

Low Temperature Metal – Plastic Overmould Technology

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Limitations of Traditional Technologies
 Our solution
 Benefits
 Comparison with Alternative Technologies



Low Temperature Metal – Plastic Overmould Technology Limitations of Traditional Technologies

Metal – plastic integrated parts

- Production of metal component (metal wiring) and plastic component separately
- Post-assembling process is required

- Production of metal component firstly
- Insert the metal component in the mould cavity and injection moulding plastic component



Limitations

OR

- Multiple steps of production
 - Machine investment, labour and logistic arrangement for in-process semifinished parts
- Limitation of geometry for the pre-fabricated plastic and metal parts
 - Normal in simple 2D construction design
 - Restrict the flexibility in product design and functionality



Low Temperature Metal – Plastic Overmould Technology

Rotating core mold

Our solution

- Low temperature metal plastic integrated production technology
- 1. Injection moulding plastic part in first cavity
- 2. Transfer plastic pre-form to second cavity in same mould
- 3. Injection of low melting point metal alloy into mould cavity for overmoulding plastic pre-form





Injection unit 2(Low melting point metal alloy)

Injection unit 1 (Thermoplastic

Low Temperature Metal – Plastic Overmould Technology Benefits



Low temperature metal – plastic integrated production technology

Benefits of the technology

- Production of complicated conductive metal path on plastic part within single production cell
 - > Lower production cost, lower hardware setup cost and higher production rate
- Higher flexibility and functionality in product design with more complicated 3D conductive path











Low Temperature Metal – Plastic Overmould Technology

Comparison with Alternative Technologies

Potential applications:

Heat Sink



Decorative surface

	Metal-plastic integrated technology	Assembling / insert moulding	Plastic overmoulding + electroplating
Production step	1	3	2
Thickness of metal layer	> 1mm	> 1mm	5-15µm
Environmental friendly	Yes	Yes	No (electroplating)
Facilities	Injection moulding	 Injection moulding Metal forming (CNC machining, die casting, etc) Assemble line 	Injection mouldingElectroplating
Cost saving in:			
1. Equipment cost	$\checkmark \checkmark$	\checkmark	\checkmark
2. Production rate	$\checkmark\checkmark\checkmark$	\checkmark	\checkmark
3. In-process logistic arrangement	$\checkmark\checkmark$	\checkmark	\checkmark
4. Raw material cost	$\checkmark\checkmark$	$\checkmark\checkmark$	\checkmark
Geometry of metal layer	3D Solid (complicated)	3D Solid (simple)	3D surface (metal only be electroplated on surface)

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