



BUILDING THE FUTURE

2 LAYERS IN 1-3 DAYS

MULTILAYERS IN 3-5 DAYS

STANDARD PRODUCTION IN 2-3 WEEKS

FLEX, RIGID-FLEX, TEFLON

HIGH TG MATERIALS

FINE LINE, MICRODRILLING

TECNOMEC

PRINTED CIRCUIT BOARDS

ESQ



TECNOMEC s.r.l.

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PARTNER

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CAC S.R.L. **CENTRO
MATRICI
GRAFICHE**

TECNOMEC

INDIC
EMS ELECTRONICS PVT. LTD.
Bangalore, India

μtec MITEC

CIPSA TEC India Pvt. Ltd.
Bangalore, India

PARTNER

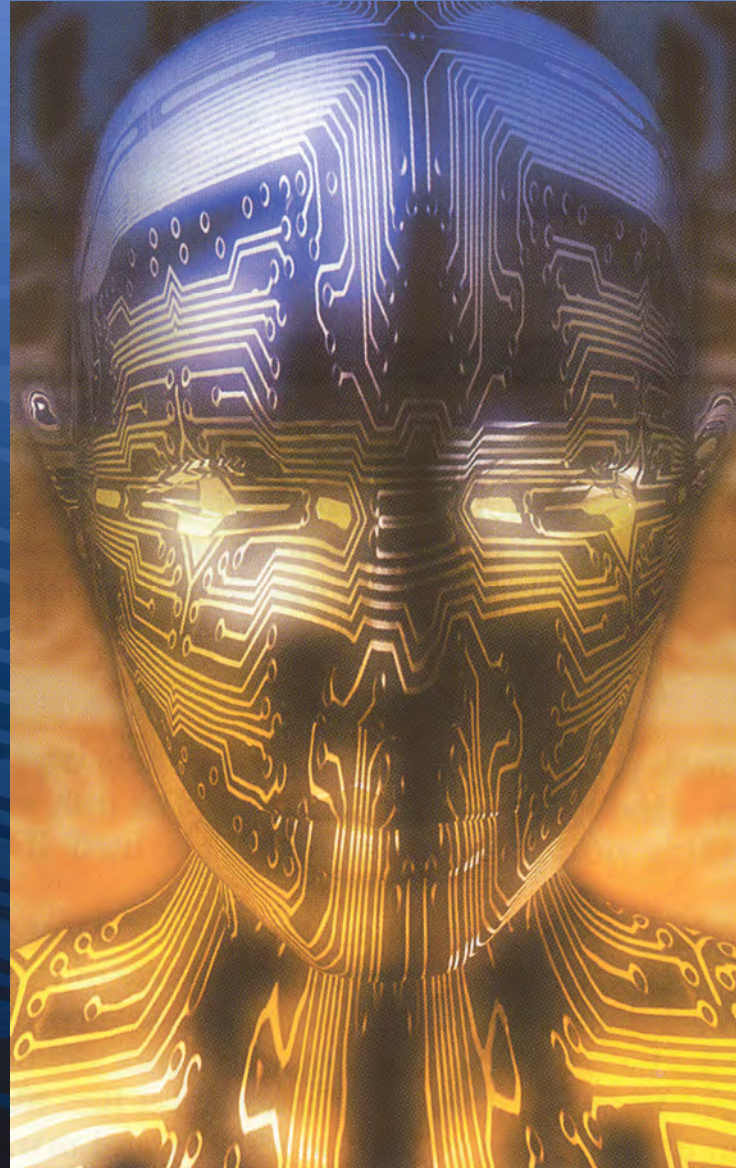
- CMG: PCB CAM engineering, artwork, laser plotting
- CIPSA-TEC INDIA: PCB plant manufacturing located in Bangalore
- INDIC: PCB assembling located in Bangalore
- TECNO 77: PCB layout generation
- MITEC: RF layout and engineering, RF packaging

welcome to Tecnomec



Tecnomec

WHO WE ARE...



Tecnomec

REFERENCE POINT FOR HIGH TECHNOLOGY PCB...

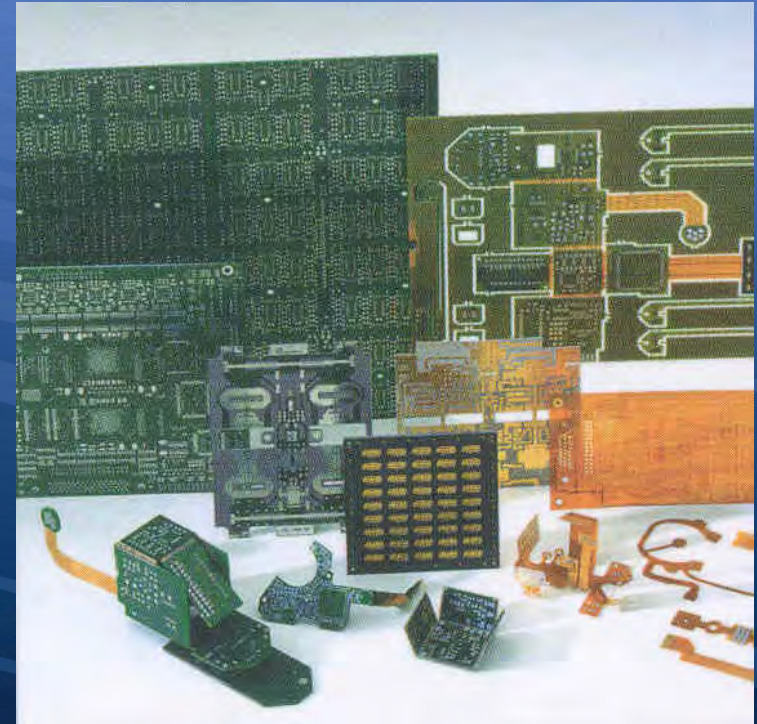


FIRM ORGANIZATION

- CHAIRMAN
Franco Pigato
- GENERAL MANAGER
Sandro Pigato
- QUALITY MANAGER
Gianluca Lovato
- SALES MANAGER
Eugenia Fornaro
- SALES AND TECH. MANAGER
Andrea Pigato
- PRODUCTION MANAGER
Peter Saccardo
- PRODUCTION PLANNING
Gabriele Giacomini
- ADMINISTRATIVE OFFICE
Anna Capozzo
- PURCHASE OFFICE
Francesca Dal Lago

PRODUCTS

- SINGLE SIDED
- DOUBLE SIDED
- MULTILAYERS
- FLEXIBLES
- RIGID – FLEX
- TEFLON
- HIGH FREQUENCY MATERIALS
- HIGH TG MATERIALS
- ALLUMINIUM
- METAL BACK
- METAL CORE

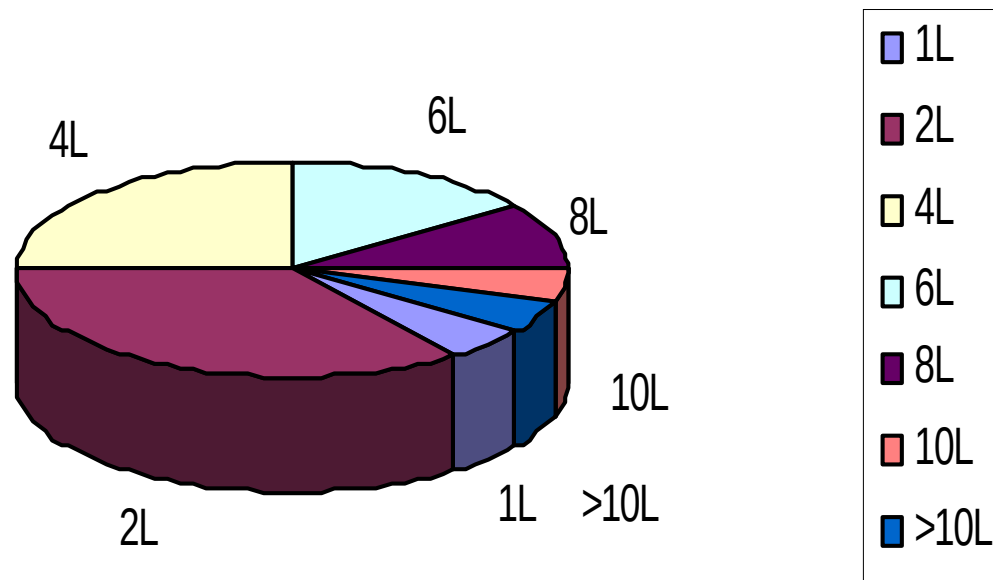


SAMPLES IN 2-3 DAYS

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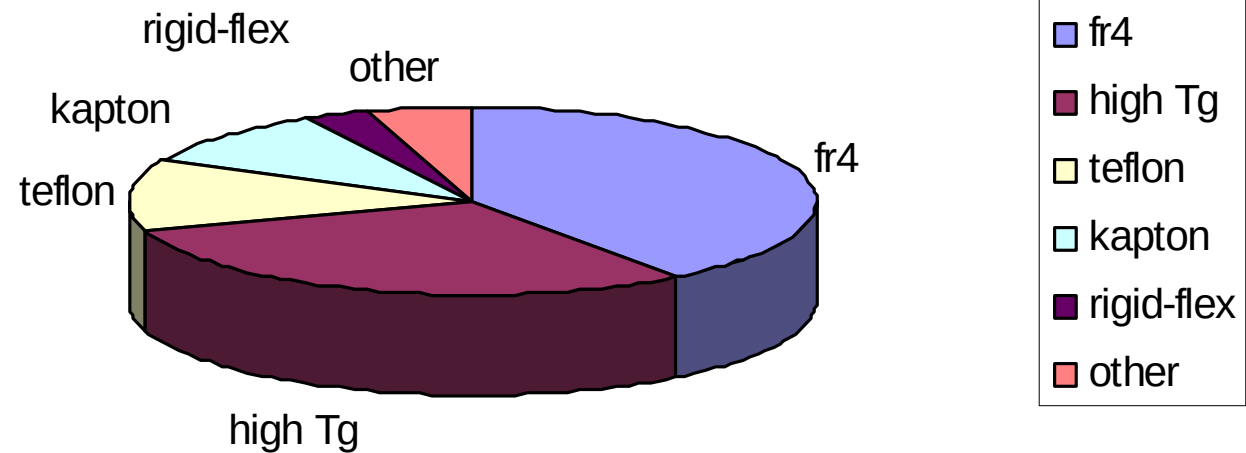
PRODUCTION

LAYERS

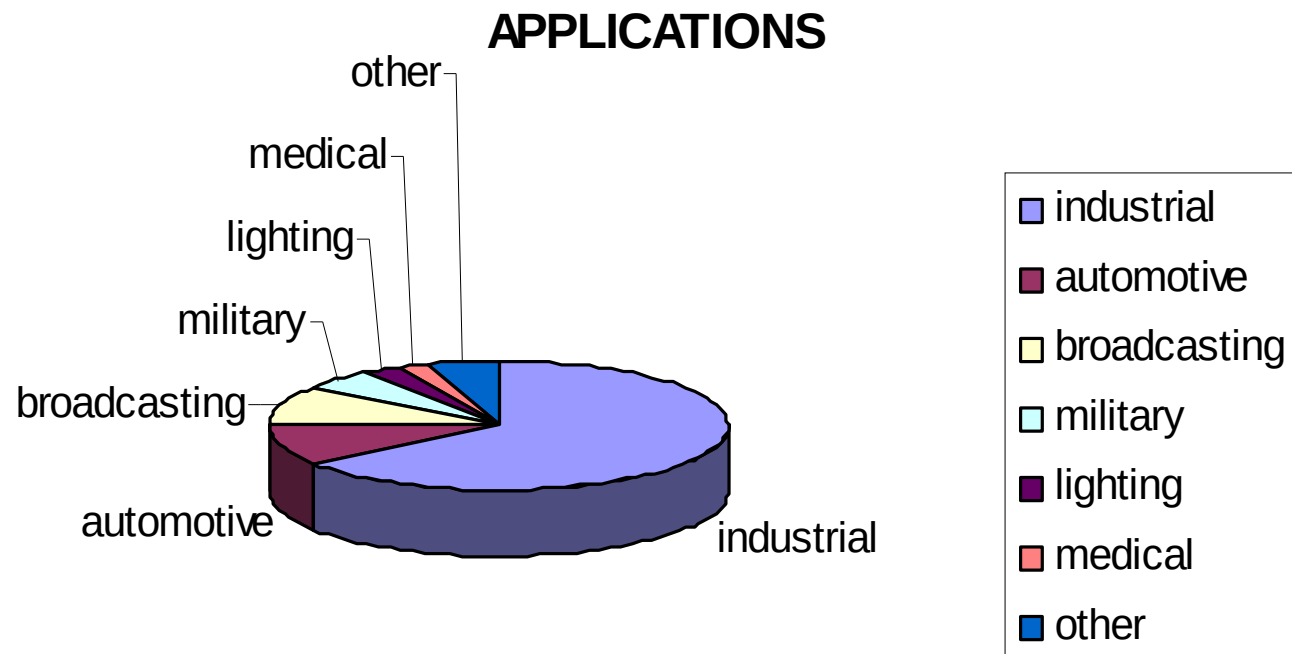


PRODUCTION

MATERIALS



PRODUCTION



CERTIFICATIONS

- UL FILE: E146387
- ISO 9001:2008



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TURNOVER and INVESTMENT

Year	Turnover	Investment
■ 2001	€ 5.000.000	€ 780.000
■ 2002	€ 5.500.000	€ 930.000
■ 2003	€ 5.000.000	€ 980.000
■ 2004	€ 6.200.000	€ 720.000
■ 2005	€ 5.700.000	€ 530.000
■ 2006	€ 7.000.000	€ 760.000
■ 2007	€ 6.700.000	€ 490.000
■ 2008	€ 7.500.000	€ 250.000
■ 2009	€ 5.650.000	€ 200.000
■ 2010	€ 8.150.000	€ 300.000
■ 2011	€ 8.740.000	€ 350.000

STANDARD PRODUCTION

■ MINIMUM HOLE	100 μ
■ MINIMUM TRACK	100 μ
■ MINIMUM ISOL.	100 μ
■ NUMBER OF LAYERS	20
■ BOARD THICKNESS	0.2÷5 mm
■ COPPER THICKNESS	17÷150 μ
■ MULTILAYER MAX BOARD	810x500 mm
■ PLUGGED VIAS (drill on pad)	

TECNOLOGYCAL CHARACTERISTICS

■ MINIMUM HOLE	50 μ
■ MINIMUM TRACK	50 μ
■ MINIMUM ISOL.	50 μ
■ NUMBER OF LAYERS	30
■ BOARD THICKNESS	0.05÷6 mm
■ COPPER THICKNESS	5÷500 μ
■ MULTILAYER MAX BOARD	900x600 mm
■ PRESSFIT	
■ BLIND AND BURIED VIAS	
■ CONTROLLED IMPEDENCE	

TECHNOLOGICAL SPECIFIC

	standard	special	critic	limit
φ minimum hole (drilled)	0,45 mm	0,35 mm	0,1 mm	0,05 mm
φ minimum hole (finished)	0,3 mm	0,2 mm		
tolerance φ fini met.	-0,1-0,05 mm	+0,1-0,05 mm ± 0,05 mm		
tolerance φ not plated holes	± 0,05 mm	+0,05-0 mm		
minimum plated holes distance	0,3 mm	0,25 mm	0,2 mm	
minimum not plated holes distance	0,25 mm	0,2 mm	0,15 mm	
positioning holes tolerance	± 0,05 mm	± 0,025 mm		
"Z" axis tolerance	± 0,1 mm	± 0,05 mm	± 0,025 mm	
aspect ratio	1:8	1:10	1:14	1:16
rigid pcb routing tolerance	± 0,1 mm	± 0,05 mm		
flex pcb routing tolerance	± 0,2 mm	± 0,1 mm		
plated slot tolerance (chemical surf.)	± 0,15 mm	± 0,1 mm		
minimum internal radius	0,5 mm	0,3 mm	0,2 mm	
scoring positioning tolerance	± 0,5 mm	± 0,2 mm		
scoring core tolerance	± 0,1 mm			
pcb tolerance after scoring breaking	± 0,5 mm			
minimum track	0,25 mm	0,15 mm	0,1 mm	0,05 mm
minimum isolation	0,25 mm	0,15 mm	0,1 mm	0,05 mm
pattern tolerance	± 25%	± 20 μ	± 10 μ	± 5 μ
minimum track function of copper thickness > 100 μ	= copper thickness x2	= copper thick. +50 μ	= copper thickness	
minimum isolation function of copper thickness > 100 μ	= copper thickness x2	= copper thick. +100 μ	= copper thick. +80 μ	
layer alignment	± 0,1 mm	± 0,05 mm	± 0,04 mm	
hole-pad alignment	± 0,1 mm	± 0,05 mm	± 0,025 mm	± 0,02 mm
routing-pad alignment	± 0,1 mm	± 0,05 mm		
hole (drilled)-pad annular ring	0,15 mm	0,1 mm	0,05 mm	0,025 mm
hole (drilled)-ground plane isolation (inner layer)	0,2 mm	0,12 mm	0,1 mm	0,08 mm
internal hole copper thickness	20 μ	25-30 μ	35-50 μ	
galvanic copper increment tolerance	± 10 μ	± 5 μ		
minimum pcb thickness	0,8 mm	0,2 mm	0,1 mm	0,05 mm
maximum pcb thickness	1,6 mm	3,2 mm	5 mm	6 mm
thickness tolerance pcb rigid	± 10%			
thickness tolerance pcb flex	± 10% (max ±50 μ)			
max pcb dilatation	0,04% (max 0,3mm)			
maximum pcb 2 layer width	500 mm	600 mm		
maximum pcb multilayer width	400 mm	500 mm	550 mm	
maximum pcb 2 layer length	800 mm	900 mm	> 1000 mm	
maximum pcb multilayer length	500 mm	800 mm	850 mm	
solder thickness	20 μ			
pad-solder annular ring	0,1 mm	0,07 mm	0,05 mm	
solder alignment	± 0,1 mm	± 0,07 mm	± 0,05 mm	
minimum solder dam (bridge)	0,2 mm	0,1 mm	0,08 mm	
minimum legend width	0,2 mm	0,1 mm		
legend alignment	± 0,2 mm	± 0,1 mm		
bow and twist	2%	1%	0,5%	
nickel thickness pcb rigid	4 μ			
nickel thickness pcb flex	2 μ			
chemical gold thickness	0,05 μ			
galvanic gold thickness	0,6 μ			
chemical tin thickness	0,6 μ			
chemical silver thickness	0,3 μ			

ENGINEERING SYSTEMS and FILE FORMATS

- BARCO WORKSTATIONS
- CAM 350 WORKSTATION
- BARCO LASER PLOTTERS
- BARCO SCANNER
- EXTENDED GERBER 274X
- DPF (BARCO)
- ODB++
- HPGL
- DXF
- DWG
- EAGLE
- PROTEL
- ORCAD
- TANGO

WORKED MATERIALS

- FR4
- BT
- POLYMIDE
- TEFLON (PTFE)
- DUROID
- HIGH TG MAT.
- CERAMIC
- THERMAL CLAD
- KAPTON
- MYLAR
- PET
- PEN

FINAL PROTECTIONS

- FOTOGRAPHIC SOLDER
- SERIGRAPHIC SOLDER
- SPECIAL SOLDER FOR FLEX
- VIAS FILLED
- COMPONENT SILKSCREEN
- INK JET LEGEND
- PEELABLE
- KAPTON COVER LAYER

SURFACE FINISHINGS

- IMMERSION GOLD
- ELECTROLITIC GOLD
- GOLD BOND
- H.A.L.
- TIN LEAD
- PASSIVATED COPPER
- IMMERSION TIN
- IMMERSION SILVER
- GRAPHITE

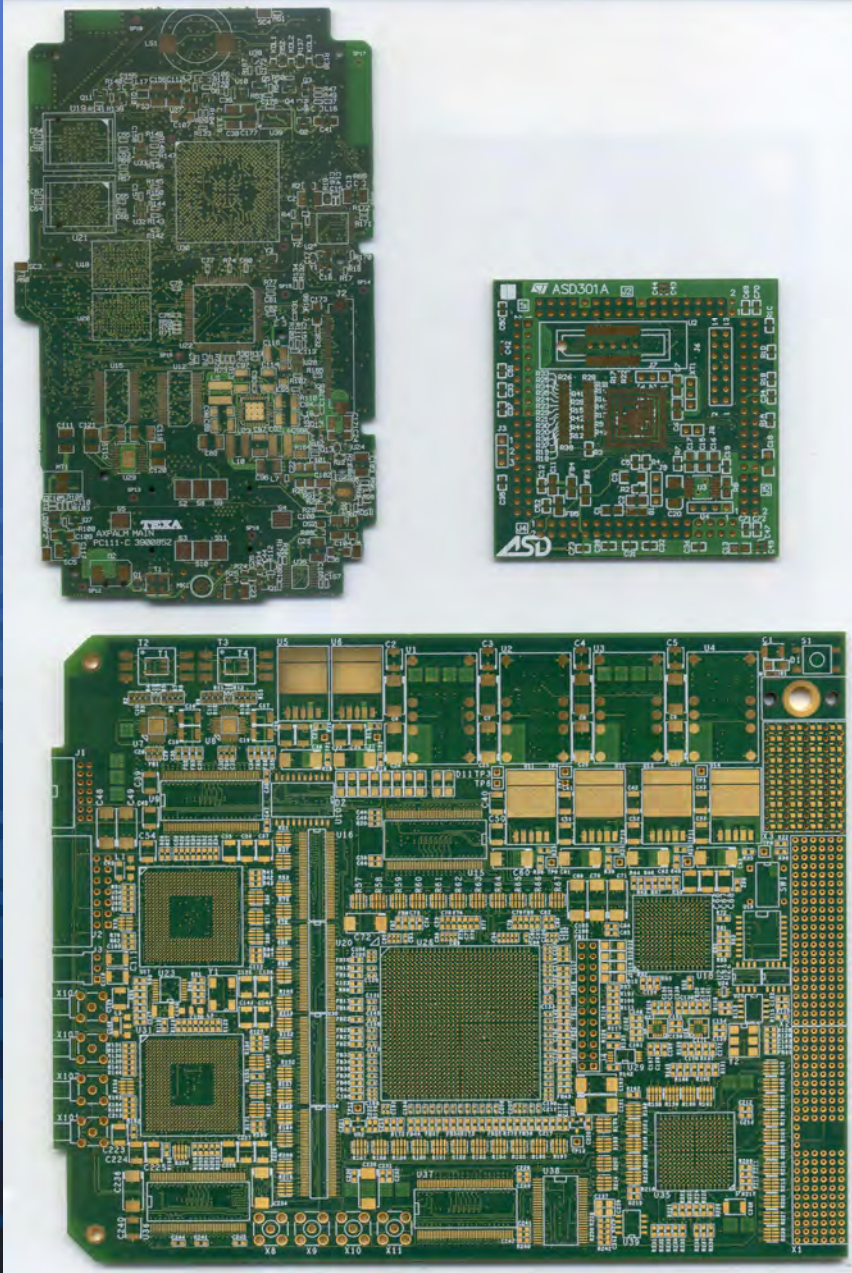
MECHANICAL FINISHING

- MILLING
- SCORING
- PUNCHING
- SOFT PUNCHING FOR FLEX

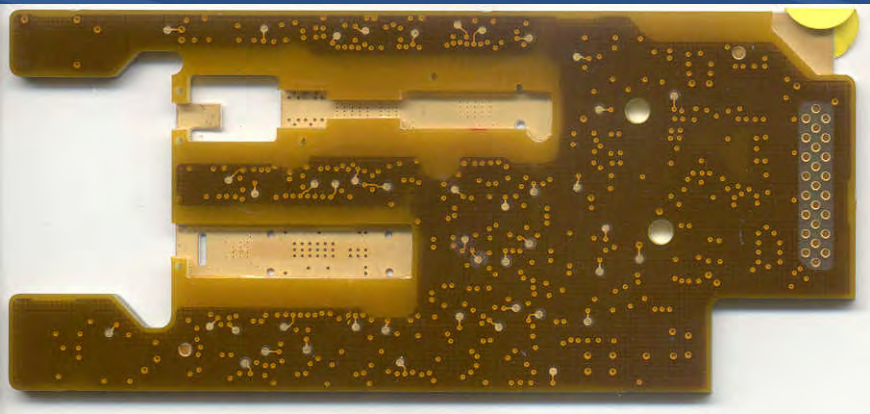
SUPPLIERS

- MAS
- KL LAMINATES
- ARLON
- NELCO
- POLYCLAD
- TACONIC
- DUPONT
- ROGERS
- ITEQ
- VON ROLL ISOLA
- KREMPEL
- ALPHAMETALS
- ALFACHIMICI
- CIMATEC
- COATES
- ELGA
- ENTHONE OMI
- MAC DERMID
- SHIPLEY
- SIRPI
- UNION TOOL
- ATOTECH

PRODUCTS MULTILAYERS



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[illegible]

0,1 mm track - 0,1 mm isolation - 0,1 mm holes

Layer	Material	Thickness (mm)
1	Cu	0.035
2	PREPREG	0.066
3	Cu	0.035
4	PREPREG	0.066
5	Cu	0.035
6	PREPREG	0.066
7	Cu	0.035
8	PREPREG	0.066
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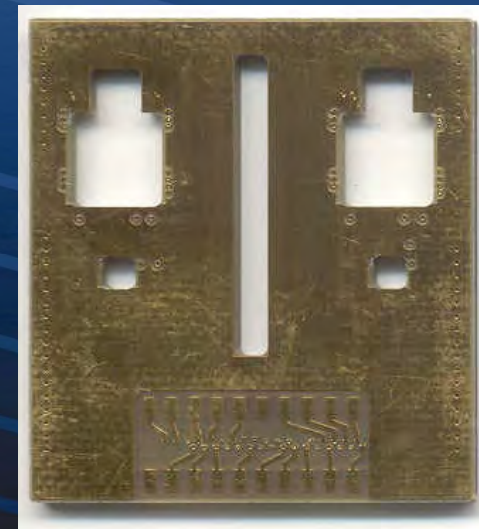
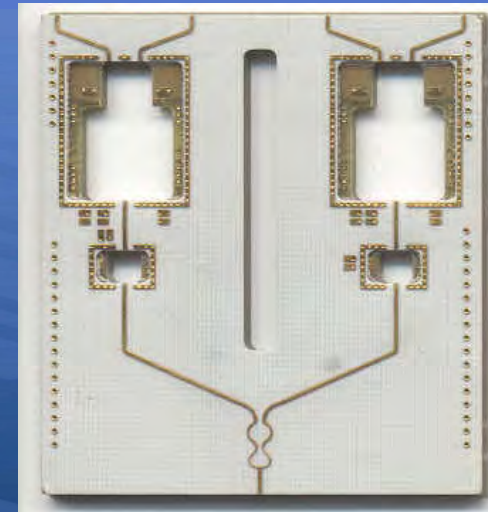
10 Layers ROGER 4350 + FR4

0,2 mm track - 0,13 mm isolation - 0,2 mm holes

Cu galv.	35u	0,035
1 Cu	35u	0,035
INNER	ROGER 4350	0,17
2 Cu	35u	0,035
Cu galv.	35u	0,035
PREPREG	1080	0,066
PREPREG	1080	0,066
PREPREG	1080	0,066
Cu galv.	35u	0,035
3 Cu	35u	0,035
INNER	FR4	0,2
4 Cu	35u	0,035
PREPREG	2116	0,105
PREPREG	2116	0,105
5 Cu	35u	0,035
INNER	FR4	0,2
6 Cu	35u	0,035
PREPREG	2116	0,105
PREPREG	2116	0,105
7 Cu	35u	0,035
INNER	FR4	0,2
8 Cu	35u	0,035
PREPREG	2116	0,105
PREPREG	2116	0,105
9 Cu	35u	0,035
INNER	FR4	0,2
10 Cu	35u	0,035
Cu galv.	35u	0,035

Total thickness: 2,3

PRODUCTS



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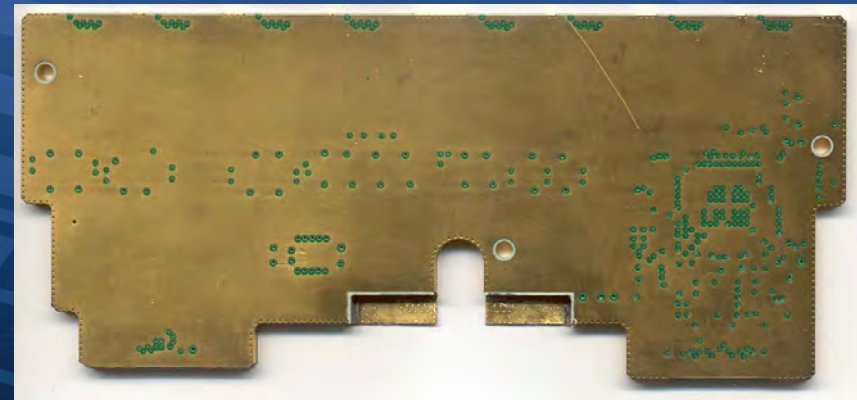
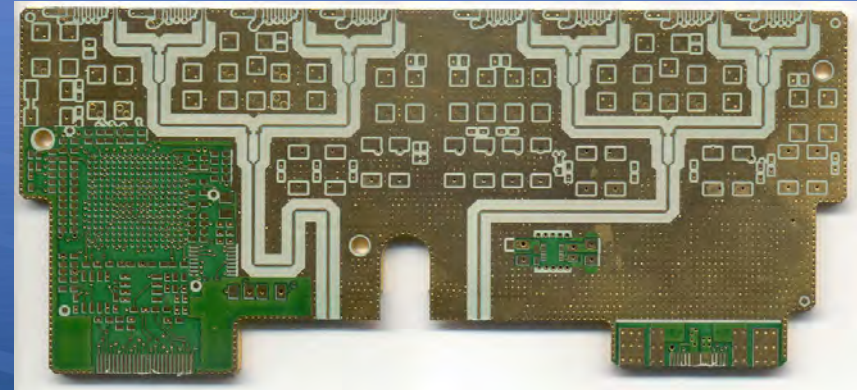
PRODUCTS

14 Layers ROGER 4350 + FR4

0,15 mm track - 0,13 mm isolation - 0,2 mm holes

Cu/glw	25u	0.005
1 Cu	17u	0.017
INNER	ROGER 4350	0.25
2 Cu	17u	0.017
Cu/glw	25u	0.005
PREPREG	1080	0.066
PREPREG	1080	0.066
PREPREG	1080	0.066
3 Cu	105u	0.105
INNER	FR4	0.1
4 Cu	105u	0.105
Cu/glw	25u	0.005
PREPREG	1080	0.066
PREPREG	1080	0.066
PREPREG	1080	0.066
5 Cu	17u	0.017
INNER	FR4	0.1
6 Cu	17u	0.017
PREPREG	1080	0.066
PREPREG	1080	0.066
PREPREG	1080	0.066
7 Cu	17u	0.017
INNER	FR4	0.1
8 Cu	17u	0.017
PREPREG	1080	0.066
PREPREG	1080	0.066
PREPREG	1080	0.066
9 Cu	17u	0.017
INNER	FR4	0.1
10 Cu	17u	0.017
PREPREG	1080	0.066
PREPREG	1080	0.066
PREPREG	1080	0.066
11 Cu	105u	0.105
INNER	FR4	0.1
12 Cu	105u	0.105
Cu/glw	25u	0.005
PREPREG	1080	0.066
PREPREG	1080	0.066
PREPREG	1080	0.066
13 Cu	17u	0.017
INNER	ROGER 4350	0.25
14 Cu	17u	0.017
Cu/glw	25u	0.005

Total thickness: 2,8



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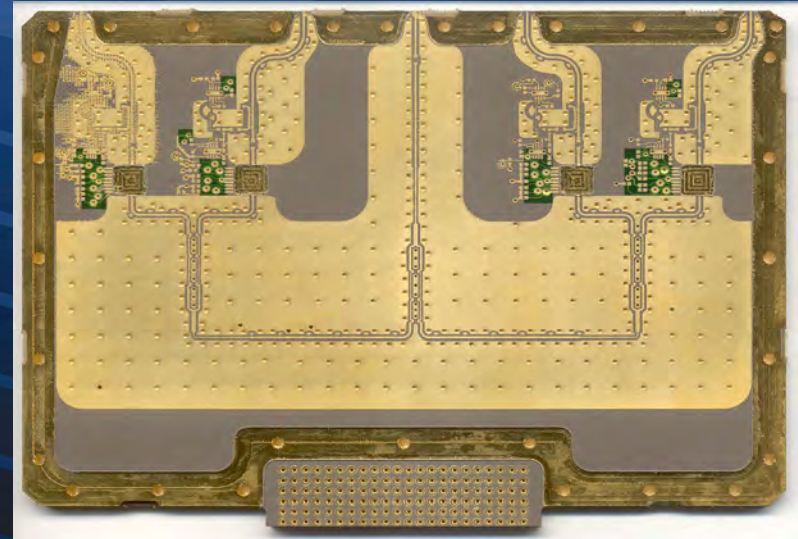
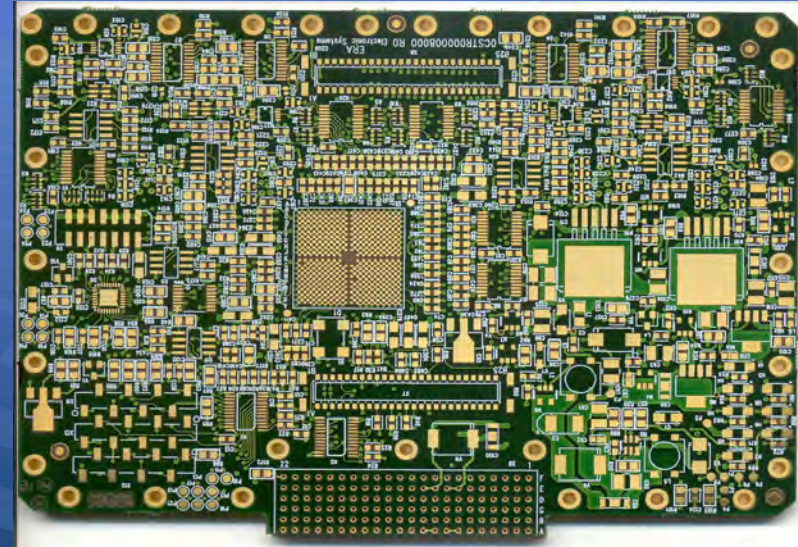
10 Layers TACONIC RF35P + FR4 (PLUGGED VIAS)

0,1 mm track - 0,08 mm isolation - 0,3 mm holes

Cu golv.	35u	0,035
1 Cu	9u	0,09
PREPREG	1080	0,066
PREPREG	2116	0,105
2 Cu	35u	0,035
INNER FR4		0,2
3 Cu	35u	0,035
PREPREG	1080	0,066
PREPREG	1080	0,066
PREPREG	1080	0,066
4 Cu	35u	0,035
INNER FR4		0,2
5 Cu	35u	0,035
PREPREG	1080	0,066
PREPREG	1080	0,066
PREPREG	1080	0,066
6 Cu	35u	0,035
INNER FR4		0,2
7 Cu	35u	0,035
PREPREG	2116	0,105
PREPREG	1080	0,066
8 Cu	17u	0,017
Cu golv.	35u	0,035
PREPREG	1080	0,066
PREPREG	1080	0,066
INNER FR4		0,25
PREPREG	1080	0,066
PREPREG	1080	0,066
9 Cu	1mm	1
Adhesive		0,025
INNER TACONIC RF 35P		0,2
10 Cu	35u	0,035
Cu golv.	35u	0,035

Total thickness: 3,5

PRODUCTS



Tecnomec

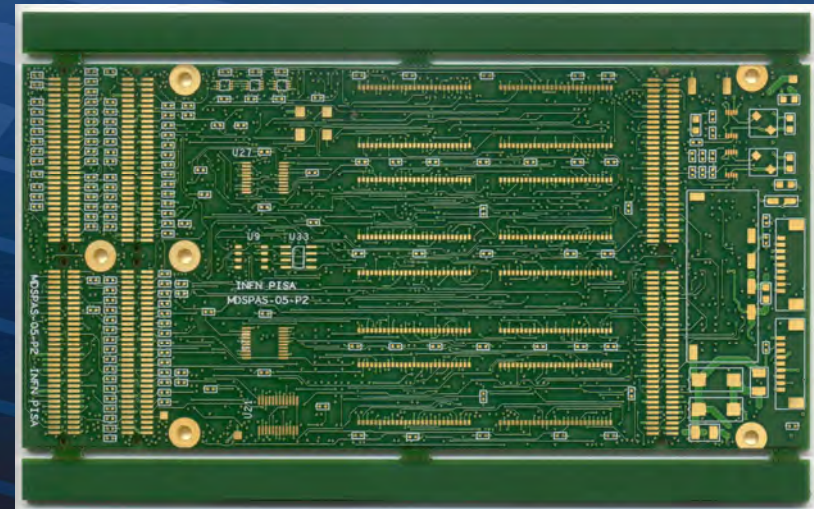
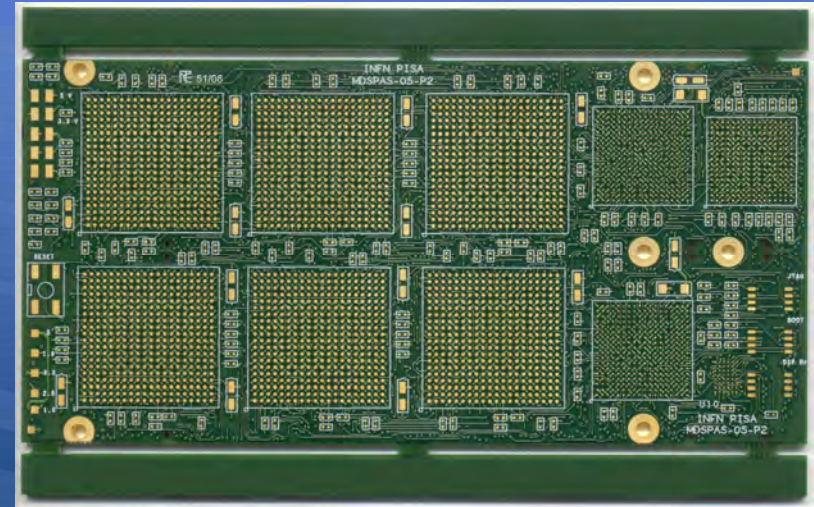
16 Layers FR4

0,12 mm track - 0,12 mm isolation - 0,2 mm holes - 2,2 mm thickness

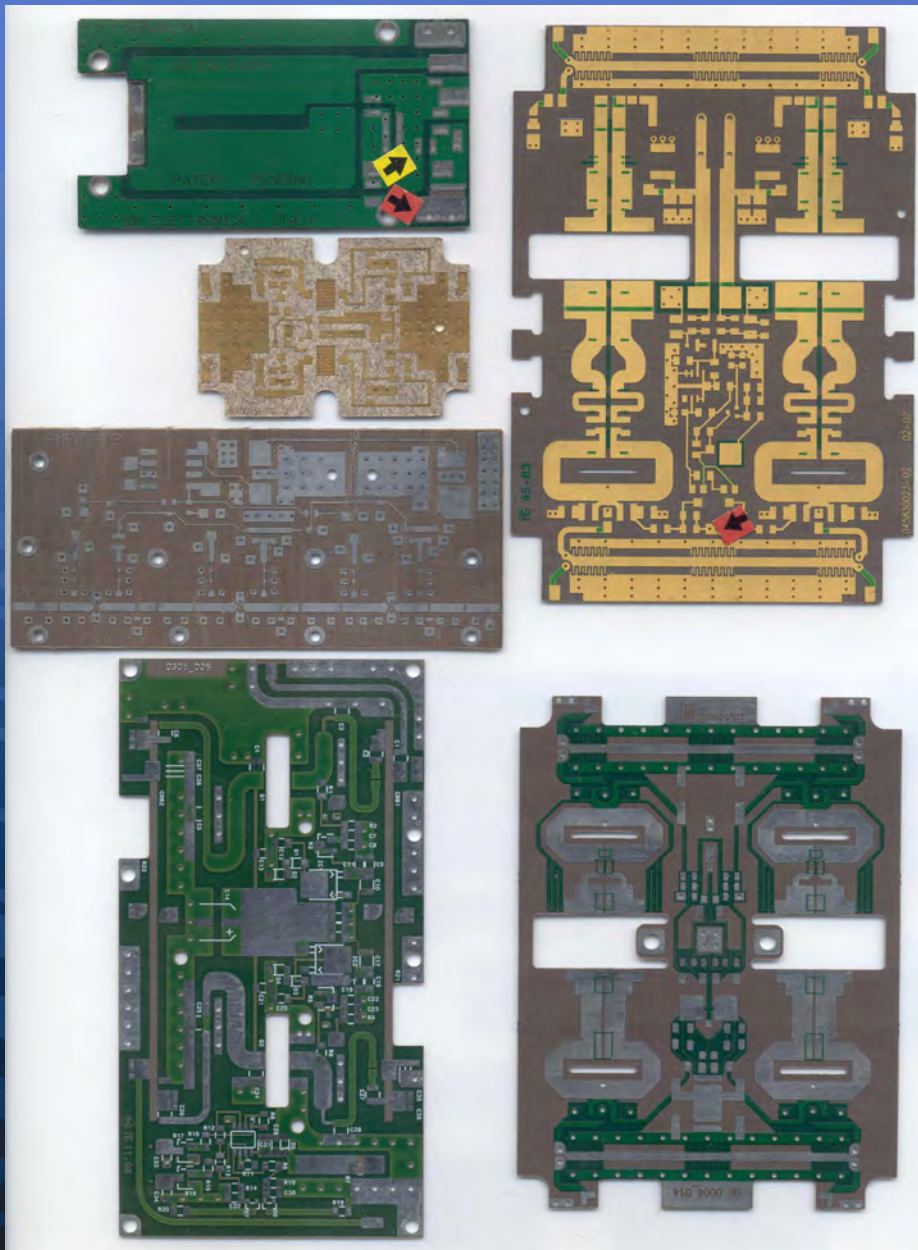
Cu galv.	25u	0.025
Cu galv.	25u	0.025
Cu galv.	25u	0.025
1 Cu	5u	0.005
INNER	FR4	0.100
2 Cu	17u	0.017
Cu galv.	35u	0.035
PREPREG	2116	0.105
3 Cu	35u	0.035
INNER	FR4	0.1
4 Cu	17u	0.017
Cu galv.	35u	0.035
PREPREG	2116	0.105
Cu galv.	35u	0.035
5 Cu	17u	0.017
INNER	FR4	0.1
6 Cu	35u	0.035
PREPREG	2116	0.105
Cu galv.	35u	0.035
7 Cu	35u	0.035
INNER	FR4	0.1
8 Cu	17u	0.017
Cu galv.	35u	0.035
PREPREG	2116	0.105
Cu galv.	35u	0.035
9 Cu	17u	0.017
INNER	FR4	0.1
10 Cu	35u	0.035
PREPREG	2116	0.105
11 Cu	35u	0.035
INNER	FR4	0.1
12 Cu	17u	0.017
Cu galv.	35u	0.035
PREPREG	2116	0.105
Cu galv.	35u	0.035
13 Cu	17u	0.017
INNER	FR4	0.1
14 Cu	35u	0.035
PREPREG	2116	0.105
Cu galv.	35u	0.035
15 Cu	17u	0.017
INNER	FR4	0.1
16 Cu	5u	0.005
Cu galv.	25u	0.025
Cu galv.	25u	0.025
Cu galv.	25u	0.025

spessore totale 2,271

PRODUCTS

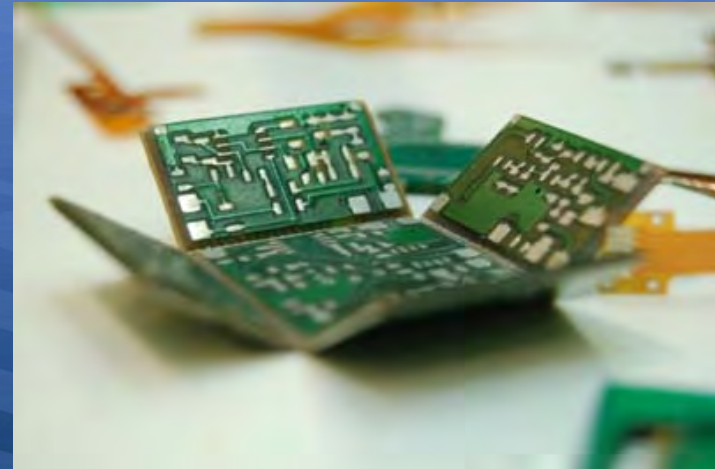
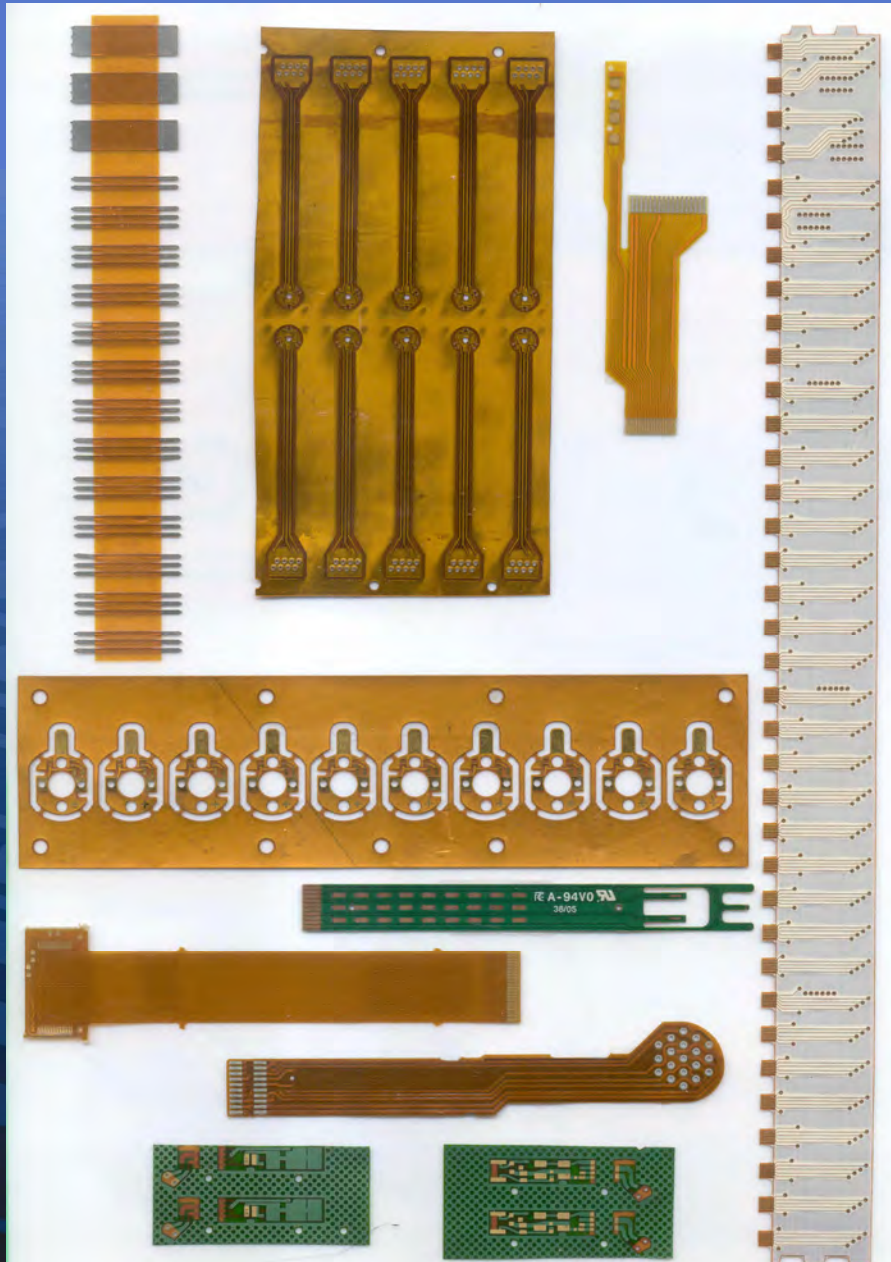


PRODUCTS TEFLON



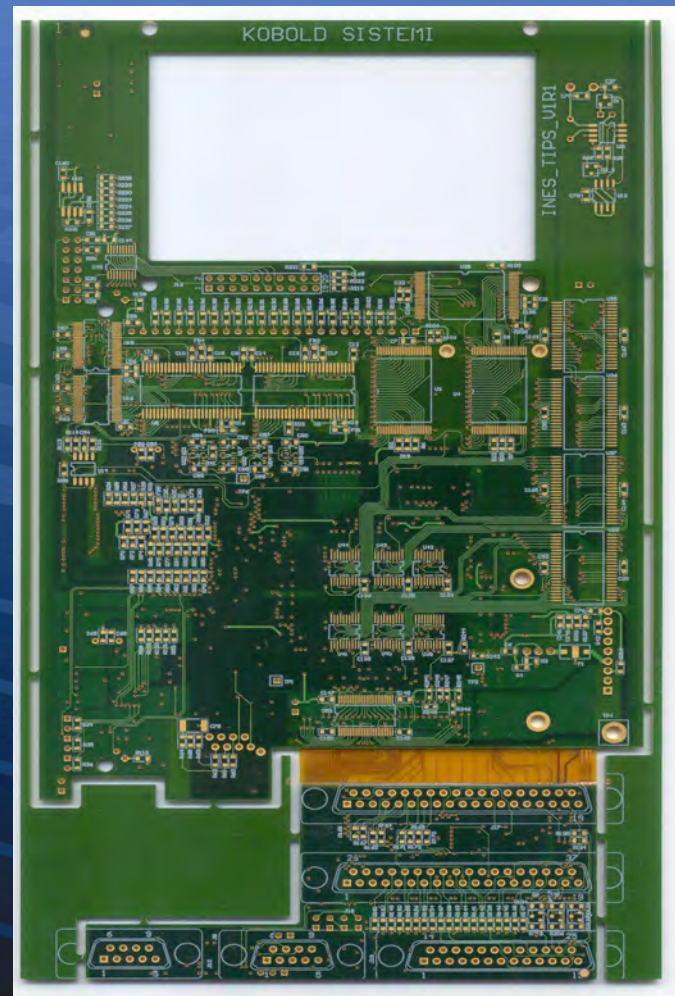
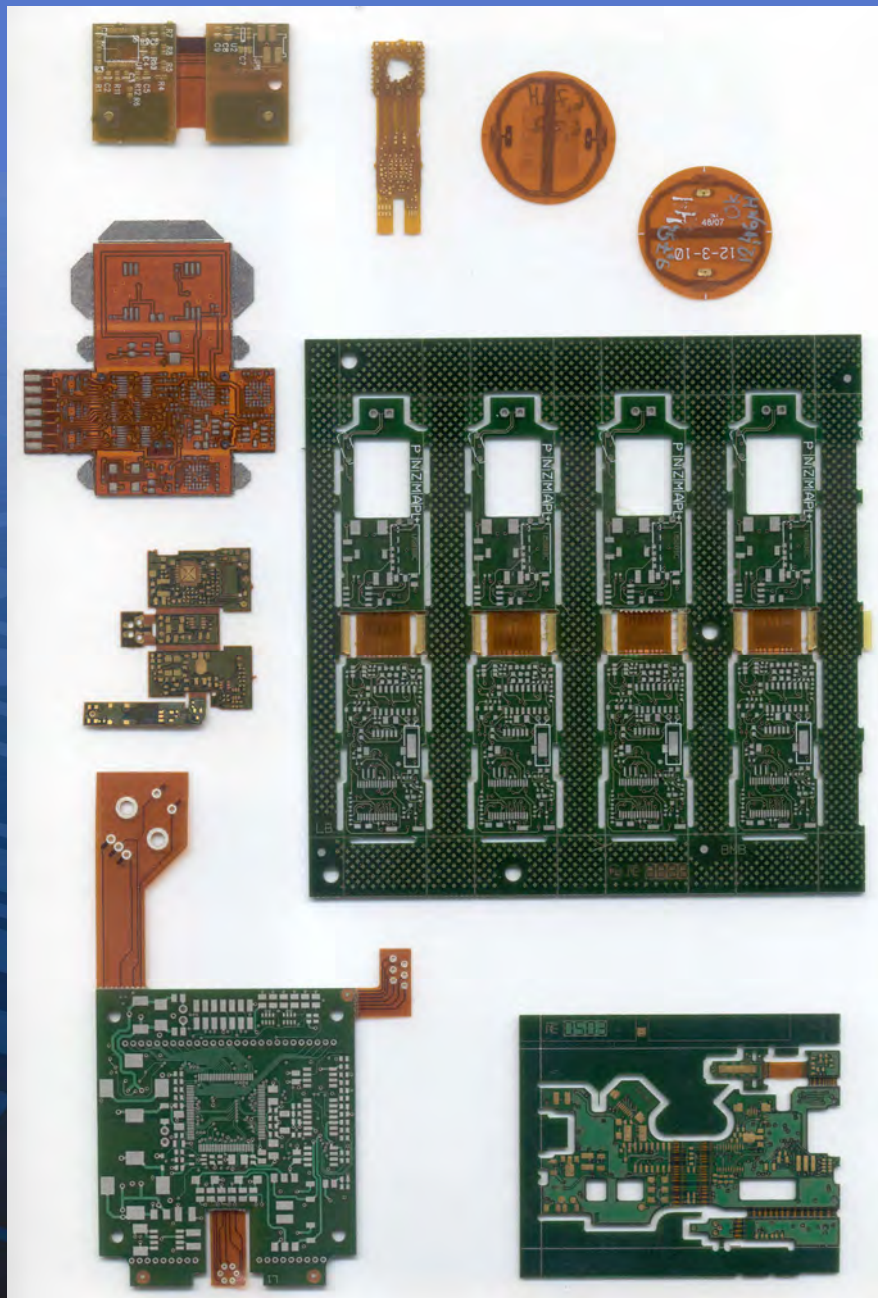
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PRODUCTS FLEX



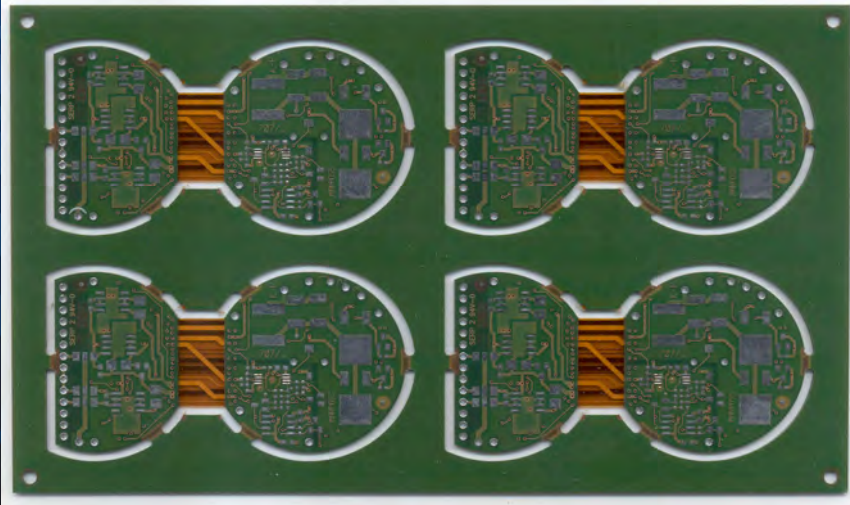
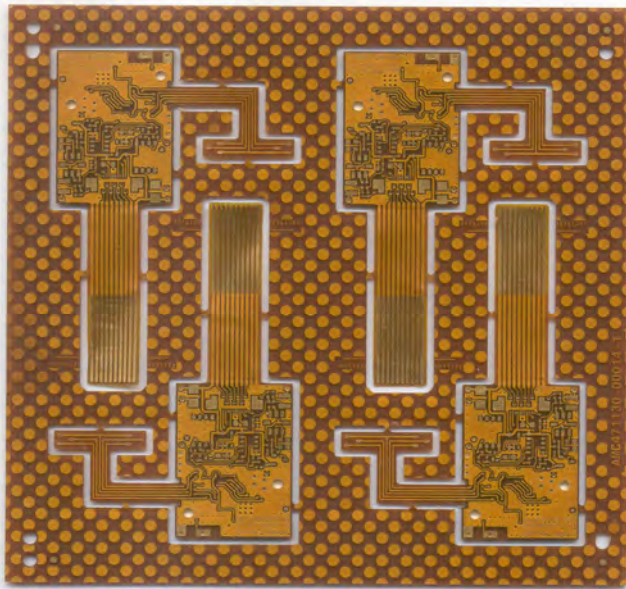
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PRODUCTS RIGID-FLEX



Tecnomec

PRODUCTS RIGID-FLEX



Tecnomec

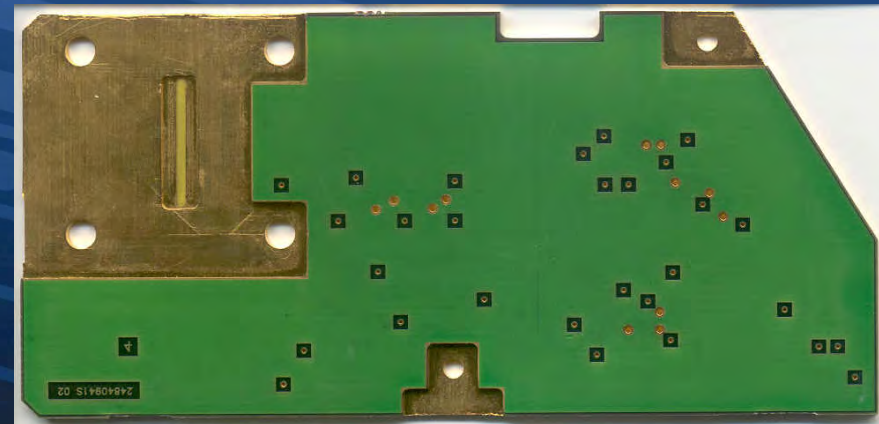
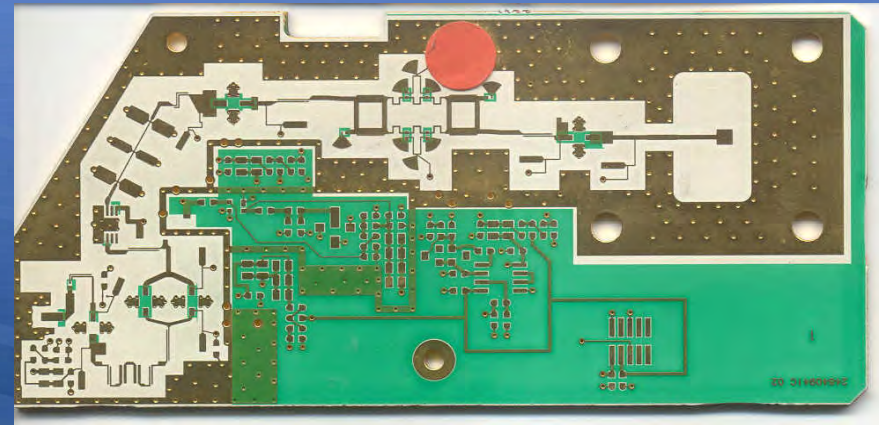
PRODUCTS METAL CORE

4 Layers ROGER 4450B + FR4 + 2 mm CUPPER CORE

0,2 mm track - 0,097 mm isolation - 0,3 mm holes

Cu galv.	350	0,035
1 Cu	9u	0,09
ROGER	RO4450B	0,1
ROGER	RO4450B	0,1
ROGER	RO4450B	0,1
2 Cu 2mm 2		
EPOXY RESIN		
EPOXY RESIN		
PREPREG	7628	0,18
PREPREG	7628	0,18
3 Cu	35u	0,035
INNER	FR4	0,4
4 Cu	35u	0,035
Cu galv.	35u	0,035

Total thickness: 3,3



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INSULATED METAL SUBSTRATE (IMS)

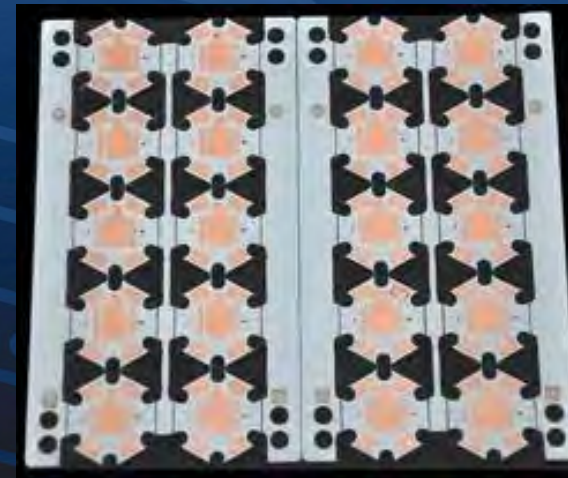
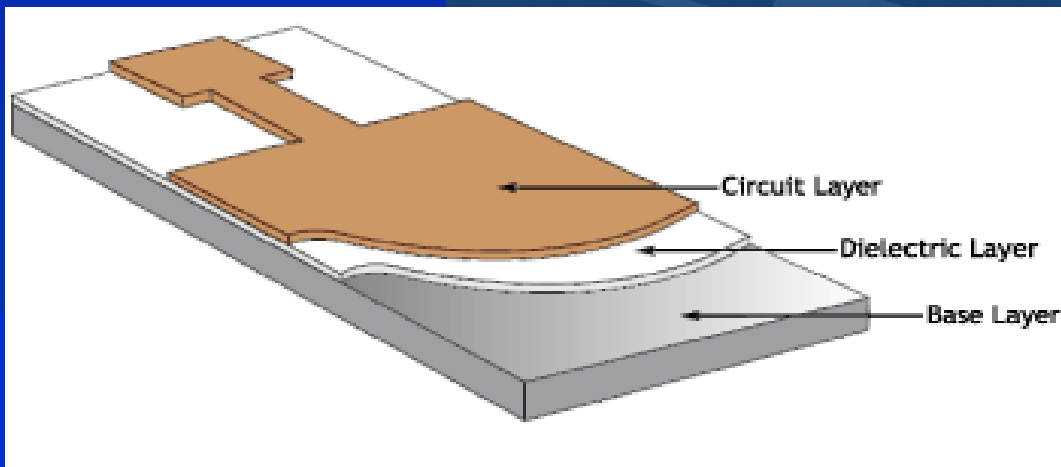
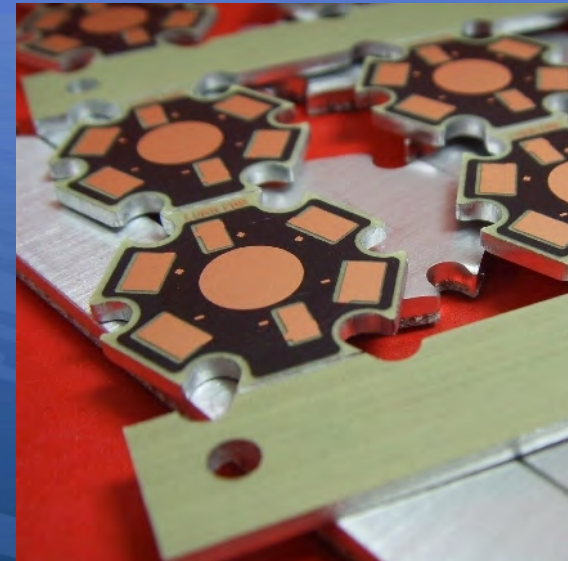
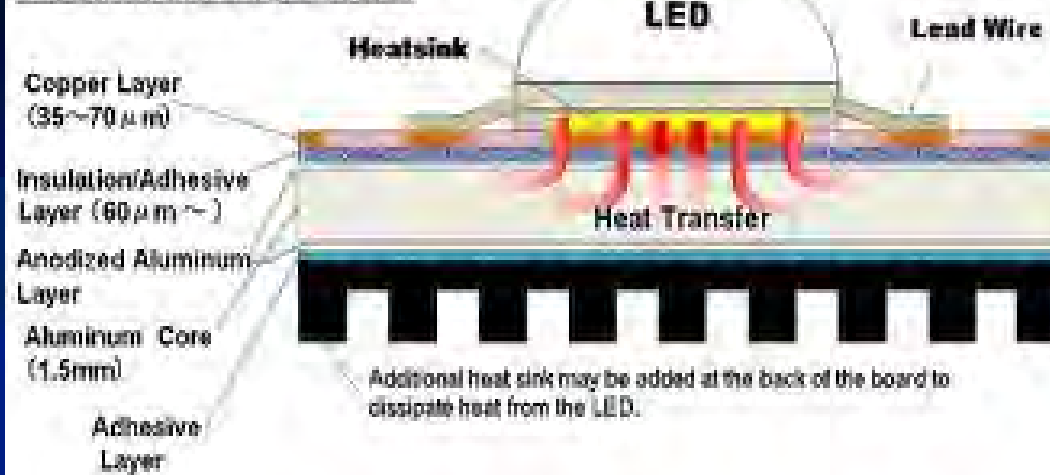
BASE MATERIALS

- Bergquist Thermal Clad
- Aismalibar Cobritherm
- Laird Tlam
- DBC (Direct Bonded Copper)
 - Allumina (Al_2O_3)
 - Nitruro di Alluminio (AlN)
- Hard Alluminium & High cond. Epoxy (made by Tecnomec)

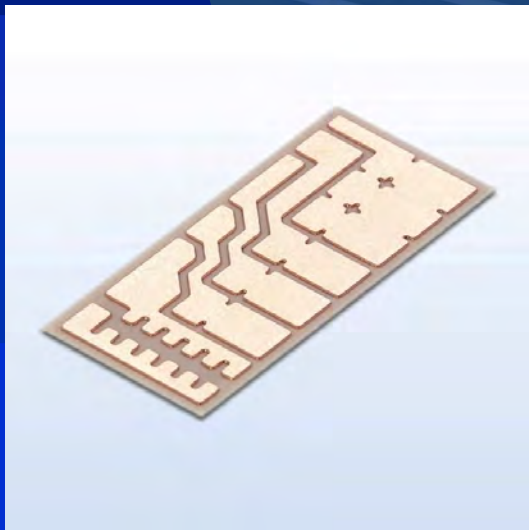
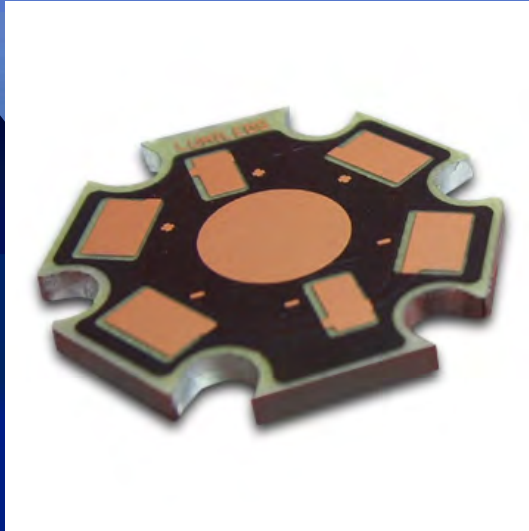
Thermal conductivity: 1.1 - 2.2 W/m $^\circ$ K

METAL BACK

Cross-Section View of
Aluminum Core PCB with LED



METAL BACK



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WHERE WE ARE IN ITALY...

The background of the slide features a blue gradient that transitions from a lighter blue at the top to a darker blue at the bottom. Overlaid on this gradient are faint, stylized circuit board patterns in a slightly lighter shade of blue, creating a technical and digital aesthetic.

PRODUCTION...

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ENGINEERING-LASERPLOTTER



Tecnomec

DRILLING-MILLING



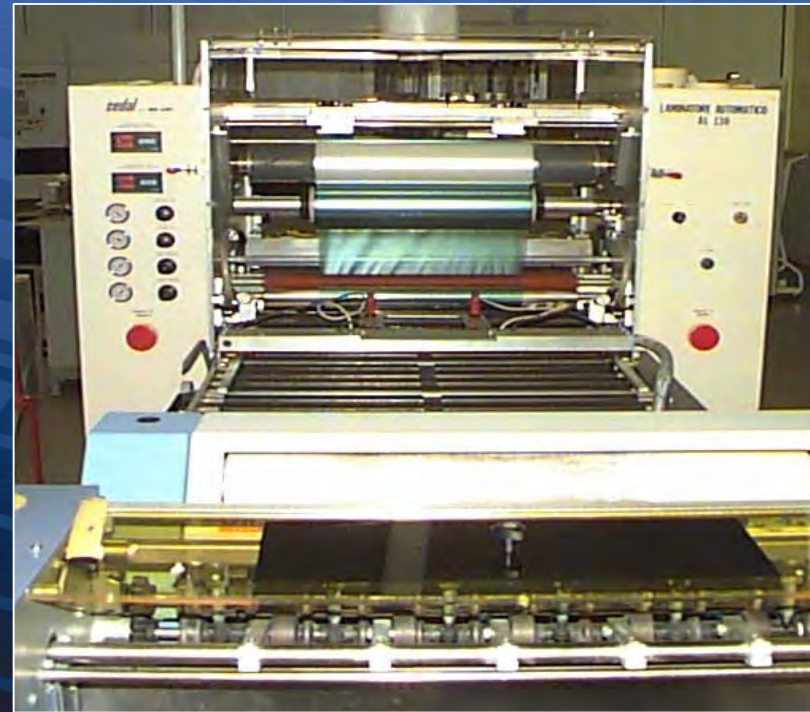
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PLASMA DESMEARING & DIRECT PLATING



Tecnomec

DRY FILM LAMINATION



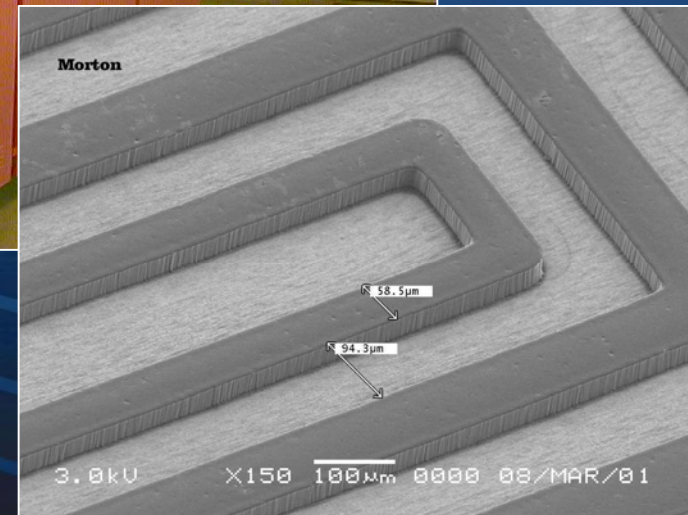
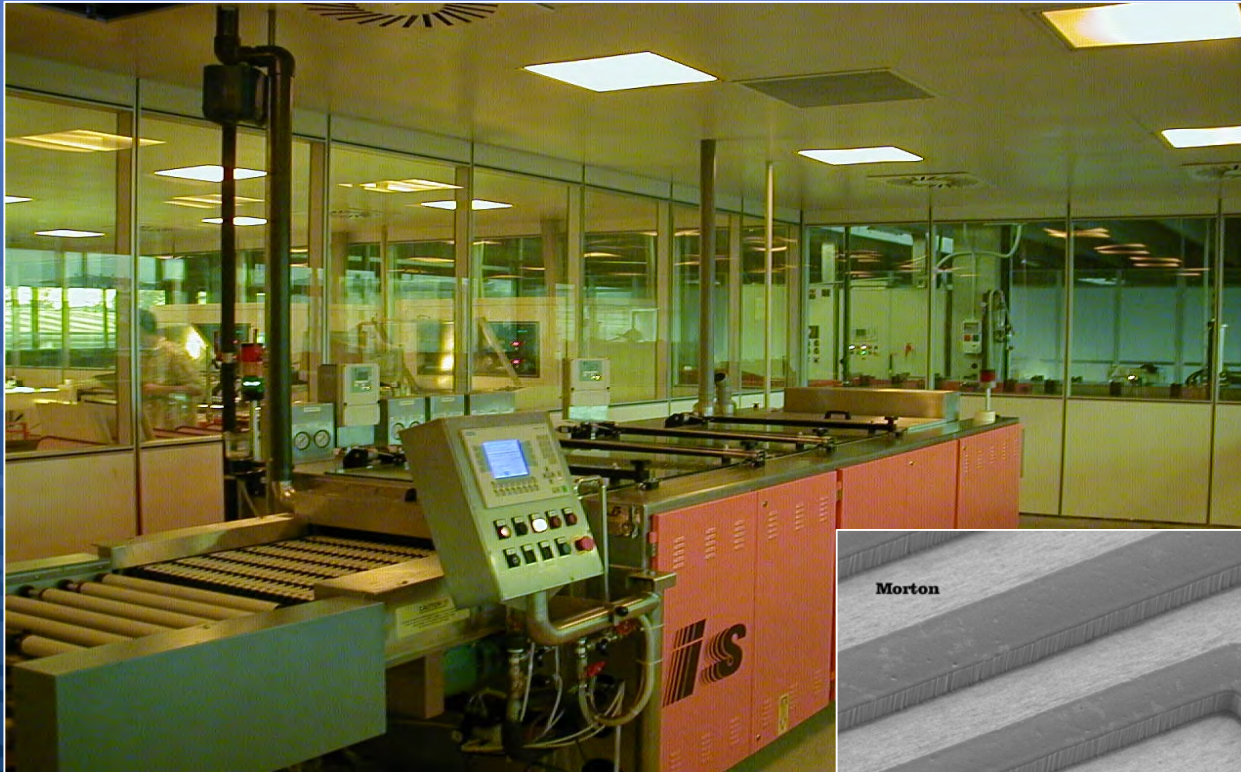
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EXPOSING-Laser Direct Imaging



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DRY FILM DEVELOPING



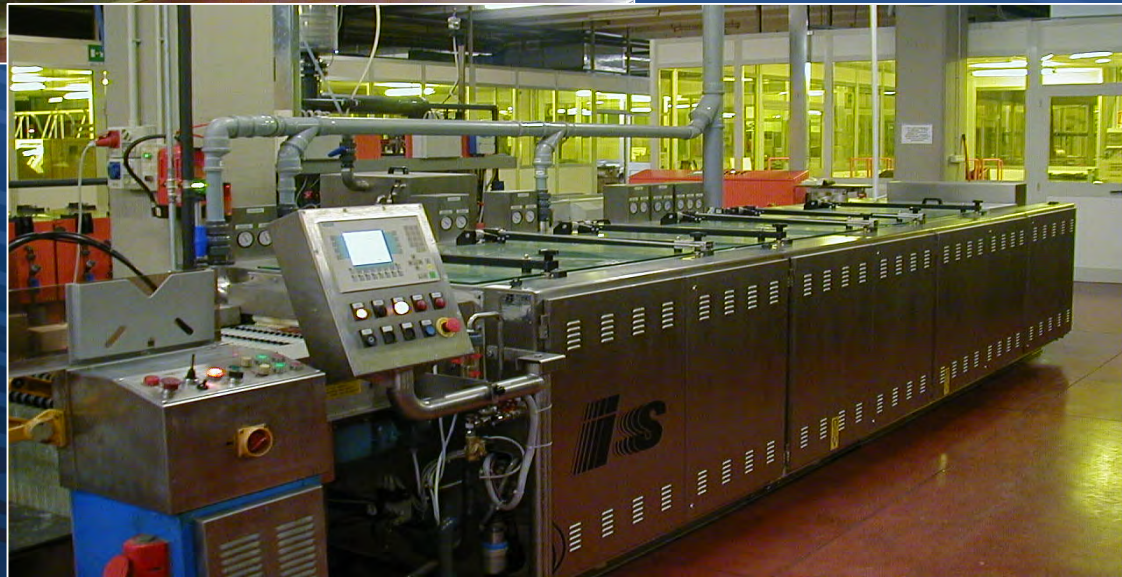
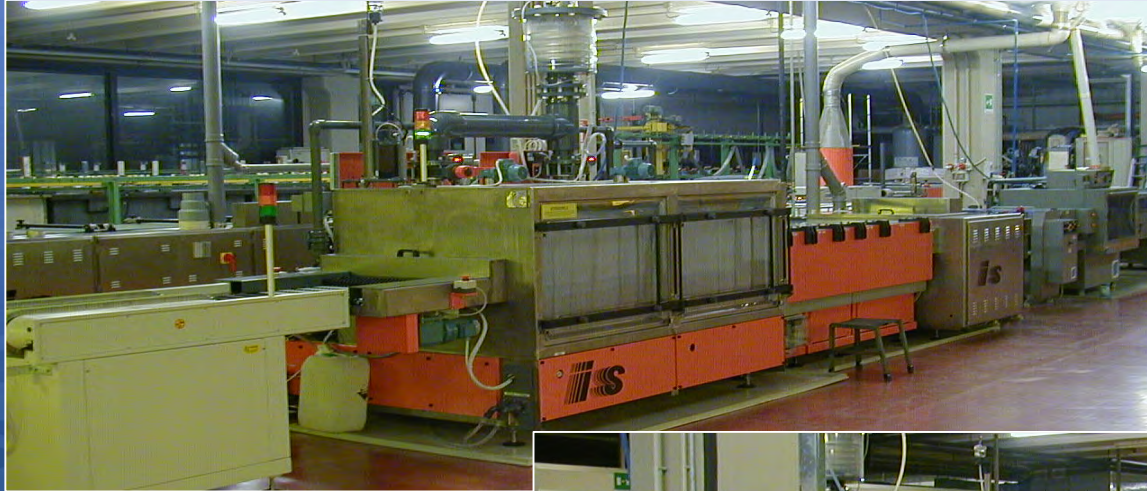
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ELECTROPLATING



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STRIPPING-ETCHING



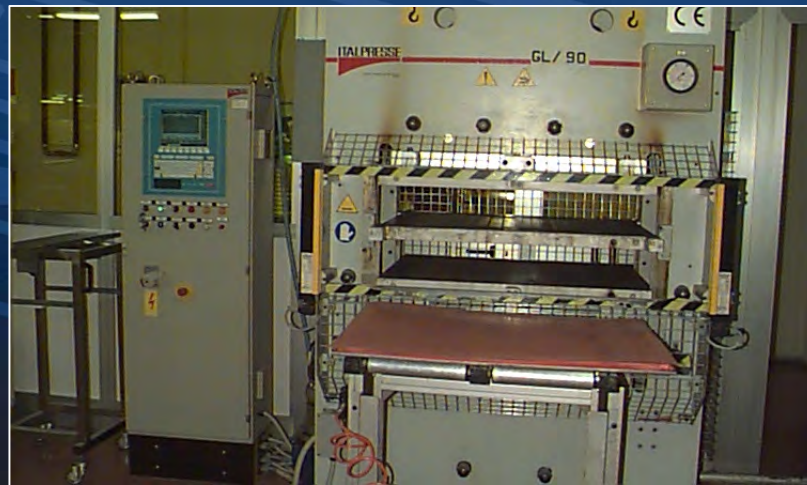
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AOI CONTROL



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MULTILAYERS PRESS



Tecnomec

SOLDER RESIST-LEGEND



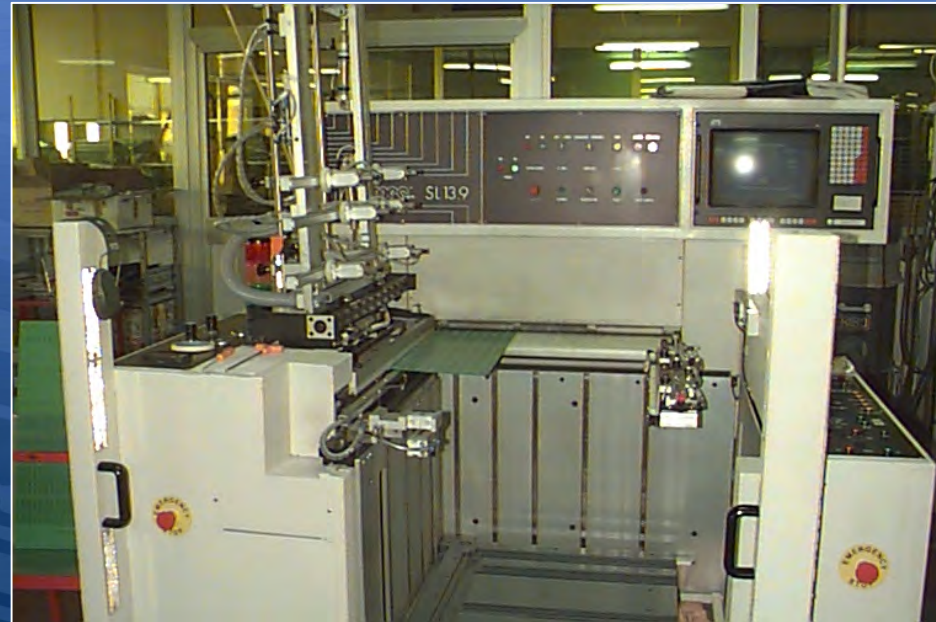
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SURFACE FINISHING



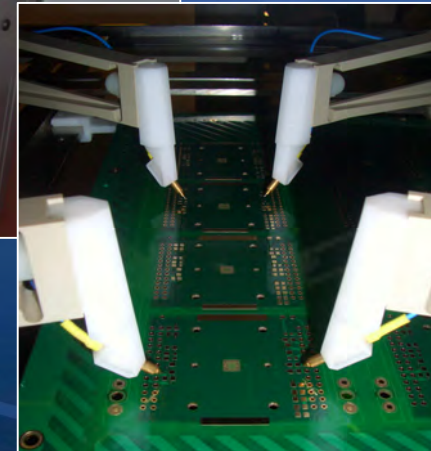
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CNC SCORING



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ELECTRICAL TEST

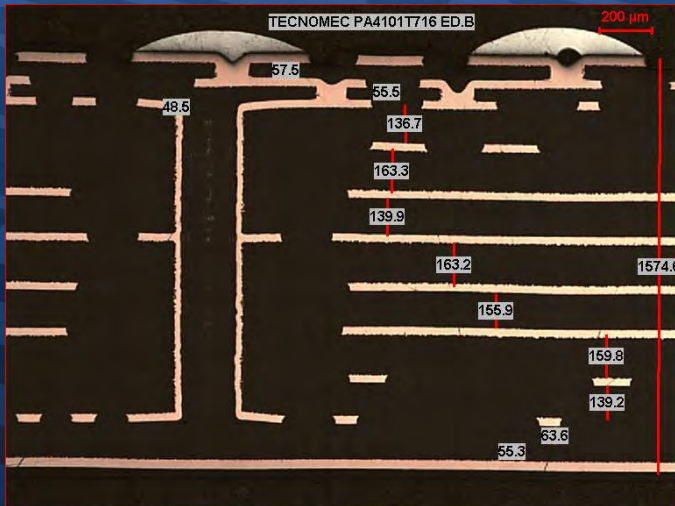


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ANALYSIS

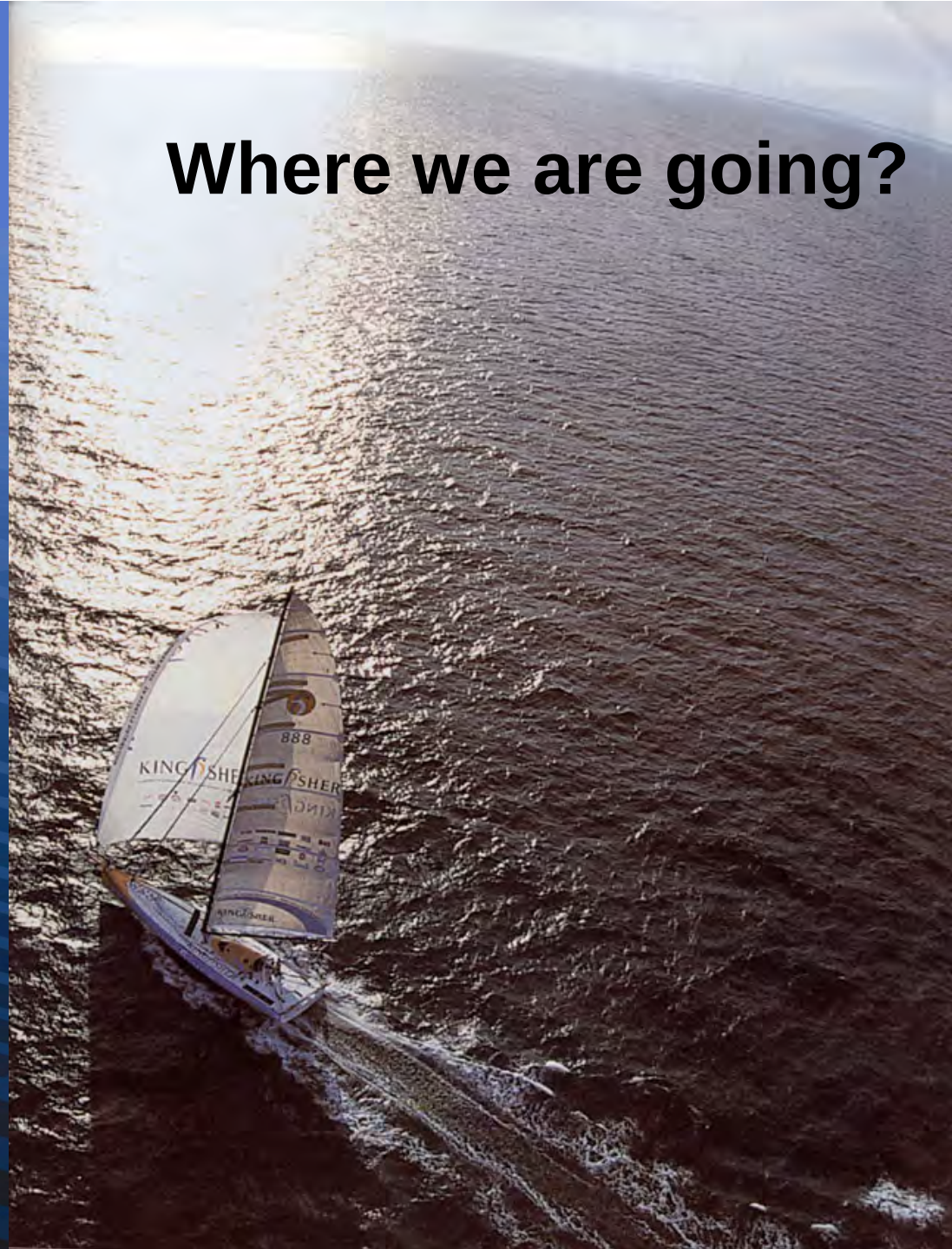


- MICROSCOPE WITH CAMERA
- SPETTROFOTOMETER
- ATOMIC ABSORPTION
- METALLOGRAFIC ANALYSIS
- CHEMICAL ANALYSIS
- METALLIC THICKNESS AND HOLE MEASUREMENTS
- THERMAL STRESS
- FISCHER X-RAY
- IONIC CONTAMINATION
- CONTROL IMPEDENCE



Tecnomec

Where we are going?



Where we are going...

- Ø vias 50 μ
- Blind and buried vias
- Track-isolation of 50 μ
- 36 layers
- Special materials
- Special finishings
- Samples in 1 day
- Production in 3-5 days

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WHERE WE ARE IN ITALY...

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CIRCUITI STAMPATI PROFESSIONALI

TECNOLOGIA AVANZATA
FLESSIBILITÀ
PRODOTTO DI QUALITÀ CERTIFICATA
SERVIZIO INTEGRATO

- PRODUZIONE BILAYER E MULTILAYER
- SERVIZIO DI CAMPIONATURA IN 3 GIORNI
- INGEGNERIZZAZIONE CAE-CAD-CAM, LASER PLOTTER
- MICROFORATURA CON FORI CIECHI E INTERRATI
- VERY FINE LINES
- LAVORAZIONE MATERIALI SPECIALI: BT, POLYIMIDE, TEFLON, 45N, 85N, ...
- H.A.L., Ni-Au CHIMICO, SPELLICOLABILE
- TEST ELETTRICO, OMOLOGAZIONE UL



VIA MELARO, 11 - 36041 ALTE DI MONTECCHIO M. - (VICENZA) - TEL. 0444/694333 r.a. - FAX 0444/698322 - MODEM 694017
E-MAIL TECNOMEC @ GOLDNET.IT HTTP: // W W W. GOLDNET.IT / TECNOMEC /

TECNOMEC^{srl}
PRINTED CIRCUIT BOARDS

L & P
COMUNICAZIONE

2 LAYERS IN 1-3 DAYS

MULTILAYERS IN 3-5 DAYS

STANDARD PRODUCTION IN 2-3 WEEKS

FLEX, RIGID-FLEX, TEFLON

HIGH TG MATERIALS

FINE LINE, MICRODRILLING

ISO 9001
CSQ

ISO 14001
E-Net

UL

TECNOMEC s.r.l.

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cad@pcb-tecnomec.com - www.pcb-tecnomec.com



TECNOMEC

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