

Expanding on precision

Spine Wave is an innovator in surgical technologies for spinal implantation. But getting one of their next-generation instruments smoothly into surgeon's hands and safely into surgery was costly, and required extra caution during shipment.

Their engineers turned to OptiMIM to deliver a more cost-effective solution—and make delivery smoother, right out of the box.



No matter how you dissect it, spinal procedures are tricky. They require meticulous positioning of surgical instruments and an incredibly steady hand. Even without complications, traditional methods often involve forcible physical manipulation, leaving patients with a long and painful recovery.

That's where Spine Wave, Inc. comes in. Since 2001, the Connecticut-based medical device company has developed surgical solutions exclusively for treating spine patients.

DELIVERING EASIER PROCEDURES

One of the company's innovations, the Velocity® Expandable Interbody Device, uses their pioneering expandable implant technology—a small spacer inserted into the spine that expands once it's inside.

Velocity® is delivered by a handheld gun that doctors load with a cartridge containing the implant, then trigger to insert the contents into the surgical site. Surgeons can load multiple

cartridges for each procedure, smoothly completing several implant expansions within one surgery.

But according to Spine Wave Quality Manager Zachary Sniffen and Senior Manufacturing Engineer James Hanrahan, it's vital to the procedure for everything leading up to the moment of implantation to go just as smoothly.

THINKING INSIDE THE BOX

Readying the Velocity® Expandable Interbody Device for surgery involves accessing cartridges from their sterile packaging, and snapping them onto the gun. "Surgeons could have trouble mating the gun to the cartridge in the moment if the components within the cartridge become misaligned during shipping," Sniffen says.

Spine Wave needed to lock the components inside the cartridges during shipping in a way that allowed a uniform, predictable, and automatic disengagement of the lock when loaded

“The engineers at OptiMIM had the foresight to see a potential issue on a susceptible part that didn’t appear during development. Because of their expertise, we were able to circumvent the issue and avoid any inventory delays.”

ZACHARY SNIFFEN

To learn more or discuss your own project, please contact a local sales engineer at www.optimim.com/contact.

onto the gun. And the shipping lock was born.

The shipping lock, a compact, clip-like piece with posts extending from the body, holds components in place during transport. The gun pushes the lock out of the way during loading, ensuring the entire process is smooth and uninterrupted.

The shipping lock’s design was effective, but because they were machined from raw bar stock, that reliability came at a high cost, says Kapp. “We had to change processes, and we knew metal injection molding would give us a cost reduction.” That’s when they contacted OptiMIM.

DIAGNOSING MIM

“Complex geometries and intricately shaped features make medical devices a great fit for the MIM process,” says OptiMIM. “Spine Wave could have spent 6 or 7 times more on machining this part than they would on MIM.”

OptiMIM worked with the engineering team to get them the best cost, a major consideration for Spine Wave. But ultimately, says Sniffen, it came down to OptiMIM’s capabilities.

“We saw the best opportunity for a quality part from OptiMIM, and their willingness to work with us on our design intent,” he says. “We had fairly tight tolerances for some features, and we saw that the engineers at OptiMIM would work through those potential speed bumps to get the best part possible.”

Spine Wave determined that with OptiMIM’s capacity for ultra-high volumes, cost-efficiency would be maximized by extending the shipping lock application to a second product. “After going through the numbers, we saw it would pay for itself fairly quickly,” says Sniffen. “It was pretty much a no brainer for us.”

THE OPTIMIM DECISION

“With projecting features like the shipping lock posts, the injection molding process always presents challenges, with cooling and flexing and bowing,” says Kapp. So during development, the Spine Wave engineers engaged in OptiMIM’s design for manufacturing (DFM) methodology to optimize manufacturability—and additionally visited OptiMIM’s Portland, Oregon facility to collaborate directly with the MIM experts.

During these interactions, the Spine Wave engineers discovered OptiMIM’s 100 years of in-house MIM experience—or rediscovered it, in Kapp’s case. It turns out he’d worked with OptiMIM years ago under its original name, Kinetics. “They’ve done some very technically challenging work. It was the right choice for this project,” he says.

“We met our target dates, we got a cost reduction which makes everyone happy, and we transitioned from the old part without hiccups,” says Kapp. “For a quality engineer, having nothing to report is a resounding endorsement.”

OPTIMIM. WHEN ONLY THE BEST WILL DO.

In today’s demanding industries, average performance is simply not an option. To create truly class-leading products, only the highest performing components will do. Simply, good enough isn’t good enough.

We can help. Using state-of-the-art metal injection molding technology, OptiMIM delivers the highest performing small precision parts in the industry.

And, with OptiMIM, you get the same performance whether you need a thousand parts or millions.

Please visit optimim.com to learn more.