

Case History 6

Pressure Sensing Catheter

Market

Neurosurgery

Client Type

Established medical device OEM ([Integra Neurocare](#))

Unmet Need

Single-use, disposable intracranial pressure sensing catheter that can be passed under the scalp for improved hygiene

Approach

Develop a low-profile catheter with connector that can be passed under the scalp with minimal dilation.

Product Features

Sensing based on use of a single optical fiber with Fabry-Perot interferometric cavity fabricated on distal tip. Deflection of 3-micron thin silicon diaphragm measured with a laser and interferometer inside the box. Novel, locking, quick-release fiberoptic connector has the world's smallest cross-section; achieves extremely low losses, low cost, and ease-of-use. System measures pressure to within 0.05 psi (1mm Hg).

Services Provided by OTI

- Optical design & engineering
- Mechanical engineering, including injection molded part design & vendor sourcing
- Development of assembly methods, including bonding, form-in-place optical coupling
- Design & fabrication of assembly & test fixtures
- Complete FDA-compliant documentation set, including all drawings & procedures
- Prototyping
- Verification & validation testing
- Transfer to manufacturing

Client Comment

"I'm a catheter guy, but I was overloaded. The guys at Optimum handled the whole design. They really know what they are doing, especially when it comes to optics."

- Jay O'Keefe, Program Manager



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