

Case History 10

Optics for DaVinci Robot

Market

Robotic Surgery

Client Type

Early commercial stage medical device OEM (Intuitive Surgical)

Unmet Need

To develop a family of 3D endoscopes that meets the client's need for state-of-the-art robotic imaging.

Approach

The client's targeted surgical procedures could have durations of hours, so the 3D imaging system had to be usable for long periods without causing the side effects often associated with extended 3D imaging: headache, dizziness, and even nausea. Our approach was therefore to develop custom endoscope designs that achieved the highest possible performance. It was particularly important to integrate the optics with the video camera with appropriate adjustments to ensure extremely close alignment of the two optical channels. We then surveyed rigid endoscope manufacturers world-wide for their ability to produce the product with top quality at affordable cost, recommended a supplier, established product acceptance criteria and test methods, and performed first article testing.

Product Features

This is the best 3D endoscopic imaging system in the world. Two completely separate optical channels in each endoscope ensure perfect stereo separation. Scopes are available in 0 and 45 degree oblique views, and feature low NAs, wide fields of view, ultra-low distortion, HDTV-quality resolution, large depth of field, intense fiberoptic illumination, and rugged mechanical design to stand up to high-use surgical environments.

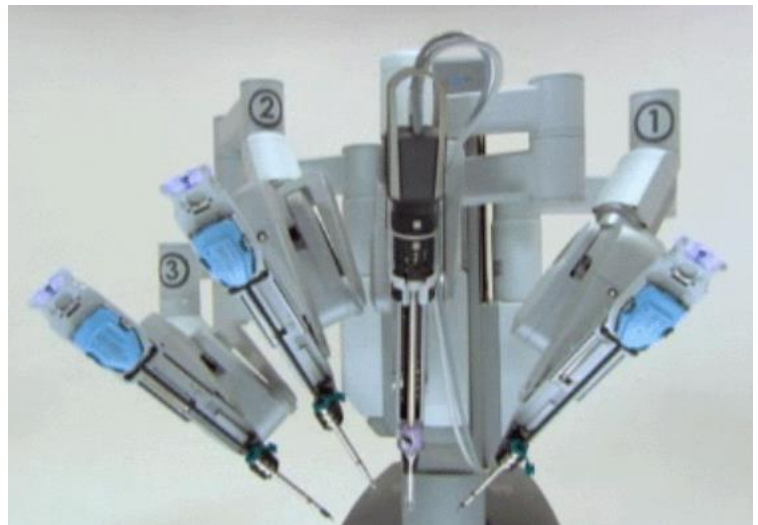
Services Provided by OTI

- Optical design & engineering
- Opto-mechanical engineering, including part design & vendor sourcing
- OEM endoscope supplier survey
- Development of acceptance criteria and test methods
- First article inspection
- Ongoing integration support

Client Comment

"It was clear from the start that Randy was expert in endoscope design and manufacturing. His team worked very closely with our team to develop scopes optimized for our particular needs, and to integrate the scopes with our video cameras and illumination systems. The success of our products speaks for the quality of our optics."

- John Stern, Director of Hardware Development



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