



SUMMARY

- 1. ELVIA PCB Overview
- 2. Product portfolio
- 3. MPGD detector production
- 4. Conclusion

Overview: The strengths of a European leader



- In the top 5 of the European PCB industry
- N°1 European leader for Aeronautics, Space and Defence solutions
- 600 employees
- 5 manufacturing locations
- Established since 1976

- Expertise across all technologies
- End-to-end in-house manufacturing solutions
- All PCB technologies available
- Innovation for industrialization * through our own engineering team

- Global customer base
- World ranking OEMs and EMS
- Companies from aerospace, defence, automotive and other sectors
- Development of efficient and innovative service models for our customers



Our industrial organisation: 5 main plants

Nadcap -

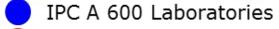
- Elvia PCB main plant (HQ) Coutances (205 people)
 - Medium to large series
 - Aerospace, Military, Medical, Telecom, Automotive and Industrial
- **Elvia A&P Lithos plant Chateaubourg (105 people)**
 - Small to medium series
 - Military Aerospace



the solution

- **CQCI** Laboratories
 - Lannion & Toulouse





Main manufacturing sites



- Medium to large series
- Automotive & Telecom



TS16949

Elvia Ciretec plant Saint Ay (95 people)

- Small to medium series
- Military Aerospace



Elvia Plantin plant Saint Benoit (56 people)

- Small to medium series
- General industry



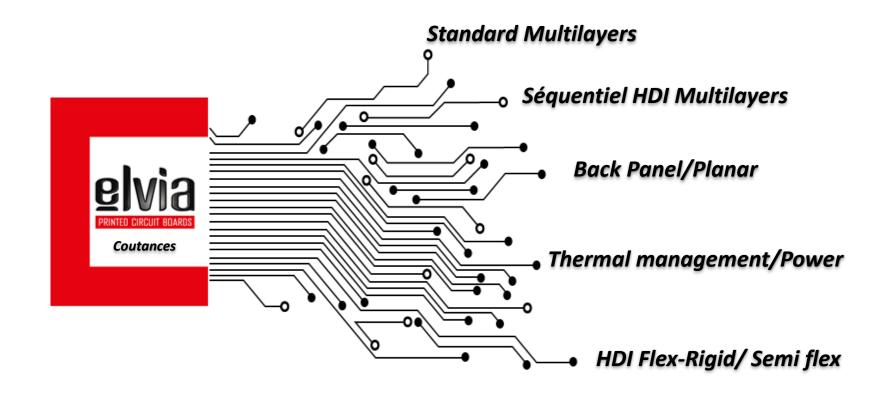
Our Markets: A winning diversification





Technology solutions for PCB's in Europe

Driver Coutances





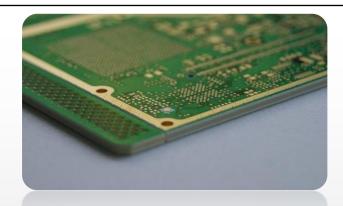
Technology solutions for PCB's in Europe *Mix Material*

Type Technology Application



HDI Multilayers

Mix material



Mix material: RF/FR4 Htg

RF: Megtron 6 (Panasonic)

4000 series (Rogers) NY series (Neltec)

Meteorwave series (Neltec)

Polyimide: Arlon, N7000 series

Flex Kapton (Pyralux)

HTg R1755V (Panasonic)

EM827 (EMC) VT 47 (Ventec) Aeronautics



Defense



Automotive



TIC

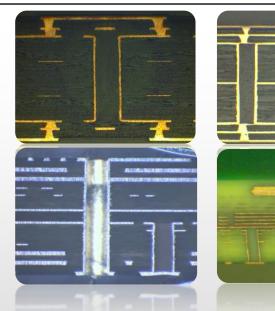


Technology solutions for PCB's in Europe *Sequential Build Up*

Type Technology Application

HDI Multilayers

Sequential Build Up (SBU)



Number of layers : 2 à 32 μvia layers: 1 to 3

Pitch BGA: 0,8 à 0,5 mm
Stack-up: sequential and //
Thickness: Jusqu'à 4,5
Material: HTg et Low CTE



Defense



Automotive



Medical



TIC



Technology solutions for PCB's in Europe

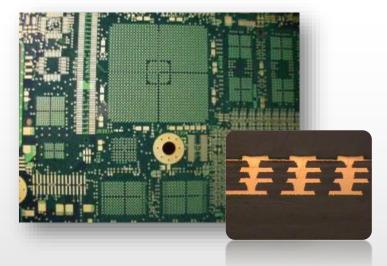
HDI Multilayers (µvia Inpad)

Type Technology Application

HDI Multilayers

μνία Filling (In Pad)

3 levels



Number of layers: 18 layers

Metallic finishes: ENEPIG

Impedance: ± 10%

Pitch BGA: 0,8 mm

Ø μνία: 120 μm

Soldermask : Probimer 77/Tayio CC01

Thickness: 2,4 mm
Material: HTg Low CTE

Aeronautics



Defense



Médical

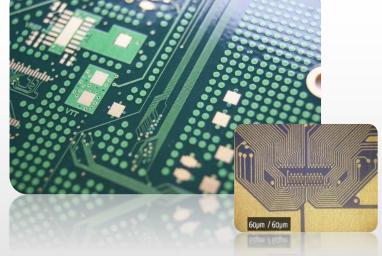






Technology solutions for PCB's in Europe *Fine Line*

Type Technology Application



HDI Multilayers
Fine Line

Track/Space Std external layers:

70 μm/90 μm

Track/Space Std inner layers:

70 μm/70 μm

Track/Space High tech external layers:

70 μm/50 μm *

Track/Space High tech inner layers:

40 μm/40 μm

Process:

Ammonium and acid etching

*μνία compatibility : In progress









Technology solutions for PCB's in Europe *HDI Flex-Rigid*

Type Technology Application

HDI Multilayers

Flex-rigid



Number of layers : 4 à 26 layers

Stack-up: Séquential 3+N+3
Pitch BGA: 0,8 à 0,5 mm

Flex: Kapton + coverlay

Material: HTg Ø through hole: 0,2 mm





Defense



Automotive



Médical



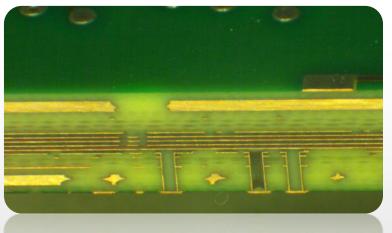


Technology solutions for PCB's in Europe *Heavy Copper*

Type Technology Application

Power management

Heavy Copper



Number of layers: 2 à 26

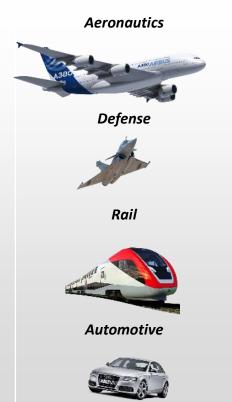
Copper thickness: 70/105/210/400 μm

Minimum Space: Cu 70 μm → 210 μm

Cu 105 μm → 210 μm

Cu 210 μm → 310 μm Cu 400 μm → 410 μm

Current density: 5 A/mm²



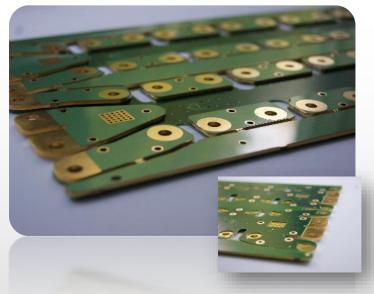


Technology solutions for PCB's in Europe *Busbar*

Type Technology Application

Power management

Busbar



Metallic finishes: ENIG

Copper thickness: 1 / 1,5 / 2 / 2,5 mm

Machining: Mechanical

Material: HTg





Defense

Aeronautics



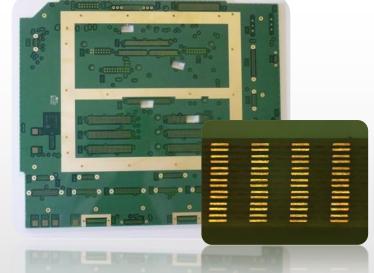
Rail





Technology solutions for PCB's in Europe *Back Panel*

Type Technology Application



Back panel

Number of layers : 24 layers Metallic finishes : ENEPIG

Dimension : 400 mm x 230 mm

Pitch BGA: 0,8 mm

Soldermask: Probimer 77

Thickness: 4,2 mm

Material: Hyper





Defense



Médical



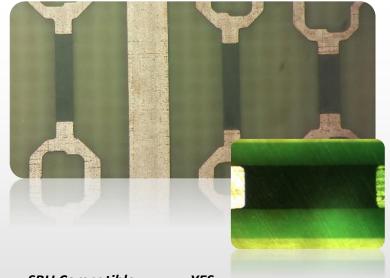


Technology solutions for PCB's in Europe Passive (embedded) resistors

Type Technology Application

HDI Multilayers

Passive (embedded) resistors



SBU Compatible : YES
Precision : ± 10 %

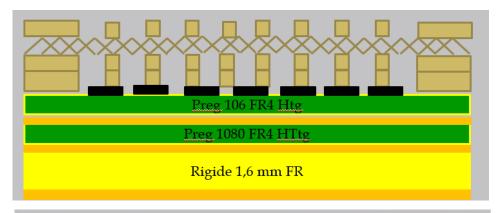
Type: Tycer, Ohméga ply



Defense



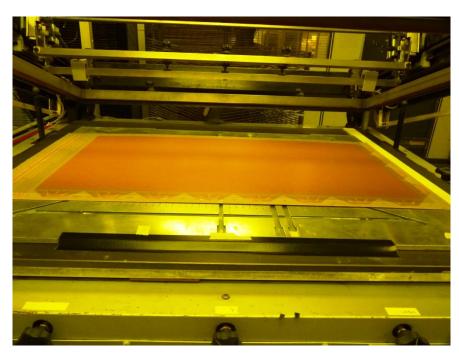
Geoazur: Geology of subsoils

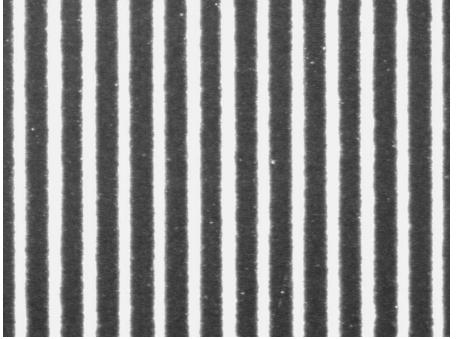




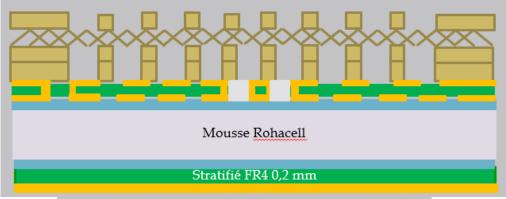
- 2400 x 500 mm
- 3 layers
- Resistive paste silkscreen
- Bulk: 3 layers of photo-imageable coverlay + 1 mesh

<u>Geoazur : Resistive paste silkscreen</u>



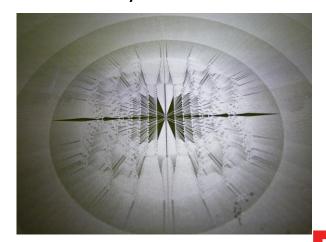


Compass: LHC experiment

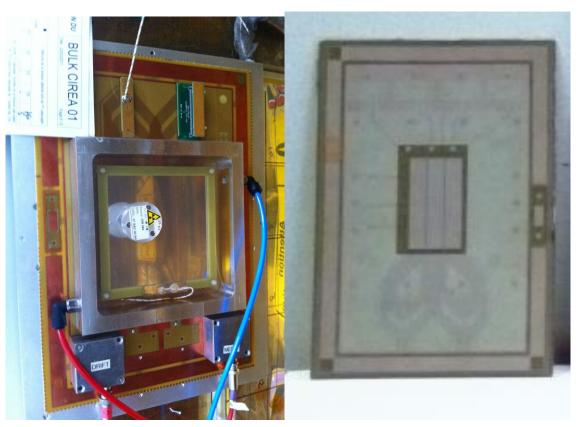




- 800 x 600 mm
- 3 layers
- Rohacell foam laminated under autoclave
- Bulk: 3 layers of photo-imageable coverlay + 1 mesh

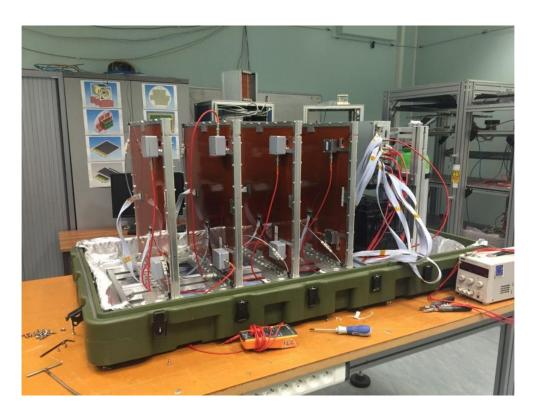


TF10:



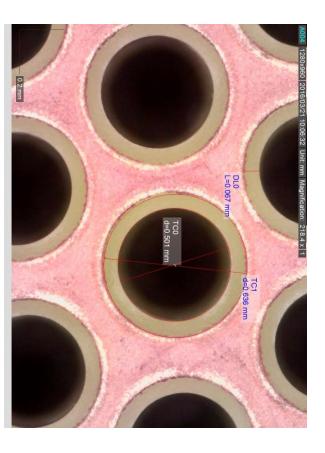
- 248 x 360 mm
- Double sided
- Bulk: 3 layers of photo-imageable coverlay + 1 mesh

MCUBE: Project Scan pyramid



- 550 x 550 mm
- 6 layers
- Burried vias + blind vias
- Kapton (resistive paste) gluing
- Silver paste screen printing
- Bulk: 3 layers of photo-imageable coverlay + 1 mesh

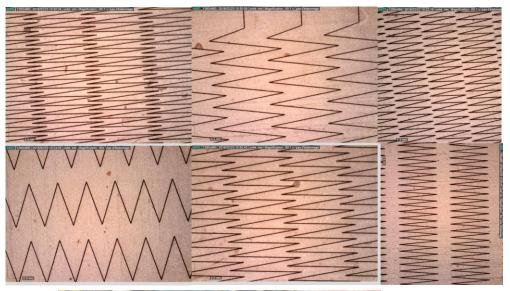
LEMWA105:





- 500 x 500 mm
- 6 layers
- Blind vias
- High NPTH density:
 - Ø 0,5 mm
 - Pitch 0,750 mm
- RIM specification

<u>Detecteurs zig-zag:</u>



CEA SACLAY

- Standard size
- 4 layers
- Zig-zag design with 20 μm spaces

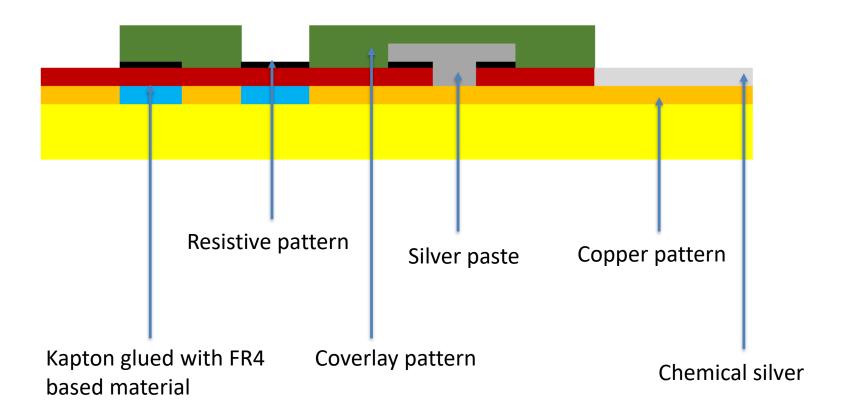
Micromegas detector: Project ATLAS NSW

- Single sided
- Track/Space : 100 μm/100 μm
- Size up to 2187 x 550 mm
- Kapton with resistive pattern
- Silverpaste screen printing
- Pillar creation : photoimageable coverlay
- Precision milling/image +/- 0,1 mm
- Chemical silver





<u>Micromegas detector : Project ATLAS</u>



Micromegas detector: Project ATLAS

High technology project → development of specific knowledge :

- CADCAM standard procedure for big sized boards
- Adaptating standard PCB process to big sized boards
- Resistive pattern: Resistivity management during autoclave lamination (influence of pressure, temperature, time)
- Special processes step: silverpaste silkscreen, coverlay
- Alignement of milling and copper image over big dimensions
- Adaptation of most of standard processes to big sized boards

Micromegas detector: Project ATLAS

Industrial project → development of 'handicraft skills' and adaptated equipment

- Team dedicated to big sized products and no-standard processes
- High competencies for MPGD detector production
- Big sized equipment :
 - Autoclave → multilayers, kapton gluing
 - Lamination system + big size exposure machine → Copper image
 - Etching line → Copper image
 - AOI
 - Drilling/milling equipment
 - Spray coating for solder mask

4. Conclusion

WE HAVE THE SOLUTION

DISCUSSION

QUESTIONS?

Please find below my contact details. Feel free to contact me if you have any needs:

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