Understanding the Advantages of Inkbit's Digital Factory and Material Portfolio

Overview of Vision-Controlled Jetting™

What is VCJ?

Inkbit's Vision-Controlled Jetting™ (VCJ) is a next-generation additive manufacturing platform combining inkjet deposition with high-resolution optical scanning and closed loop control. Each layer is measured and corrected in real-time before curing, enabling consistent, production-grade accuracy for complex geometries and high performance materials like TEPU.

How is VCJ unique?

VCJ fuses machine vision and material science to create a closed-loop printing ecosystem. Traditional additive systems rely on static deposition and manual post-processing. VCJ's real-time optical correction and contactless jetting allow the use of advanced, production-grade chemistries like TEPU that deliver unmatched performance and part quality.

How it works

- **Deposition:** Reactive TEPU resin droplets are jetted layer-by-layer.
- **Scanning:** Structured-light sensors capture each layer's topography.
- **Correction:** The system adjusts deposition before UV-curing.
- **Curing:** Layers are cured to achieve desired mechanical properties.
- **Post-Processing:** Wax support removal process, no sanding or surface finishing required.

End result

High-fidelity elastomer and/or rigid parts with smooth surfaces, dimensional precision, and functional resilience.

Overview of VCJ

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TEPU™ Elastomer Materials

- Access to true production elastomers with long-long term resilience and tear resistance.
- A bridge between PolyJet prototyping and molded elastomer production.
- Opportunities in automotive, consumer, foam/cushioning, medical, and robotics markets.
- A competitive differentiator in tool-free, production of soft/rubber-like and/or rigid/plastic parts.

Competitive Advantages

Contactless Printing: Reactive chemistries that are unprintable with PolyJet, SLA, or DLP.
Closed-Loop Precision: Optical scan eliminates drift and layer variation for better surface quality.
Wax Support System: Enables drainage and freedom for complex foams, channels, and lattices.
Production Reliability: Repeatable quality with automated calibration and no manual tuning.
Multi-Material Flexibility: Supports rigid-soft material transitions and multi-functional parts.

When to choose VCJ

- Soft, functional parts requiring precision and repeatability.
- Rigid-soft integration in a single print, no post-assembly, no tooling required.
- Elastomer, prototypes that replicate molded part performance.
- Rapid design validation without tooling or mold lead time.
- High complexity builds; fine features, lattices, channels, ect.