

APEC
2024

LONG BEACH
CALIFORNIA
CONVENTION CENTER

February 25th - 29th

Streamlining Bobbin Design to Improve Winding Performance



MILES - PLATTS

Precision technical moulding of coil bobbins and electro-technical parts



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Topics for Discussion

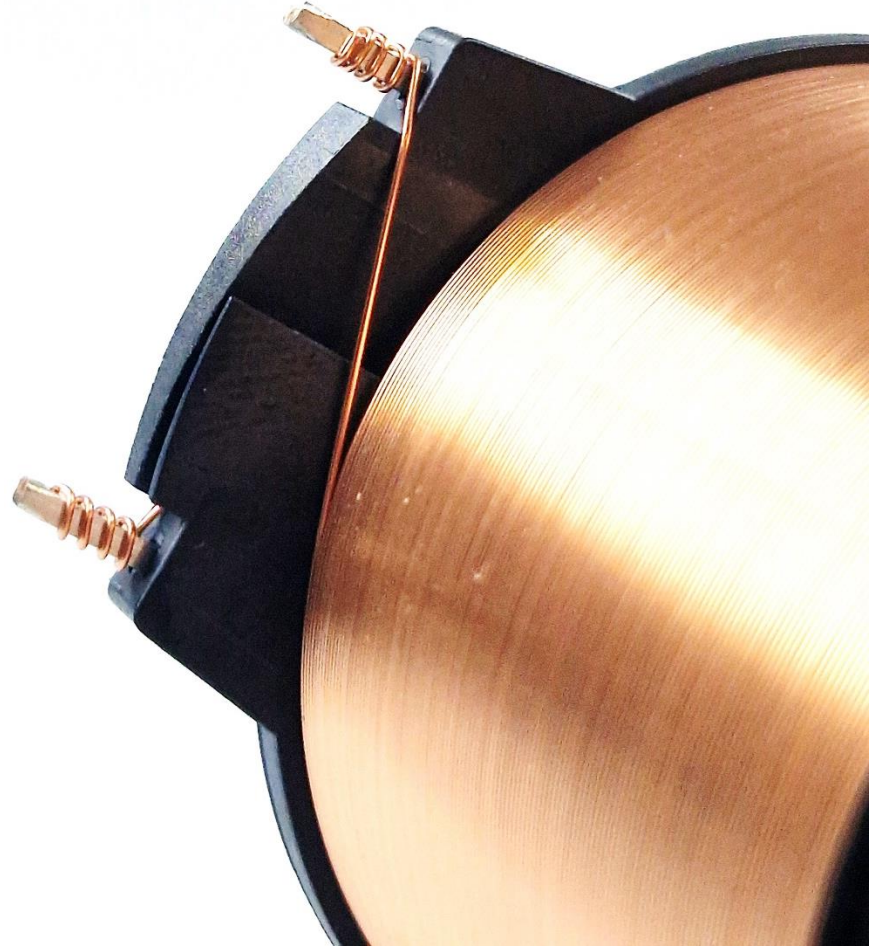
Perfect Layer Technology

Design Concepts

Mould Flow Analysis

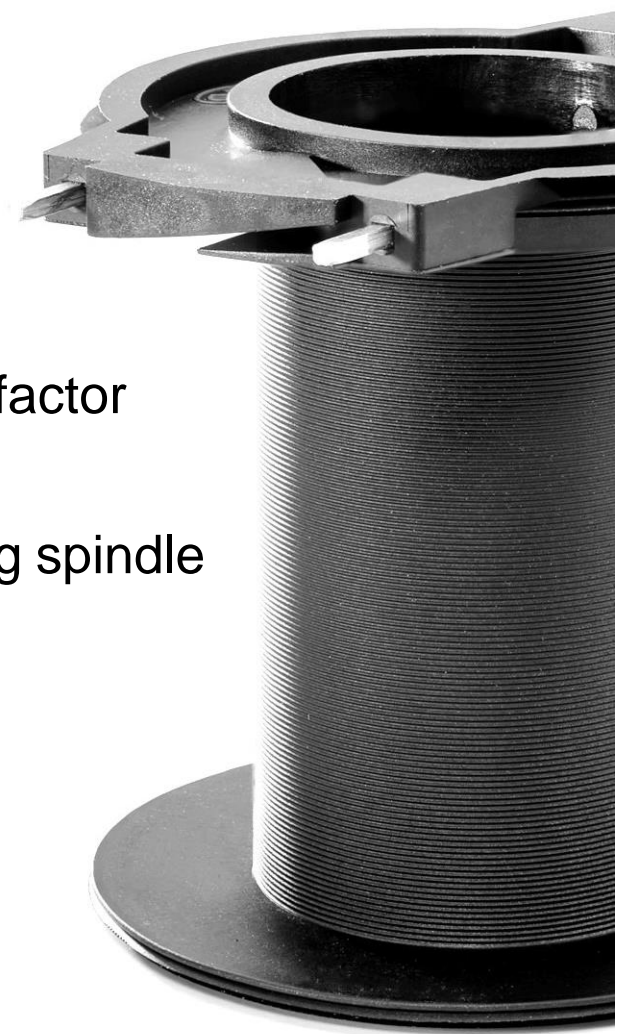
Micro Molding

Micro Pinning

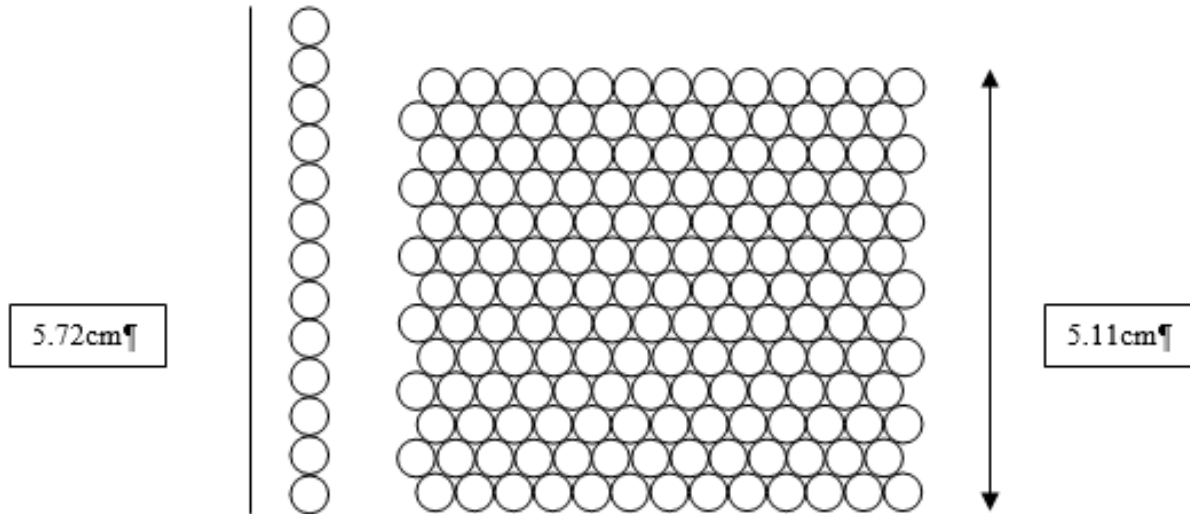


Perfect Layer Winding

- Improved coil performance
 - Increased production yield and build quality
- Perfect layer winding technique achieves 90% fill factor
 - 65-70% for random wound coils
- More turns in the same area without compromising spindle speed
- Ensures a uniform first layer
 - Prevents wire from becoming randomly wound
- Lower failure rates of wound coils
 - reduction in hot spots within the winding.

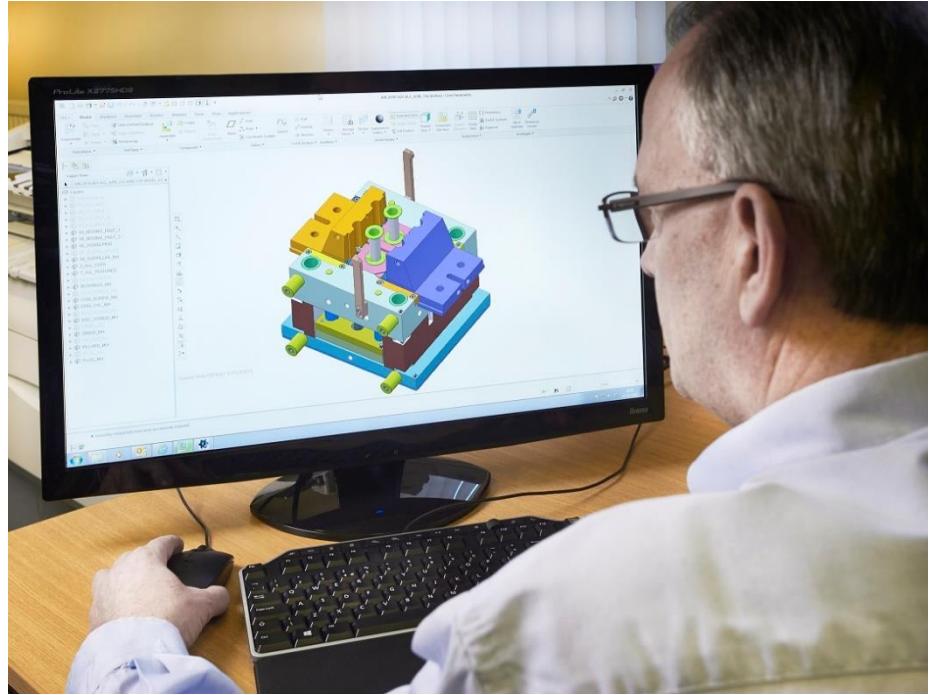


Reducing coil size through PL 'nesting'



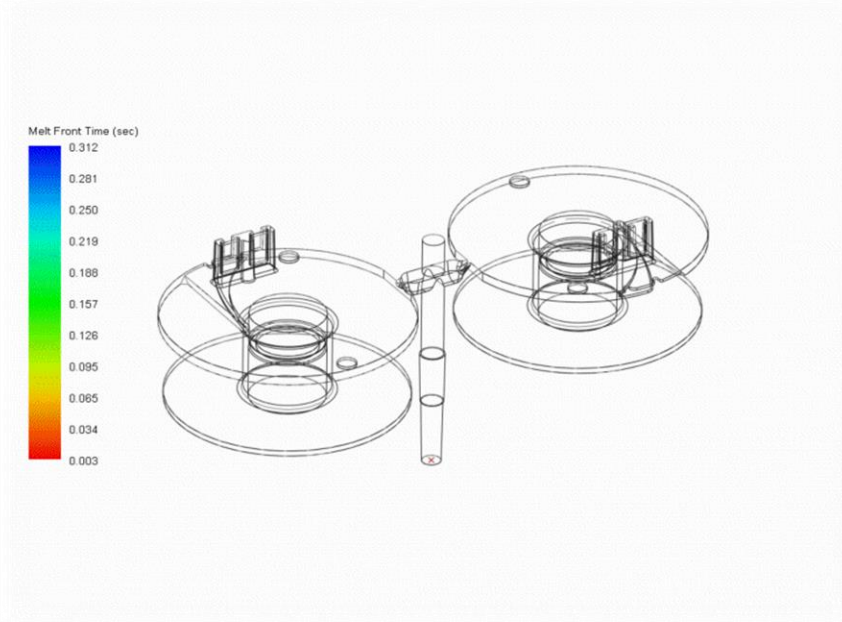
Design Concepts

- Component design
 - Mold Flow Analysis
- Tooling
 - In-house Tool Room
 - Tool Design
 - Tool Manufacture
 - Tooling Transfer
- Molding
 - Micro Molding
- Terminal insertion
 - Micro Pinning



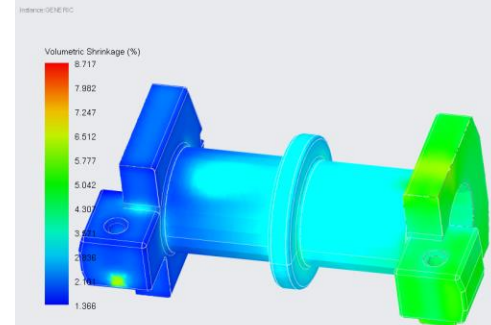
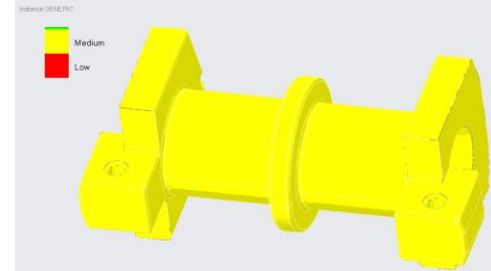
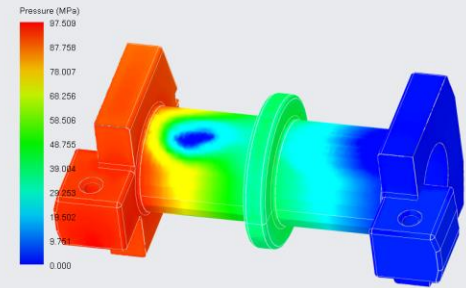
Mold Flow Analysis

- How the component will fill
- Will there be weld lines?
- Optimum sprue positioning
- Identifies the flow pattern of material
- See if and where the material will freeze in the part
- Helps choose optimum amount of impressions
- Material specific analysis
- Identifies problems and provides solutions



Mold Flow Analysis

- Melt front time
- Moldability
- Air trap
- Weld lines
- Pressure
- Temperature
 - Center Temperature
 - Bulk Temperature
- Shear rate and shear stress
- Frozen layer ratio
- Volumetric shrinkage
- Sprue pressure



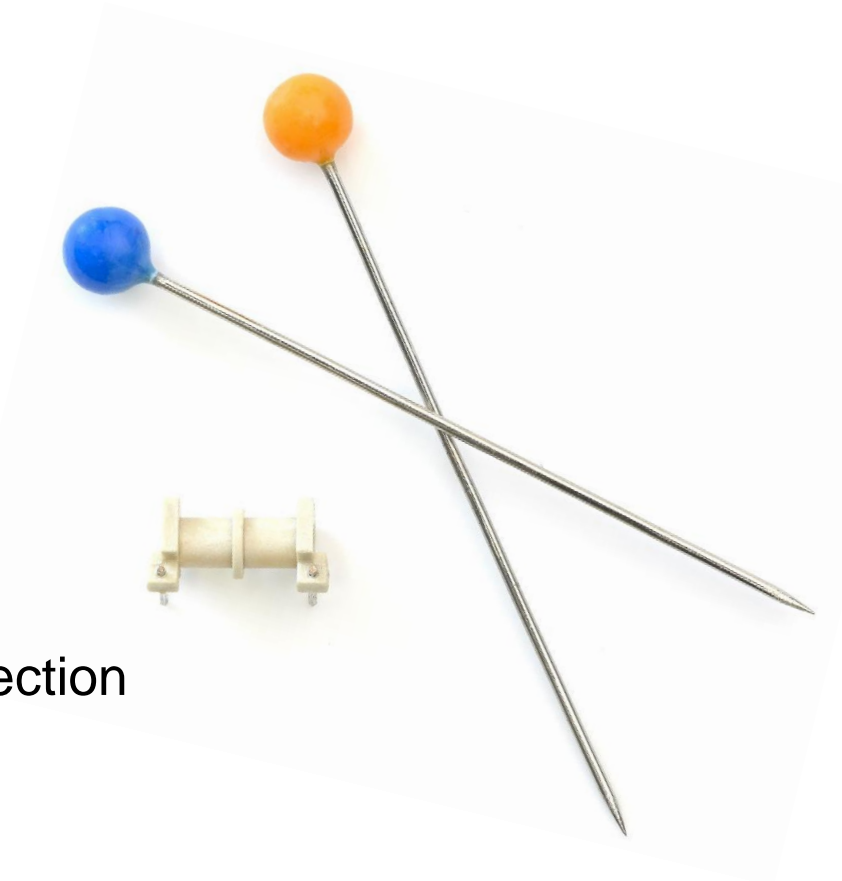
Micro Molding

- Micro-components with a weight $<0.05\text{g}$ for relays, solenoids, and sensors.
- It will be used for custom designed components with high quality tooling.
 - Tooling manufactured in-house
- High performance engineering grade polymers.
 - PEEK and LCP
- Guaranteed repeat accuracy and high processing quality.
- Peripheral monitoring and optimised injection units ensure optimal performance.



Micro Pinning

- Computer controlled custom pinning machine
- Wire sizes down to 0.25mm
- Effective high volume production
 - Maximum of 3600 per hour
- Multi-pin insertion in a single action
- Integrated HD imaging system
- 100% automated real-time time inspection and quality monitoring
- Vibratory bowl feed system



Miles Platts

Precision technical molding of coil bobbins and electrotechnical parts.

Full service manufacturer of electro-technical projects from initial concept through to the final molded component.

**Component
Design**

Tooling

Moulding

**Terminal
Insertion**

**Polymer
Selection**