

Vention Designs, Develops, and Validates Precision Extruded Tube in Just 8 Weeks



CUSTOMER SITUATION

A large, multinational medical device company with a broad product portfolio was redesigning its introducer sheath for a neurovascular microcatheter used to deliver an implant to the brain.

The extruded sheath had to have:

- Tight tolerances to ensure dimensional stability
- Heavy walls for a strong, robust product
- Precise tip for consistent positioning
- Specific transparency criteria to visualize the implant

The customer chose to work with Vention because of its complex extrusion experience, as well as its ability to develop the tube quickly and at a competitive cost. Vention was initially only engaged to produce prototypes based on the customer's design requirements. But the customer was so impressed with Vention's plans for development and production that it won the contract to produce the extruded tube and perform the secondary operations for a finished product.



VENTION SOLUTION

Vention collaborated closely with the customer to develop a detailed project plan and meet tight timelines. The team worked through many iterations with different tip angles and geometries

as well as tubing diameters to achieve the functional requirements. The customer also asked Vention to modify the design of the proximal end, which had been square. Vention's new design included a lead-in funnel to ease the transition. Vention was able to build and ship prototypes for customer evaluation within 10 days.

The customer then presented Vention with an additional challenge: to make the tube transparent so that the user could visualize the implant through the thick walls of the tube. Polyethylene extrusions generally have a matte surface. The team quickly iterated and developed a proprietary extrusion process to achieve the transparency goal. The team had to develop all-new tooling and conducted many trials to consistently achieve a smooth surface. Vention also built a dedicated manufacturing cell within 6 weeks with all the tooling and equipment needed for one-piece flow and just-in-time manufacturing.

The Vention team brought years of expertise in extrusion materials and processing, as well as in catheter tip forming and processing, tooling design, validation, and project planning and management.



OUTCOME

The Vention team completed the project very quickly and cost-effectively. It took only 8 weeks from start to finish, including design, development, and validation.

The customer successfully commercialized the redesigned introducer sheath, and Vention has been successfully manufacturing this component for more than a year, meeting targets for unit price and overall project cost.

Vention is continuing its collaboration with this customer. It has developed and is currently validating a product family extension: a larger introducer sheath for a different market.

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ventionmedical.com/case-studies
info@ventionmedical.com

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