



Открытое акционерное общество

ВИТЯЗЬ

**Technological
Opportunities of
Open Joint-Stock Company
"Vityas"**

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Assembly manufacture.

The manufacture provides the production of radio-electronic units and blocks assembled on printed-circuit-boards. The further production cycle provides the finishing assembly and packing of products.

1. Two automatic lines of superficial assembly.

The first line

- . The Automatic device of the dosed applying of glue YAMAHA HSD - 2 pieces, productivity of each is 45 000 spots/hour.
- . The Automatic device of stuffing SMD-components YAMAHA 180Xg-L, productivity - 37 800 components/hour.
- . The Automatic device of stuffing SMD-components TOPAZ-Xi, productivity - 18 000 components/hour.

Stuffed components:

- 0402, microchips in case SOP with maximum sizes 32x32 mm.

- . System of convectional melting ERSA.
- . Stuffing SMD-components on glue with the subsequent soldering with a double wave of solder in the environment of nitrogen.

Total productivity of the line is up to 55 000 components/hour

The second line

- . The Automatic device of screen printing DEK ELA. Time of a cycle – 12 sec.
- . The Automatic device of stuffing SMD-components YAMAHA 180Xg-L - 2 pieces. Productivity of each is 37 800 components/hour.

- . The Automatic device of stuffing SMD-components YAMAHA 100Xg. Productivity is 20 000 components/hour.

Stuffed components:

- 1) passive elements:

The minimal size of the case of an element is 0402;

- 2) microchips:

In case PLCC with the maximum size 45×45mm;

In case QFP with the maximum size 45×45 mm, the minimal step between outputs is 0,4 mm;

In cases BGA, mBGA, CSP with the sizes from 6×6 mm up to 45×45 mm, with the minimal step of ball outputs of 0,5 mm, the minimum diameter of ball outputs is 0,3 mm.

- . System of convectional melting HELLER 1809 EXL.
- . Stuffing SMD-components on soldering paste with the subsequent melting of the pastes in convectional ovens. Total productivity of the second line is up to 97 000 components/hour.

The accuracy of stuffing components is ± 50 a micron (3 s), Quality assurance of stuffing is provided by means of system MANTIS. The maximum sizes of a board is - 380×330 mm.

2. The equipment for the automated stuffing of components with axial outputs.

- . The Assembly automatic device for stuffing of wire jumpers, model Universal 6298C (USA)
Productivity is 40 000 components/hour.
- . The Complete set of the equipment for stuffing of axial components, model Universal productivity of a fitter is 40 000 components/hour

3. The assembly automatic device for stuffing of radial components.

- . Model Universal 6380B productivity is 21 000 components/hour.

For installation of non-standard components there are two conveyors of assembly with the subsequent soldering with a double wave of solder in an atmosphere of nitrogen on lines of soldering ERSA Hotflow and Soltec DeltaWave.

4. Manufacture of cables (wires)

JSC "Vityas" possesses the equipment and fitting for processing the following wires:

The equipment for manufacture of **wires**:

1. CODERA Casting C370 plant for cutting and removing the isolation from assembly wires from two sides. Section of wires is from 0,03 mm² up to 5,26 mm². Productivity is 4800 pieces/hour for wires with the length of 300 mm.
2. CODERA Casting 371F plant (for processing tape wires with the width up to 20 mm with isolation from polyvinylchloride plastic compound - cutting at size, a longitudinal section and removal of isolation). Section of wires is from 0,08 mm² up to 8 mm². Productivity is ~1500 wires/hour.
3. CODERA Casting 373F plant (for processing tape wires with the width up to 40 mm with isolation from polyvinylchloride plastic compound - cutting at size, a longitudinal section and removal of isolation from two ends). Section of wires from 0,08 mm² up to 8 mm². Productivity is ~1500 wires/hour.
4. Automatic device Kappa 220 for cutting and removing the isolation from assembly wires.
5. Presses Mecal TT (5 pieces) for automatic press fitting of contacts on a wire. Productivity is 1000 contacts/hour. The maximum effort is 2000 kg. Presses are completed with various types applicators depending on processable contacts.

5. Finishing manufacture.

Two conveyor lines for assembly of products of technical equipment of various purpose. The maximum weight of products is up to 90 kg.

Technical opportunities of a section of galvanic coverings

Num.	Name of covering	Capacity, m ² /year	Max. size of the processed parts, mm	Thickness of the covering, mm	Purpose of the coverings	Quality assurance of coverings
1	2	3	4	5	6	7
1.	Chemical oxidation of steel in the automated line in a drum and on suspension brackets	16900	500x500x100	-	-protective -finishing for painting	1.thickness- by spot method 2. Durability of coupling - a method of heating, a grid of scratches 3.Appearance 4. Corrosion resistance
2.	Chemical oxidation of aluminium	50000	800x600x100	-	- for increasing superficial electronic conduction	
3.	Anode oxidation of aluminium	25900	800x600x100	-	-protective	
4.	Electrochemical polishing of stainless Steel	8500	600x500x100	-	-protective-decorative	
5.	zinc plating on a drum	25900	hardware	от 0,003 до 0,015	- protective - protective-decorative for painting	
6.	zinc plating on suspension brackets	32000	600x500x100	от 0,003 до 0,015	- protective - protective-decorative for painting	
7.	Chemical passivation of copper	54600	100x50x10		-protective	

8.	Shining tin of steel on suspension brackets	16300	600x500x100	от 0,003 до 0,015	-3protective -for soldering
9.	Drawing an alloy tin-bismuth with a sublayer of copper in the automated line in drums	20000	contacts	From 0,003 up to 0,015	-3protective -for soldering
10.	Shining tin of steel in drums	12000	contacts, jacks, pins	from 0,003 up to 0,009	-3protective -for soldering
10.	Nickel plating in a bell bath	4800	pins	from 0,003 up to 0,006	-3protective
11.	Shining nickel plating on suspension brackets	6800	500x400x100	from 0,003 up to 0,009	-protective- decorative
12.	Chemical nickel plating	650	100x100x10	from 0,003 up to 0,009	-protective - for increasing of wear resistance
13	Chromium plating	1000	500x500x300	from 0,001 up to 0,009	- protective - for increase of wear resistance and superficial hardness

Mechanical manufacture

Processing of sheet materials

- . The cutting of details and blanks of a various configuration from ferrous metals, stainless steels and aluminium alloys on the laser cutting machine Laser CUT--3015-1-1-0-00 with an opportunity of marks for identification.

The maximum sizes of a sheet are 3000 x 1500 mm

The maximum weight of blank is 360 kg

Accuracy of positioning is ± 0.02 mm

Accuracy of an output in a point on coordinates X, Y is ± 0.05 mm

The maximum thickness of a processable material:

- Constructional steel - 10 mm
- Stainless steel - 5 mm
- Aluminium alloys - 3 mm

Bending of sheet materials

- . Parameters of materials:
 - Thickness is up to 3 mm,
 - A corner of bend is from 30° up to 180°
 - Length of bend is up to 2500 mm
- . The Equipment:

Hydraulic press with computer numerical control, model ERMAKSAN CNC HAP 2600-80

Punching of details on crank presses.

Technical opportunity of the equipment

number	The Name of the equipment	Effort of press (Tons)	Quantity of equipment (pcs)	The Sizes of produced details (mm)
1	crank press	16	16	200x300
2	crank press	25	5	250x350
3	crank press	40	12	280x420
4	crank press	63	12	340x500
5	crank press	100	5	400x600
6	crank press	160	4	470x700
7	crank press	160	1	870x1400
8	automatic press	40	2	125x170
9	automatic press	63	1	240x150
10	automatic press	6,3	2	25x50

Manufacture of details from plastic

Method of moulding under pressure.

1. Processed materials:
ABS, ABS + PC, PA, PBT, PC, PE, PMMA, PP, PS, PVC.
2. The Equipment.
Moulding Machines under pressure of the company JONWAI, with effort of closing from 60 up to 2000 t., in total - 39 pieces

Automatic Thermoplastic Machine DEMAG, with effort of closing 1300 t
- 1 piece

Automatic Thermoplastic Machine BIRAGHI, with effort of closing 1100 t
- 3 pieces
3. Volume of a processed material.
ABS, ABS + PC, PS - 9 288 tons per year.

PA - 5,9 tons per year.

PBT - 47,5 tons per year.

PC - 34,4 tons per year.

PE - 8,9 tons per year.

PP - 128,3 tons per year.

PVC - 85,5 tons per year.

PMMA - 4,1 tons per year.
4. Painting the details.
 - 4.1. Painting the details with enamels of various colors by a method of pneumodispersion.
 - 4.2. Painting the details during moulding under pressure with the use of superconcentrates.

Technical opportunities of a section of manufacturing of printed-circuit-boards.

1. Characteristics of printed-circuit-boards:

- Material - one-sided foil-coated hardened paper or glass-cloth-base laminate
- The maximum size of printed-circuit-boards, mm - 400x300
- Thickness, mm – 1- 4
- The class of accuracy of printed-circuit-boards is not higher than 3 (the minimum width of conductors, the minimum distance between conductors- 0,25mm)
- A chemical method of manufacturing

- A method of formation of holes by punching or drilling depending on

volume requirements. The minimum diameter of holes received by punching: on foil-coated hardened paper - $0,7\pm 0,05$ mm, foil-coated glass-cloth-base laminate $1,3\pm 0,1$ mm. The minimum diameter of holes received by drilling - $0,6\pm 0,05$ mm, irrespective of a material.

- opportunity of multiplication of blanks of printed-circuit-boards

- division of multiplied blanks by punching, scribing

2. Capacity of a section

- At a large-lot production - 45 000 m²/year (formation of holes by the method of punching).
- At a small-lot production - 30 000 m²/year (formation of holes by the method of drilling).

Engineer-production complex “Vityas-C”

1. Mechanical processing of details on the equipment:

- Turning work:

250ИТВ - turning machine

1325Φ30 – turret machine

16Б16Т1С - turning machine with computer numerical control

- Milling work:

67К25ПΦ2-0 - multifunctional milling machine

ГД13400ПМ1Φ4 - multifunctional boring mill

6Д82ШΦ20 - horizontal-milling machine

2171С5 - milling machine with computer numerical control

676П - universal milling machine with computer numerical control

- Coordinate work:

2Е440 - Coordinate boring machine

- locksmithing :

2М112 - drilling machine

1К152 - drilling machine

ВСН-12 - thread-rolling machine

РВЕ-40S1М – hydraulic press

ЕРМАКСАН CNC HAP2600-80 – bending press

ДШВ 1930-4006 – manual press

- welding work:

MT 2201, MT 2202 - machines of contact welding

УДГ-301 – machine of argon welding

ВД-306 – welding device

- Laser cutting of material:

УЛРМ –laser cutting plant

Laser Cut--3015-1-1-1 - machine of laser cutting

- Casting work:

A711Б08, A711HA07 – machines for under casting pressure

CAT-025; ЭСТ-250 - electric ovens (furnaces)

2. Assembly, adjusting work on the equipment:

5C.012.00.00 – an assembly ruler

5C.025.00.00.00 - a tinning bath

УПМ-300 - a line of soldering

СВ-2М; St-80 - vibration stand

МС-71 - the chamber of low temperature

ОМ-034.17 – machine of vibrocleaning

ДМВМ3.112.000 – pneumatic press

TANSIES. 324689.004 – workplace of assembler

ПИЖМ.324689.001 - workplace of an adjuster

3. Painting (lacquering):

УС-3 - drying cabinet

ОК-1 - the painting chamber

4. Optical work on the equipment:

ЦСМ-50, ЦСМ-10 - centering machines

6ШП-100 - grinding-and-polishing machine

П-20, П-6 - polishing machine

АШС-15 - an automatic colour-grinding machine

ЧПД-200 – polishing-lapping machine