48	5.01
Formic acid		30.00	%	0.9	0.27	2.82
Sulphuric acid		10.00	%	0.9	0.09	0.94
Baychrome A		35.00	%	8.0	2.80	29.22
Preventol L		60.00	%	0.1	0.06	0.63
Sodium sulphite		0.00	%	0.0	0.00	0.00
Soda ash		10.00	%	1.0	0.10	1.04
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
Subtotal:				19.4	4.44	46.28
RETANNAGE						
Chromosal B		20.00	%	3.0	0.60	1.83
Tanigan OS		30.00	%	2.0	0.60	1.83
Sodium bicarbonate		10.00	%	0.3	0.03	0.09
Mimosa extract		15.00	%	4.0	0.60	1.83
Coripol DXU		40.00	%	3.5	1.40	4.26
Cutisan TMP-E		40.00	%	2.5	1.00	3.04
Coripol ICA		40.00	%	1.0	0.40	1.22
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
		0.00	%	0.0	0.00	0.00
Subtotal:				16.3	4.63	14.09
IMPREGNATION	1	kg/m2		0.050		
Euderm driver		80.00	pts	100	0.40	0.40
Eukanol Binder IM 45A		65.00	pts	250	0.81	0.81
Water		0.00	pts	650	0.00	0.00
Subtotal:				1000	1.21	1.21
BASE COAT	2	kg/m2		0.040		
Eucanol Colours		160.00	pts	70	0.86	0.86
Euderm Fix GA		200.00	pts		0.00	0.00
Euderm Driver PF		80.00	pts	20	0.12	0.12
Eukanol Filler 1060			pts		0.00	0.00
Eukanol Binder IM 45A			pts		0.00	0.00

R E C I P E	x	Price Ksh/kg	Recipe	qty.	Costs Ksh/	Ksh/m2
Eukanol Binder AF			pts		0.00	0.00
Eucanol Colours			pts		0.00	0.00
Bayderm Bottom SM		80.00	pts	100	0.62	0.62
Dyestuffs A liq.			pts		0.00	0.00
Bayderm dyestuff		500.00	pts	70	2.69	2.69
			pts		0.00	0.00
			pts		0.00	0.00
Water		0.00	pts	780	0.00	0.00
Subtotal:				1040	0.98	0.98
TIPPING COLOUR	1	kg/m2		0.010		
Bayderm Dyestuff		500.00	pts	400	2.00	2.00
Euderm Driver PF		80.00	pts	200	0.16	0.16
Water		0.00	pts	400	0.00	0.00
Subtotal:				1000	2.16	2.16
INTERMEDIATE COAT	1	kg/m2		0.010		
Baysin Lustre K		100.00	pts	80	0.08	0.08
Euderm Fix GA		80.00	pts	30	0.02	0.02
Eucanol Filler 1060		80.00	pts	100	0.08	0.08
Eukanol Binder IM 45A		65.00	pts	150	0.10	0.10
Eukanol Binder AF		65.00	pts	150	0.10	0.10
		0.00	pts	0	0.00	0.00
		0.00	pts	0	0.00	0.00
Water		0.00	pts	490	0.00	0.00
Subtotal:				1000	0.38	0.38
LACQUER	2	kg/m2		0.010		
Isoderm Base HF		250.00	pts	300	1.50	1.50
Butyl acetate		100.00	pts	100	0.20	0.20
		0.00	pts	0	0.00	0.00
		0.00	pts	0	0.00	0.00
		0.00	pts	0	0.00	0.00
Water		0.00	pts	600	0.00	0.00
Subtotal:				1000	1.70	1.70
FINISHING Subtotal:					6.44	6.44
GRAND TOTAL:					16.39	74.54

COSTING SHEET - Wet-blue

Cost components	Ksh/m2	US$/m2
Basic materials	106.67	6.37
Chemicals	54.02	3.23
Labour (direct)	0.75	
Wage allowances	0.15	
Social costs	0.36	
Leasing costs	0.00	
Other (special) costs	0.00	
Manufacturing overheads	0.80	
FACTORY COSTS	162.74	
Administrative overheads	0.68	
Depreciation	8.00	
Allowances for rejects	3.25	
Sales costs	8.00	
P r o f i t	24.91	
EX-WORKS PRICE	207.58	12.40
Forwarding/Packaging	4.00	
Export incentive	-10.38	
F.O.B. PRICE	201.20	12.02
Freight/Insurance	24.00	1.43
Financial costs	6.54	
C.I.F. PRICE	231.74	13.84
Wholesale/Retail margin	17.10	
NETTO PRICE	248.85	
Value added tax	49.77	
INCLUSIVE PRICE	298.62	

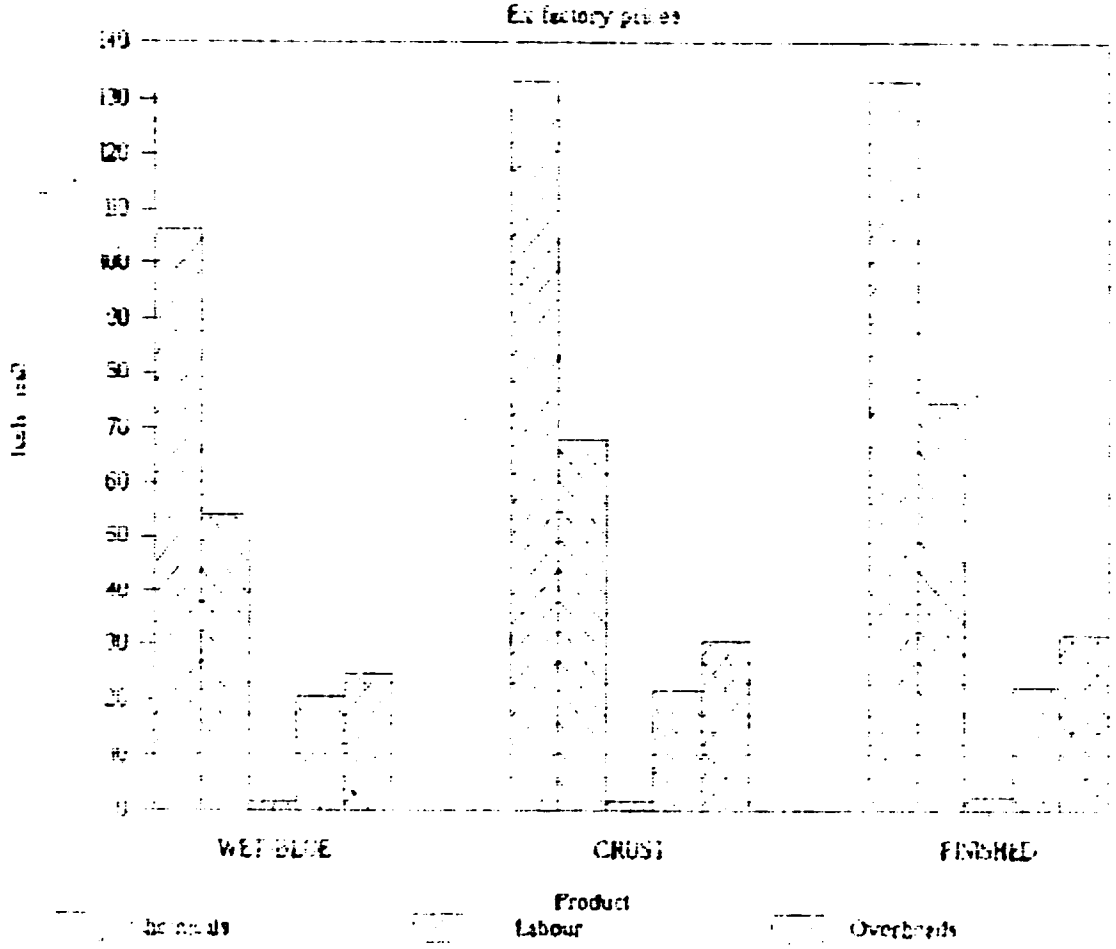
COSTING SHEET - Crust

Cost components	Ksh/m2	US$/m2
Basic materials	133.33	7.96
Chemicals	68.11	4.07
Labour (direct)	1.00	
Wage allowances	0.20	
Social costs	0.48	
Leasing costs	0.00	
Other (special) costs	0.00	
Manufacturing overheads	0.80	
FACTORY COSTS	203.92	
Administrative overheads	0.90	
Depreciation	8.00	
Allowances for rejects	4.08	
Sales costs	3.00	
P r o f i t	30.67	
EX-WORKS PRICE	255.57	15.27
Forwarding/Packaging	4.00	
Export incentive	-12.78	
F.O.B. PRICE	246.79	14.74
Freight/Insurance	24.00	1.43
Financial costs	8.02	
C.I.F. PRICE	278.81	16.66
Wholesale/Retail margin	20.98	
NETTO PRICE	299.79	
Value added tax	59.96	
INCLUSIVE PRICE	359.75	

COSTING SHEET - Finished leather: Corrected grain

Cost components	Ksh/m2	US$/m2
Basic materials	133.33	7.96
Chemicals	74.54	4.45
Labour (direct)	1.50	
Wage allowances	0.30	
Social costs	0.72	
Leasing costs	0.00	
Other (special) costs	0.00	
Manufacturing overheads	0.80	
FACTORY COSTS	211.20	
Administrative overheads	1.35	
Depreciation	8.00	
Allowances for rejects	4.22	
Sales costs	8.00	
P r o f i t	31.74	
EX-WORKS PRICE	264.51	15.80
Forwarding/Packaging	4.00	
Export incentive	-13.23	
F.O.B. PRICE	255.29	15.25
Freight/Insurance	24.00	1.43
Financial costs	8.30	
C.I.F. PRICE	287.58	17.18
Wholesale/Retail margin	21.70	
NETTO PRICE	309.28	
Value added tax	61.86	
INCLUSIVE PRICE	371.14	

Comparative price structure



Annex 6

U N I D O
United Nations Industrial Development Organization

B C K
Research Institute for the Leather and Footwear Industries

P R O G R A M M E
for the Seminar on
CAD/CAM in the shoe industry

14th November 1988 (Monday)

8.30 Welcome speech by Mr Arpad Varszegi, director BCK
9.00 Opening of the seminar by Mr Juhani Berg, UNIDO
9.30 Practical information and administrative matters
10.00 *Coffee break*
10.20 Development trends in the World footwear industry
11.00 Basics of computing (hardware, software, firmware)
12.00 *Lunch*
13.00 CAD/CAE/CAM/CIM
14.00 Practical exercises with microcomputers
15.55 *End of workshop*

15th November 1988 (Tuesday)

8.30 Basics of computer graphics
10.00 *Coffee break*
10.20 CAD systems in the footwear industry (videofilms)
12.00 *Lunch*
13.00 CAD system functions (FDS demonstration)
14.00 Practical exercises (Paintbrush, DeluxPaint, Printmaster, FastGraph)
15.55 *End of workshop*

16th November 1988 (Wednesday)

8.30 Basics of leather, footwear and leathergoods costing
10.00 *Coffee break*
10.20 Practical training (CAD, costing)
12.00 *Lunch*
13.00 Sightseeing tour to Budapest
17.00 *End of sightseeing*

17th November 1988 (Thursday)

8.30 Theory and practice of shoe pattern grading
9.00 Optimization by computers
10.00 *Coffee break*
10.20 Practical training (CAD/FDS, costing, grading, product mix optimization)
12.00 *Lunch*
13.00 Visit to VICAM system at BÖRKER, Budapest
15.55 *End of plant visit*

18th November 1988 (Friday)

8.30 The function of CAD/CAM in the footwear industry
10.00 *Coffee break*
10.20 Visit to BCK laboratories and the library
11.00 Practical training (CAD/FDS, costing, grading, product mix optimization)
12.00 *Lunch*
13.00 Closing discussion, opinions
14.30 Reception given by BCK
15.55 *End of seminar*

The seminar is organized in the conference room and the computer laboratory of the *Research Institute for the Leather and Footwear Industries* (1047 Budapest, Baross u. 52., Hungary).

Annex 7

List of participants on the
UNIDO CAD/CAM seminar

at the Research Institute for the Leather
and Footwear Industries (BCK)

14-18 November 1988
Budapest, Hungary

Mr. Iaria Pablo Alberto	Instituto Nacional de Tecnologia Industrial (INTI). Av. Gral Paz y Av. Alvarellos 1650 San Martin Buenos Aires Republica Argentina Phone: 752-6915
Mr. Anatólio Laschuk	Universidade Federal do Rio Grande do Sul - UFRGS Escola de Engenharia Av. Osvaldo Aranha, 99 90049 P. ALEGRE - RS - Brazil Phone: (0512) 24-3006
Mr. Wan Wen Ke	Anhui Leather Industrial Corporation No. 77 Chang Jiang road Hefei City, Anhui Province, China Phone: 55265, 54121
Mr. Wei Xun	Leather Research Institute 747 Xie Tu road Shanghai, China Phone: 314614
Mr. Alemayehu Chuffa	National Leather and Shoe Corporation 22764 Addis Ababa, Ethiopia Phone: 157122, 157024, 446098
Dr. D. L. V. Rao	Central Leather Research Institute CAD Center for Footwear Adyar, Madras-600 020, India Phone: 412616/53

Mr. P. S. Kinyanjui	Tiger Shoe Company Limited Lunga Lunga Road, P.O.Box 74572 Nairobi, Kenya Phone: 556322
Mr. F. J. Castro Vargas	Centro de Investigacion y Asistencia Tecnologica del Estado de Gto. Omega 201 Frac. Delta Leon, Gto., Mexico Phone.(471) 47616
Mr. Alhaji Abdullah Albasu	National Research Institute for Chemical Technology School of Leather Technology P.B.M. 1052 Samaru Zaria, Nigeria Phone: (069) 50565
Mr. A. Raza Zaidi	Leather Products Development Centre Ministry of Industries P.O. Box 1521 Adda Passrurian, Imam Bargah Road Sialkot, Pakistan
Mr. Shuja-Ud-Din Siddiqui	Leather Industry Development Organization Ministry of Industries P.O.Box 1231 Islamabad, Pakistan
Mr. Alfredo A. Regondola	Footwear and Leather Industry Center National Manpower and Youth Council Manila, Philippines
Mr. A. A. J. Mendis	Sri Lanka Leather Product Corporation 141 Church Road, Mattakkuliya Colombo-15, Sri Lanka
Mr. Hamdoun Nourreddine	Centre National du Cuir et de la Chaussure 6, Rue Djebel Mansour Tunis, Tunesia

Annex 8

Evaluation of the responses collected by the questionnaires

1. What is your opinion of the topics of the seminar?

All the participants evaluated the topics discussed during the seminar as interesting, useful and well chosen for developing countries, but some people regarded the duration rather short.

2. Which are the areas (subjects) which should have been emphasized more?

There were opinions expressing the complexity and the complete character of the subjects presented. At the same time the majority of the participants wanted to have even more information and especially practice on costing and computer grading.

3. Name the most interesting topics for you.

As one would expect the most interesting topics denoted by the participants are just the same as the ones indicated in the previous point.

4. Were there any unnecessary topics? If, yes, which ones.

All participants answered "NON" for this question.

5. What is your opinion of the ratio of practical and theoretical training?

The duration of the seminar and the share of practical exercises regarded too little; everyone would allocate more tyme.

6. What additional topics would you suggest for similar CAD/CAM seminars?

A the most frequently named topics were designing, quality control, CAM and computer graphics.

7. How did you find the organization of the seminar?
8. What is your opinion of the atmosphere and training conditions provided by the organizing institute?

For both questions all participants answered "EXCELLENT" or "GOOD".

Research Institute for the Leather
and Footwear Industries

Budapest IV., Baross utca 52.
H–1047 HUNGARY

Certificate

.....

attended the

.....

organized by the

Research Institute for the Leather
and Footwear Industries (BCK)

.....

Budapest, ...

.....
director of BCK

.....
chief lecturer