



3-D Moulded Interconnect

Art of Technology AG

Agenda

Why 3D-Moulded Interconnect Devices

Advantages/To be aware of

Techniques



Why 3D-MID?

Integration of electrical and mechanical functions

Printed circuit boards

Enclosure

Plug-in connectors and switches

Cables



Advantages

Design freedom

Integration of mechanical and electronic functions

Miniaturization

Reduced size and weight

Rationalization

Reduced number of parts

Shorter process chains

Reduced material consumption

Higher reliability

Environmental compability

Reduced variety of Materials

Recycling of basic materials

Non critical disposal

To be aware of:

Not suitable for assemblies with:

few electromechanical components

large printed circuitboards and more than two layers

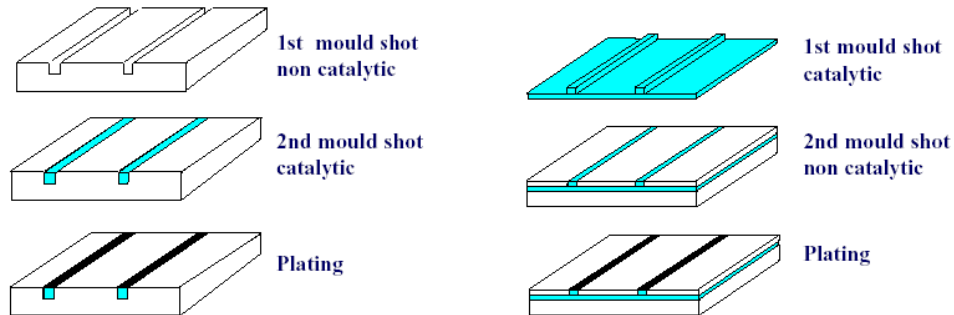
**Full 3D production/assembly
requires 6 axis control**



Picture: source Räumliche Elektronische Baugruppen Erlangen

Techniques

Two step moulding

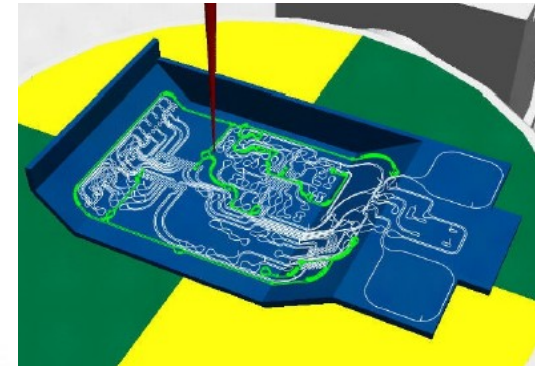
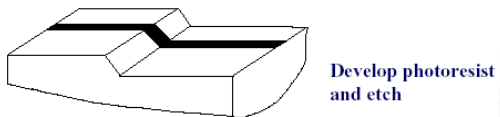
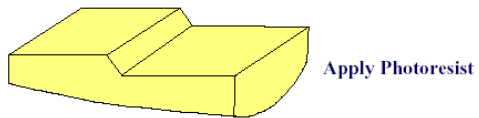
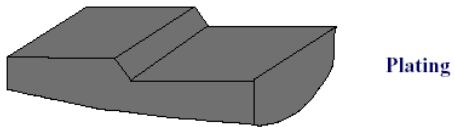
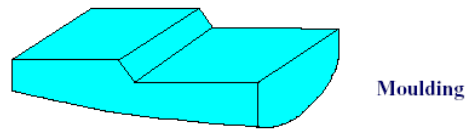


The shown process uses plating onto the catalytic mould material

Another option is to mould a conductive material with non conductive material

Techniques (2)

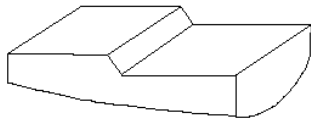
Photo-lithography (Laser Subtractive Structuring)



Pictures: source ivf

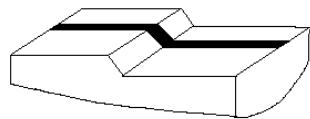
Techniques (3)

Laser direct Structuring



moulding

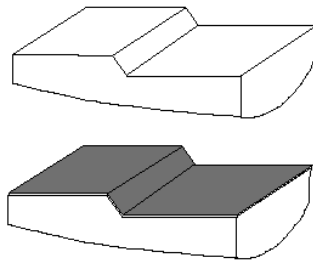
Laser activation



Galvanisation (activated areas)

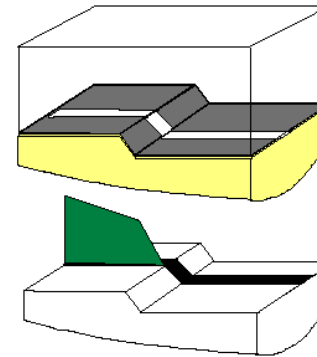
Techniques (4)

Hot embossing



Moulding

Metal foil placement



Hot Emboss and bond

Strip excess foil

Pictures: source ivf

Stamp Overmoulding

Stamp sheet metal

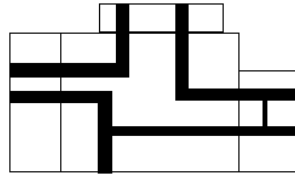
Overmould

Techniques (5)

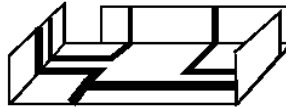
Film Over Moulding

This technique is based on flex circuits

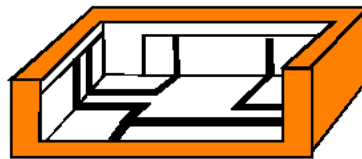
Film cutting and structuring



Film shaping



Overmould film



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***Thank you
for your attention!***