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Technical Course on Criteria for the Selection of Woodworking Machines

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SEMI-AUTOMATED PLANT FOR ROLLER-BLIND AND DOOR PRODUCTION 1/

by

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[illegible]

[illegible] from the quantities to be produced WE DEEMED necessary to [illegible] from the QUANTITY point of view, as to the [illegible] types of products to be obtained.

For this purpose, we worked out the CONSTRUCTION DRAWING of the various products, establishing as well, for each type, the quantities according to its sizes.

Besides, we [illegible] 60% the coefficient of DAY'S PRODUCTIVITY, thus resulting the productive minutes 300 per 8 hours of work.=

1) - WINDOWS AND [illegible] : (Drawing no. 128201)

1-SHUTTER WINDOWS:

opening dimensions	0,60 m x 1.30 hr	100 per day
" "	0,60 m x 0.40 hr	100 " "

2-SHUTTER WINDOWS:

opening dimensions	1,20 m x 1.[illegible] hr	200 per day
" "	0,[illegible] m x 2.10 hr	50 " "
" "	1.50 m x 2.10 hr	50 " "

Wood used : NORTH [illegible] SPRUCE.

The wood, piled up in a suitable distribution store of 20-working day capacity, is transferred, by side loading fork lift trucks (137) to the gang mills (101) and belt saws (102), for the horizontal cutting. From here, on suitable trucks, the obtained lists are conveyed to the drying cells (103) of 20 cu.m stowage capacity each.

After a drying cycle, calculated depending on the wood thickness--humidity-quality, the lists are placed on trucks and brought to the adjacent room for the mechanical working.

Here, after the cutting to size and the simultaneous selection of the pieces according to the knots by means of the cross-cut saws (104 and 105), a part of the lists goes to the automatic dowel cutting machines (106) and then, together with the remaindor, to the moulding machines (107) which mould all pieces.

At the side of the moulding machines we placed some single cylinder planers (108) and thicknessing planers (109) as well as a router (112), for straightening and salvaging the excessively twisted or damaged pieces which the moulding machines operators should have had put aside during their working. The pieces are then transferred to the five shaft double tenoning machines (110) which provide for obtaining groove-and-tongue joints of all window sash components as well as for the inclined cutting to size of the various accessories.

The posts of the windows for balconies are then conveyed to the chiselling machines (111) where are obtained the counter-mould holes in correspondence of the lowdr cross beam connection. All materials pass then to the hydraulic frame clamps (113) which, after glue spreading on tenons, make up perfectly squared sashes and frames.

After some stop on the trucks, to allow the glue setting on tenons, the various sashes are conveyed to the line (115 - 116 - 117 - 118 - 119 - 120 - 121) which performs simultaneously the gauging-straightening of the two faces and, subsequently, the rabbet moulding on the four perimetral sides.

The frames having dimensions exceeding the opening width of the gauging machines (115 - 116 - 117), pass then on the 3-m belt sanding machines (114).

The sashes are then sanded along their perimeter by double sand' machines (125) run on the [illegible] by the line (123 -124 -125).

The accessories, such as pulleys, hinges, sash guards, roller blind webs, etc., are sanded by the suitable mould sanding machine (126).

Finally, for particular workings such as bolt joints, third closings, etc., we provides the use of programmed moulding machines (127) and of the pantographs (128).

The sashes and frames, forming the whole window, pass then through the brush-polishing machines (129 and 130) and then go to the benches for the application of the accessories immediately before been hung to the overhead chains (134) bringing to the impregnation.

In a suitable separate room the sashes and frames, hanging from the chain, pass first through two opposite water curtain cabins (131) where they receive the spray coat of protective filler and then in the drying oven (133) after having been rotated by 90° by suitable automatic work turning tables. On impregnation completion, the various pieces, still hanging from the overhead chain (134), pass to the adjacent room where they are equipped with the ANUBA supporting hinges (136) both on sashes and on frames, whereas the various benches check and test the various parts before they are transferred to the FINISHED PRODUCTS AND SHIPPING STORE.

2) - ROLLER BLIND: (Dwg. No. 129203)

The dimensions are those indicated for the windows as at previous point no. 1) and the profile that indicated on drawing.
The quantity has been established at 450 sq.m.
The used wood is the red spruce or the Sweden pine.

Also for the roller blinds the timber in planks, taken from a store of 20-working day capacity, is transferred, by the same lift trucks already considered for the windows (137), to the circular gang mills (201) and belt saws (202) which provide for the longitudinal cutting of the slats and of the winding rollers.

On suitable trucks the sawn material is brought to the dry kilns (203 of 20-cu.m stowage capacity each and subsequently, on trucks, transferred to the various subsequent workings.

At this point, for simplification, we will separate the slat working from the winding roller one.

a) - The slats are elected, chosen and cut to size by the cross-cut saws (204). The excessively knotty ones pass to the dowel cutting (205) and then, together with the others, are profiled, moulded and sanded by the lines 207 - 208 - 209 - 210 and then, on trucks, placed into a big store.

From this the slats, already worked and cut to size, pass on suitable illuminated benches (215), where they are coupled and composed in carpets, adapting them so as to avoid as much as possible light infiltrations. After this, there is the hook mounting on the benches no. 216.

At this point, the finished carpet is transferred to the movable table sanding machines (217), which, by two successive stages, sand the two faces before their varnishing.

In an adjacent separate room the carpets are hung, by suitable lifting portals (218), to the overhead conveyor chain (226), and brought

[illegible] (219) in a [illegible] (220) where a group of [illegible] spray the first coat of polyurethane pigmented or transparent varnish depending on requirement. From [illegible] area (221), the carpets are transferred on another conveyor chain, transversal and therefore very [illegible] (222), which conveys them through the proper furnace (223).

After the first coat drying, the carpets leave the furnace by a portal similar to the previous one (218), or, lift and brought to the two sanding machines (224) which sand and buff the two varnished faces. Then, still by a lifting portal, the carpets are hung again and brought to the second cabin inlet, by means of the chain (226) which, through a watertight area (225) conveys them to a second cabin (227) similar to the previous one, where the carpets are varnished with the second polyurethane coat. By a system similar to the previous one, the carpets pass to the chain (229) which conveys them through the drying furnace (225) longer than the previous one, as the second coat of varnish takes, for drying, more time than the first one.

At the furnace outlet the carpets are taken off and brought, rolled up, to the adjacent room, where they are packed by thermoretractable films in a suitably provided line (228 - 229 - 230) and and then placed in the FINISHED PRODUCTS AND SHIPPING STORE.

b) - The rollers are cut to size by the cross-cut saws (206) and then profiled and moulded by the heavy moulding machine (211). We provided also a single cylinder planer (212), a thicknessing planer (213) and a router (214) for reclaiming the rejected pieces.
At this point, the roller working is completed, thus, by suitable trucks, they are directly conveyed to the packing and from here to the FINISHED PRODUCTS AND SHIPPING STORE.

3) - DOORS (Two. no. 1.25.xx)

1-SHUTTER GLASS DOOR

opening dimensions	0.[illegible] m x 2.10 hr	100 per day
" "	[illegible] m x 2.10 hr	350 " "
" "	1.70 m x 2.10 hr	100 " "

1-SHUTTER GLASS DOOR

opening dimensions	0.[illegible] m x 2.10 hr	100 per day
" "	0.70 m x 2.10 hr	50 " "

2-SHUTTER GLASS DOORS

opening dimensions	1.20 m x 2.10 hr	100 per day

The principle followed for the construction of the doors panels has been :

a) - Pine honeycomb with 50x50 mm mesh.

b) - Internal frames entirely made of pine.

c) - The two faces covered with 3-mm Sederox.

Besides all 0.60 x 2.10 m doors and 50% of the remaining ones shall be made of valuable material, that is with intrados, posts and counter-posts, vertical panel rabbet edges and glass stops made of valuable wood, and covering of the two panel faces with 6/10-mm sheared wood of the same essence. All other doors are manufactured with the solid wood parts made of NORTH OLD SPRUCE and with the panel faces made of uncovered LEMORSX.

We have to point out that we provided for the doors 3 separate stores from which are taken the raw materials they consist of, that is :

SHEARED WOOD STORE which houses the various essences of sheared wood, stored on roller ways of 20-working day capacity. The preparation of the various composite boards, to be transferred to the press, is obtained through a longitudinal-transversal cutting

line (321 - 322 - 323). Here the [illegible] are jointed by the jointing machines (324) and checked and repaired, if required, through an illuminated bench (325) and subsequent work bench.

[illegible] which could be [illegible], is used for the boards, to be stored in piles of 20-cubic-m by capacity and moved by means of a side loading fork lift truck (3 1). The various boards, cut to size by a universal milling machine (302) are then slotted by a copying pantograph (303). Thereafter, to the glue-line presses, and then conveyed, on roller ways, to the [illegible] here placed at the head of the two presses.

BOARDS STORE of 20-working day capacity, in piles on pallets, with movement by means of side loading fork lift trucks (301). The timber provided in the 3 PINE, HARD Red SPRUCE and VALUABLE WOOD sequences, is first cut longitudinally on the circular gang mills (304) and band saws (305) of 20-cu.m stowage capacity each, and then, by the suitable trucks, is conveyed to the store before the subsequent workings.

In order to better meet [illegible] the doors working cycle, it is advisable to subdivide the working lines, according to the doors components, in:

PANELS

which consist of:

a) - honeycomb consisting of 3-mm thickness strips, arranged in a 50-mm mesh. Its production has been conceived as follows: unlike what has been done for all remaining workings, the drying here is performed directly on boards, which are then cross-cut (304) and planed on both faces (306), transversally moulded (308) and then cut into strips by the gang mill (301) placed in the vicinity. Afterwards, on suitable benches some mantles are made up, which are conveyed on trucks to the pressing line.

b) - contour frames [illegible] which are of previously mould

ing the frame lists over the wide belt (317), subsequently cutting them in length (318), and composing them both in the blank and the [illegible] of the panels in the clinching machines. (319) and (320).

Therefore running on the belt conveyor the presses on roller ways and it is conveyed to the pressing line (322-323-324) after having been rotated by 90° on the platforms (321). They are introduced, two at a time, in the glue coating machine and then transferred to the panel composition together with the contour frames and the honeycomb.

Leaving the press(324) the still hot panels go into a wide store for their gradual cooling and their acclimatization to the ambient. However, at this point, it is still necessary to subdivide the panels themselves as follows:

Panels to be laminated, which go to the squaring and edge bonding with valuable wood laths on the long side (325-326-327), then to the gauging of the two faces (328-329-330) and from here to the press (336) for the application of sheared wood scaleboards on the two faces.

Raw panels, which are directly transferred to the gauging of the two faces (328-329-330). At this point all panels are conveyed to the rabbet molding on the 4 perimetral sides on two separate lines, of which one standard (337-338-339) and the other (341-342-343) provided with special slotted devices for the part of glass panels.

By means of the milling machines (340), the programmed moulding machines (344) and the pantographs (345), special mouldings are performed for the housing of locks, bolts, etc., then, through the double sanding machines, the rabbet mouldings are finished (346).

At this point the panels, after a stop in a large store, are transferred in an adjacent room for their varnishing.

This consists of spray distempering and varnishing first the rabbet edges, sanding or pasting on 15 piled up panel . spraying the contour surfaces.

For this purpose, 2 spray water curtain cabins (362) equipped with revolving platforms (363) are provided. In the first cabin the solvent distemper is applied. In the second one the first coat of polyester base varnish, and in the third one the second coat of varnish after a light sanding of the parts sprayed with the first coat of varnish. Drying of all these coats is obtained in air.

The panels are then transferred to the two varnishing lines of the two external faces. It consists of previously sanding-brushing the faces to be varnished (366), roller distempering (367) and subsequently drying into infrared ray furnace (368). roller spreading the first priming coat (369) and subsequently drying it into hot air furnace (370 - 371 - 373) in order to directly sand and buff (374) before spreading the second finishing mist coat (377). Considering that the drying time of the second coat is much longer than that of the first coat, a particular 8-floor furnace has been used, which takes up a very reduced space. It consists of a 8-floor charger (378) which accumulates the panels, then distributing them on the corresponding 8 floors of the furnace. This consists of a flash zone (379), a drying zone (380) and a forced cooling zone (381). For passing then, through an 8-floor discharger (382), to the discharging belt (384).

The panels, after a step on the roller ways placed at the furnaces head, are conveyed to the other similar line having the same characteristics of that described before, with the only exception for the two sanding machines (365 and 375) which will be equipped with pressers on the belts, so as to avoid the panel already varnished lower surface slipping at the moment of the sanding.

INTRADOS

The wood coming from drying ([illegible]) is transferred to the **cross-cut** saws (307) for selection and cutting to size. then a part goes to the dowel matching (309) and straightening (312). if required. then. together with the remainder, to the moulding sanding line (313-317-315). After moulding the lock back plate housing (349). the material is conveyed on trucks to the adjacent close varnishing room.

This is performed by special automatic machines provided with swinging spray guns (355). First the distemper is spread. so as to obtain the intrados matching to the panel colour. and then the subsequent first coat of polyurethane varnish. The pieces. placed on 15-decker fork trucks. go into the carousel drying furnace (360). provided with [illegible] gear (36[illegible]) for trucks to which the trucks are hooked for conveyance inside the furnace. They are then transferred to the other line for sanding (357) and subsequent spraying of the second finishing coat (355) which is dried in a furnace similar to the previous one (360). Finally. all varnished intrados are conveyed to the adjacent assembly room where they are first perfectly squared and countermould worked (385). then hand bored at the two ends of the cross member. and. besides. bored and provided with pins in correspondence of one of the two ends of the posts (386).

POSTS, COUNTERPOSTS AND GLASS STOPS

The wood coming from drying and cutting to length. contrary to what provided for all other handworks. is first conveyed to the moulding-sanding (316 - 317 - 318) and then to cutting at 45° (308). then on trucks it is brought to distempering and varnishing in the 3 subsequent water curtain cabins (348). However. whereas the distemper is not dryed in the furnace. the first coat and the second one pass in the carousel furnaces (3[illegible]2). with intermediate

sanding between the first and the second coat on the two sanding machines 364.

These, too, are ready for reaching the adjacent bay for their assembly with panels and intrados.

At this point, the various door components result finished, as they have only to be completed with accessories, that is :

= panels and intrados shall be equipped with ANUBA supporting hinges by means of the special boring-screwing machines (387) and then, on benches, with locks and back plates.

= the glass panels shall also be equipped with glass stops and this on suitable benches provided for this purpose.

Finally, intrados, posts and panels packs are packed with thermo-retractable films by suitable line (388 - 389 - 390) and from here conveyed to the FINISHED PRODUCTS AND SHIPING STORE.

QUANTITY OF REQUIRED MATERIALS PER DAY

DOORS AND WINDOWS	
North Red Spruce	25.00 cu.m
ROLLER BLINDS	
North Red Spruce or Pine slats	12.00 cu.m
Pine Rollers	2.50 cu.m
DOORS	
Pine honeycomb	14.00 cu.m
Pine internal sashes	15.00 cu.m
North Red Spruce Intrados	8.00 cu.m
Valuable Wood Intrados	10.00 cu.m
North Red Spruce Posts	3.00 cu.m
Valuable Wood Posts	3.50 cu.m
North Red Spruce Frames	1.00 cu.m
3-mm Ledorex	5300 sq.m
6/10 mm Sheared Valuable Wood	2850 sq.m

REQUIRED LABOUR PER DAY

WINDOWS AND BALCONIES	:	workmen	No.	129
ROLLER BLINDS	:	workmen	No.	90
DOORS	:	workmen	No.	277
TOOLS	:	workmen	No.	18

REQUIRED ENERGY PER DAY

HEAT	: water at 110°C	6.250.000	KCal/hr
	steam at 1.70 atu	1.000	kg/hr
COMPRESSED AIR	:	2.836.200	l/hr
ELECTRIC ENERGY	: Motive Power	4.720	KW
	Lighting	250	KW

THE CHAIRMAN

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Bologna. 4th February 1976

SEMIAUTOMATED PLANT FOR ROLLER BLIND AND DOOR PRODUCTION

MACHINERY LEGEND — WINDOWS

No.		Quantity
101	CIRCULAR GANG MILL	2
102	BAND SAWS WITH AUTOMATIC FEED	2
103	20-CU.M STOVAGE HOT AIR METAL DRYERS	3
104	HEAVY CROSS-CUT SAWS	7
105	LIGHT CROSS-CUT SAWS WITH INCLINED CUTTING	2
106	AUTOMATIC DOWEL CUTTING MACHINES	3
107	6-SPINDLE MOULDING MACHINES WITH PRE-PLANER	6
108	500 SINGLE CYLINDER PLANING MACHINES	3
109	600 THICKNESSING MACHINES	1
100	3000 5 + 5 SPINDLE-TENONING MACHINES	3
111	AUTOMATIC CHISELLING MACHINES	3
112	ROUTER	1
113	HYDRAULIC FRAME CLAMPS	10
114	3000 BELT SANDING MACHINES	2
115	1100 UPPER GAUGING MACHINE	1
116	1100 x 2300 TRANSFER	1
117	1100 LOWER GAUGING MACHINE	1
118	1100 x 3000 ALIGNING MACHINE	1
119	2000 4 + 4 SPINDLE-SQUARING MACHINE	1
120	WORK TURNING DEVICE	1
121	3000 4 + 4 SPINDLE SQUARING MACHINE	1
122	DOUBLE MOULD SANDING MACHINES	2
123	1100 UPPER SANDING MACHINE	1
124	1100 x 3000 TRANSFER	1
125	1100 LOWER SANDING MACHINE	1
126	MOULD SANDING MACHINE	1
127	PROGRAMMED MOULDING MACHINES	2
128	PANTOGRAPHS	2

129	2000 BRUSHING MACHINE	1
130	1300 BRUSHING MACHINE	1
131	5000 WATER CURTAIN SPRAY CABINS	6
132	3000 90° OVERHUNG WORK TURNING DEVICES	6
133	HOT AIR FURNACES	3
134	OVERHEAD CHAINS FOR LONGITUDINAL CONVEYANCE	3
135	STIFFENED OVERHEAD CHAINS FOR TRANSVERSAL CONVEYANCE	3
136	BORING-SCREWING MACHINES FOR ANUBA	2
137	SIDE LOADING FORK LIFT TRUCKS WITH 1500 STRADDLE 2000-KG CAPACITY	2

SEMIAUTOMATED PLANT FOR ROLLER BLIND AND DOOR PRODUCTION -

MACHINERY LEGEND — ROLLER BLINDS

No.		Quantity
201	CIRCULAR GANG MILL	2
202	BAND SAWS WITH AUTOMATIC FEED	2
203	20-CU.M STOWAGE HOT AIR METAL DRYERS	3
204	SPECIAL CROSS-CUT SAWS FOR ROLLER BLIND LISTS	10
205	AUTOMATIC DOWEL CUTTING MACHINES	2
206	HEAVY CROSS-CUT SAW	1
207	SPECIAL 6-SPINDLE MOULDING MACHINES WITH CHANGER	
208	4000 CHANGER	5
209	AUTOMATIC SLAT MOULDING MACHINES	10
210	SLAT SANDING MACHINES	5
211	4-SPINDLE HEAVY MOULDING MACHINE WITH PRE-PLANER	5
212	500 SINGLE CYLINDER PLANING MACHINE	1
213	500 THICKNESSING MACHINE	1
214	ROUTER	1
215	SLAT ASSEMBLY ILLUMINATED TABLES	1
216	HOOK MOUNTING TABLES	4
217	MOVABLE BELT SPECIAL SANDING MACHINES	6
218	BELT LIFTING PORTALS	6
219	1000 x 2000 x 4000 H WATERTIGHT ZONE	3
220	DOUBLE WATER CURTAIN CABINS WITH ALTERNATE AUTOMATIC SPRAY-GUNS	1
221	1000 x 5000 x 4000 H EXHAUSTED FLASH ZONE	2
222	4000 x 11000 x 4000 H HOT AIR FURNACE	1
223	1000 x 3000 x 4000 H WATERTIGHT ZONE	1
224	1000 x 6000 x 4000 H CLOSED EXHAUSTED ZONE	1
225	4000 x 13000 x 4000 H HOT AIR FURNACE	1
226	OVERHEAD CHAINS FOR LONGITUDINAL CONVEYANCE	1
227	OVERHEAD CHAINS FOR TRANSVERSAL CONVEYANCE	2
228	1000 x 7000 x .00 H BELT CONVEYOR	2
229	2500 THERMORETRACTABLE FILM PACKING LINE	1
230	1000 x 7000 x 800 to 200 H BELT CONVEYOR	1

SEMI AUTOMATED PLANT FOR ROLLER BLIND AND DOOR PRODUCTION

MACHINERY LEGEND DOORS

NO.		Quantity
301	CIRCULAR GANG MILLS	6
302	BAND SAWS WITH AUTOMATIC FEED	5
303	[illegible]	6
304	HEAVY CROSS-CUT SAWS	5
305	SINGLE CYLINDER-THICKNESSING PLANING MACHINES (400)	2
306	MOULDING MACHINES FOR BEEHIVES	2
307	4-SPINDLE HEAVY MOULDING MACHINES	2
308	LIGHT CROSS-CUT SAWS WITH CUTTING AT 45°	6
309	AUTOMATIC DOWEL CUTTING MACHINES	2
310	12+12-GUN FRAME CLINCHING MACHINE	1
311	18+18-GUN FRAME CLINCHING MACHINE	1
312	SINGLE CYLINDER 500 PLANING MACHINES	2
313	6-SPINDLE HEAVY MOULDING MACHINES WITH PRE-PLANER	3
314	2500 TRANSFER	3
315	MOULD SANDING MACHINES	3
316	6-SPINDLE LIGHT MOULDING MACHINES	4
317	2500 TRANSFER	4
318	MOULD SANDING MACHINES	4
319	5000 PANEL CROSS-CUT SAW	1
320	PANTOGRAPH SPECIAL SLOTTING MACHINES	3
321	2500 DIA. REVOLVING PLATFORMS	6
322	2500 GLUE COATING MACHINES	3
323	2500 x 4770 MOTOR DRIVEN ROLLER BENCHES FOR GLUE	3
324	2200 x 6500 CONTINUOUS CYCLE PRESSES WITH AUTOMATIC DISCHARGER	2
325	1500 SQUARING MACHINE WITH 3 + 3 MOTORS	1

326	2500 MOTOR DRIVEN TRANSFER	1
327	DOUBLE EDGE BENDING MACHINE	1
328	1100 UPPER GAUGING MACHINE	1
329	1100 x 2500 TRANSFER	1
330	1100 LOWER GAUGING MACHINE	1
331	HEAVY CROSS-CUT SAW FOR 800 SHEARED WOODS	1
332	500 x 5000 x 750 H BELT CONVEYOR	1
333	3200 EDGE SHEARS	1
334	GLUE JOINTING MACHINES WITH BENCHES FOR SHEARED WOODS	9
335	1000 x 2500 ILLUMINATED BENCH	1
336	2200 x 5300 CONTINUOUS CYCLE PRESS WITH AUTOMATIC DISCHARGER	1
337	1500 SQUARING MACHINE WITH 4 + 4 MOTORS	1
338	WORK TURNING DEVICE TRANSFER	1
339	3000 SQUARING MACHINE WITH 4 + 4 MOTORS	1
340	LOCK MORTISING MACHINES	9
341	1500 SQUARING MACHINE WITH 4 + 4 MOTORS AND SLOTTING DEVICES	1
342	WORK TURNING DEVICE TRANSFER	1
343	3000 SQUARING MACHINE WITH 4 + 4 MOTORS AND SLOTTING DEVICES	1
344	PROGRAMMED MOULDING MACHINES	2
345	PANTOGRAPHS	2
346	DOUBLE MOULD SANDING MACHINES	2
347	600 x 4500 x 750 H BELT CONVEYOR	1

SEMI AUTOMATED PLANT FOR ROLLER BLIND AND DOOR PRODUCTION

MACHINERY LEGEND DOORS (follows)

NO.		Quantity
348	3000 WATER CURTAIN SPRAY CABINS	3
349	600 x 6000 x 750 H BELT CONVEYOR	1
350	SUCTION HOOD	1
351	EXHAUSTED COVERED ZONES	2
352	HOT AIR FURNACES	2
353	TRUCK DRAFTING CHAINS	2
354	MOULD SANDING MACHINES	2
355	3-REVOLVING SPRAY GUN SPRAYING MACHINES	9
356	6000 TRANSFER	3
357	MOULD SANDING MACHINES	3
358	3000 TRANSFER	3
359	EXHAUSTED COVERED ZONES	2
360	HOT AIR FURNACES	2
361	TRUCK DRAFTING CHAINS	2
362	5000 WATER CURTAIN SPRAY CABINS	3
363	2500 DIA. REVOLVING PLATFORMS	3
364	1400 x 2500 BELT CONVEYORS	4
365	135 SANDING MACHINE	1
366	1350 SANDING MACHINE WITH PRESSER	1
367	ROLLER DISTEMPERING MACHINE	2
368	INFRARED RAY FURNACES	2
369	ROLLER LACQUERING MACHINE	2
370	HOT AIR FURNACES = FLASH ZONE	2
371	HOT AIR FURNACES = DRYING ZONE	2
372	TRAVELING LIFTS AT 180°	2
373	FORCED COOLING TUNNELS	2
374	VARNISH SANDING BUFFING MACHINE	1

375	VARNISH SANDING BUFFING MACHINE WITH PRESSER	1
376	ACCELERATING BELTS	2
377	2-HEAD FLOW COATING MACHINES	2
378	8-FLOOR CHARGERS	2
379	8-FLOOR HOT AIR FURNACES - FLASH ZONE	2
380	8-FLOOR HOT AIR FURNACES - DRYING ZONE	2
381	FURNACES - FORCED COOLING ZONE	2
382	8-FLOOR DISCHARGERS	2
383	BELT CONVEYORS	2
384	BELT CONVEYORS	2
385	3000 LIGHT TENONING SQUARING MACHINE WITH 3 + 3 MOTORS	1
386	DOUBLE BORING BROACHING MACHINE	1
387	BORING SCREWING MACHINES FOR ANUBA	3
388	1000 x 7000 x 800 H BELT	1
389	2500 THERMORETRACTABLE FILM PACKING LINE	1
390	1000 x 7000 x 800 to 200 H BELT	1
391	SIDE LOADING FORK LIFT TRUCKS WITH 1500 STRADDLE 2000-KG CAPACITY	3

SEMIAUTOMATED PLANT FOR ROLLER BLIND AND DOOR PRODUCTION

MACHINERY LEGEND TOOLS

NO.		Quantity
401	ELECTRIC WELDING MACHINES FOR BAND SAWS	2
402	AUTOMATIC SHARPENING MACHINES FOR BAND SAWS	2
403	AUTOMATIC BAND SAW-SETTING MACHINES	2
404	AUTOMATIC W.C. CIRCULAR SAW-SHARPENING MACHINES	3
405	AUTOMATIC W.C. CIRCULAR SAW-SETTING MACHINES	2
406	WIDIA CIRCULAR SAW AUTOMATIC SHARPENING MACHINES	4
407	W.C. AND WIDIA STEEL CUTTER AUTOMATIC SHARPENING MACHINES	5
408	PLANER KNIFE AUTOMATIC SHARPENING MACHINES	3
409	CUTTING MACHINE KNIFE AUTOMATIC SHARPENING MACHINE	1
410	W.C. AND WIDIA STEEL BIT SHARPENING MACHINE	2
411	W.C. CHISEL KNIFE SHARPENING MACHINES	1
412	ELECTRIC ARC WELDING MACHINE	1
413	OXY-ACETYLENE WELDING MACHINE	1
414	2000 CENTER LATHES	2
415	COLUMN DRILLING MACHINES	2
416	SURFACE GRINDING MACHINE WITH MAGNETIC PLATEAU	1
417	IRON HACKSAWS	2
418	2-HEAD GRINDING MACHINE	3
419	SHAPING MACHINE	1

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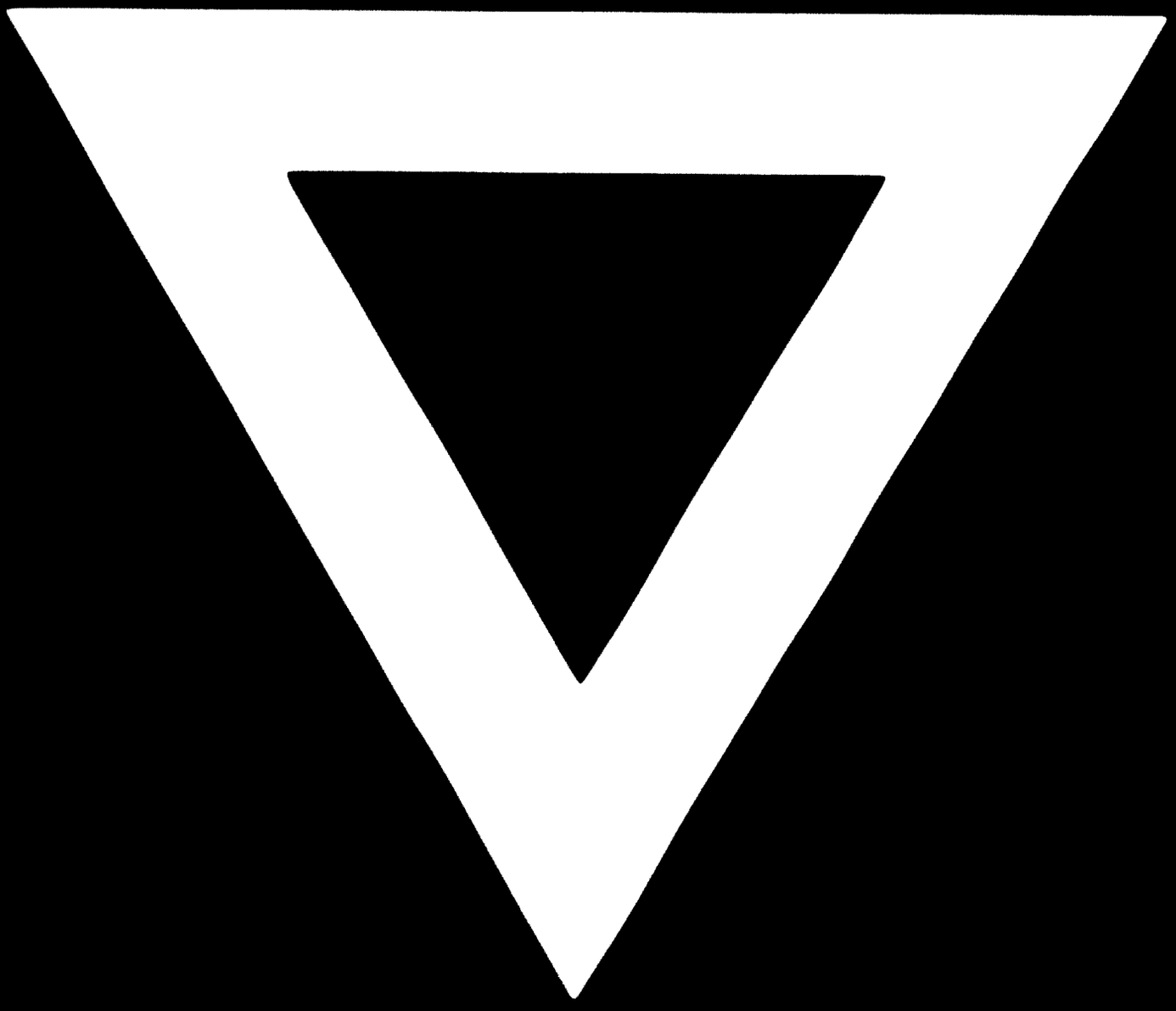

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