inkbit

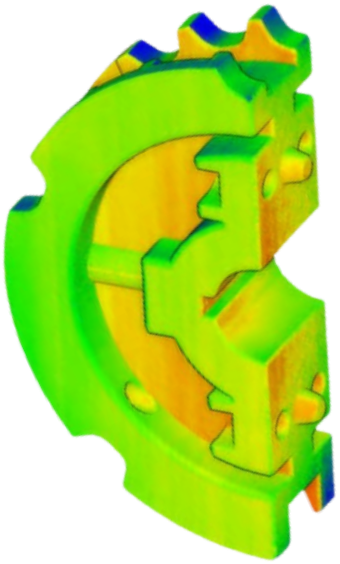
Complex Component Case Study

Split Sprocket with Mating Features

The Challenge

An industrial automation systems supplier is making components for a customer project. Their projects contain many unique parts that are needed in low to mid volume. Tooling for injection molds is expensive at these volumes, driving them to machine most components. However, machining is relatively expensive and results in parts that are often bulkier and heavier than needed. This has led them to pursue making these components using additive manufacturing.

These machine components must be both accurate and durable enough to properly fit and operate for long periods of continuous use, while having a competitive cost at their production volumes. Existing additive manufacturing methods have been unable to meet their needs.



Diameter: 65 mm

Highly accurate to the original CAD design, with a 4-sigma tolerance of +218/-116 microns

The Solution

Inkbit Vista allows this company to meet these production needs. The VCJ platform would ensure that parts are accurate and precise, while supporting the production volumes needed for their wide range of parts. A dimensional analysis on a split sprocket shows part accuracy to ensure the sprocket halves mate and function correctly. The tough epoxy material used to print this part has excellent durability and stable properties over time, giving confidence that the components will perform as intended throughout their service lives.

Rigid Epoxy

Titan Tough 85

Key Takeaways

Final Results

- Tight tolerances achievable due to closed loop process control
- Cost-competitive parts due to high production throughput and low-labor support removal process
- Functional material properties that don't degrade over time

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