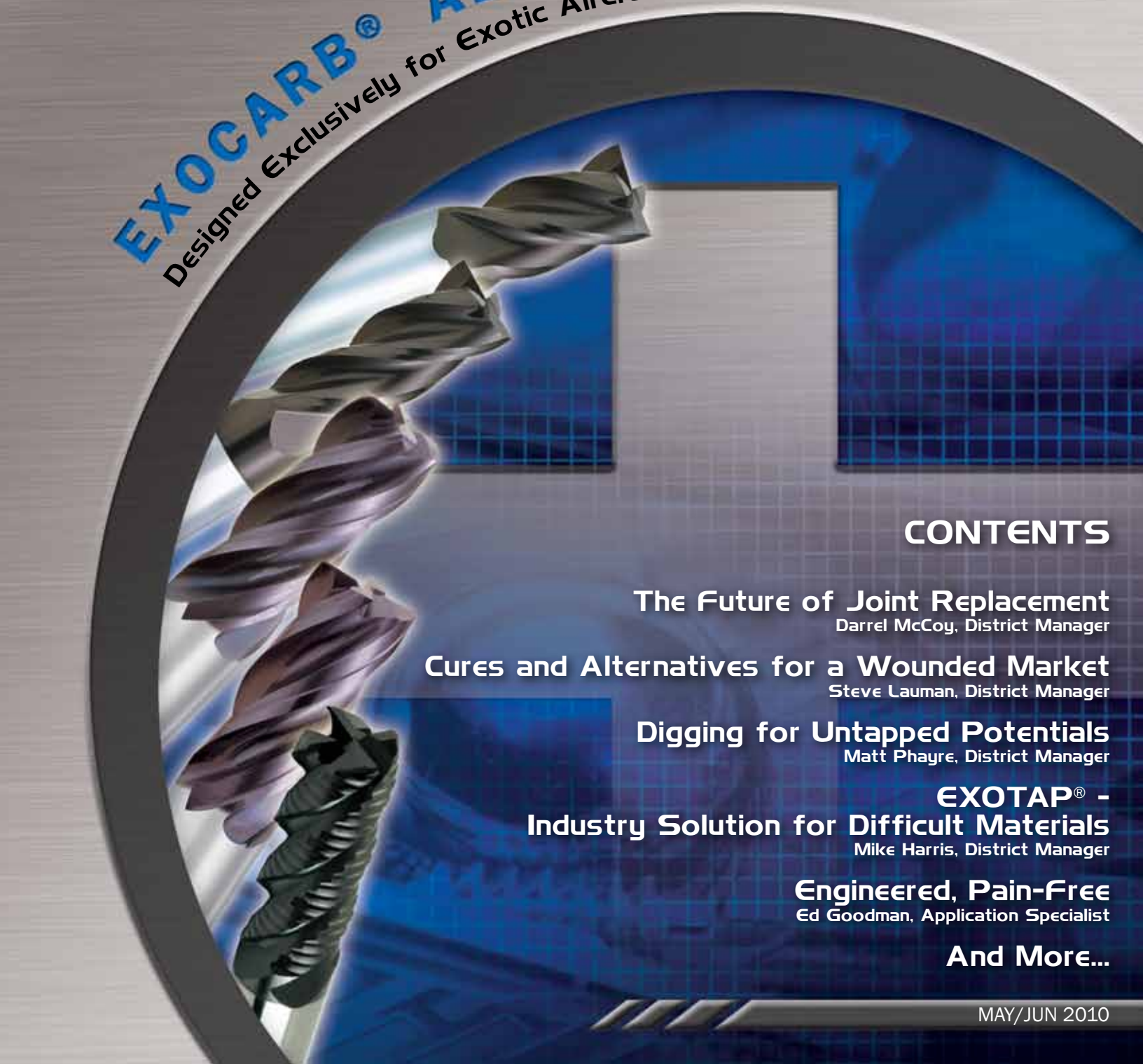
Cutting NEWS

EXOCARB® AERO END MILLS

Designed Exclusively for Exotic Aircraft Materials



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MAY/JUN 2010

Cutting News

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Editorial

The Future of Joint Replacement

Darrel McCoy, District Manager

Medical manufacturing processes and materials are strictly regulated by the Food and Drug Administration. I remember when I first got into the cutting tool industry in the 1980s, one project that I worked on was with a machinist machining titanium. Back then this material was not very common. It was mainly used in the aerospace industry, not medical.

"Each year approximately 773,000 Americans have a hip or knee replaced."

Medical part failures during the earlier time period were commonly due to poor metallurgy, poor manufacturing technique and implant design. The casting process used to make metallic implants often suffered from poor quality control, which sometimes would lead to products with inferior wear resistance and were prone to fracture in the body. Today, as the cutting tool industry continues to evolve, materials like titanium, stainless steel and cobalt-chromium alloys have become more widely used in the medical arena. Implants such as joint replacement, have benefited from technological advancement in particular.

Each year approximately 773,000 Americans have a hip or knee replaced, according to the National Institutes of Health. Joints in the human body can be damaged by arthritis, injuries and other

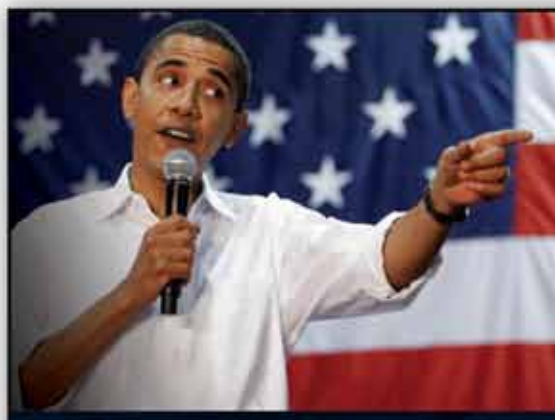
diseases. Arthritis may cause the joint to wear away, which can cause pain, stiffness and swelling. A new joint, called a prosthesis, can be made of plastic, metal, or both. It may be cemented into place or not cemented, so that the human bone will grow into it. Sometimes the orthopedic surgeon will not remove the whole joint, but will only replace or fix the damaged parts. Replacing a joint can relieve pain and help the patient move and feel better. Hips and knees are replaced most often. Other joints that can be replaced include the shoulders, fingers, ankles and elbows.

"The future of joint replacement may see the implementation of other intriguing surface materials."

Recently, researchers at North Carolina State University have developed a "metal foam" that has a similar elasticity to bone. This new material could signify a new generation of biomedical implants that would avoid bone rejection, which often results from more rigid implant materials like titanium. According to researchers, the metal foam is even lighter than solid aluminum and can be made 100 percent of steel or a combination of steel and aluminum.

The future of joint replacement may see the implementation of other intriguing surface materials. Surfaces made of diamond have been produced recently. There is also much discussion on hardened titanium's potential, due to its smooth exterior. Even extremely hard plastics are being considered in joint replacement due to their superior flexibility.

Now, what does all this mean to me? Not much, except that it helps with the stress as I have a titanium plate in my neck and need a knee replaced.



Short Cuts

Obama signs health bill into law

The health care overhaul will extend health coverage to 32 million Americans, expand the government health plan for the poor, impose new taxes on the wealthy and bar insurance practices from refusing to cover people with pre-existing medical conditions.

Obama's intense focus on the issue drew criticism from some Democrats who worried health care was becoming a distraction from the need to fix the economy and boost jobs. Republicans also have vowed to try to repeal the health care bill as they believe that it raises taxes, installs price controls, and puts a new federal bureaucracy in charge of health care.

Feature

Cures and Alternatives for a Wounded Market

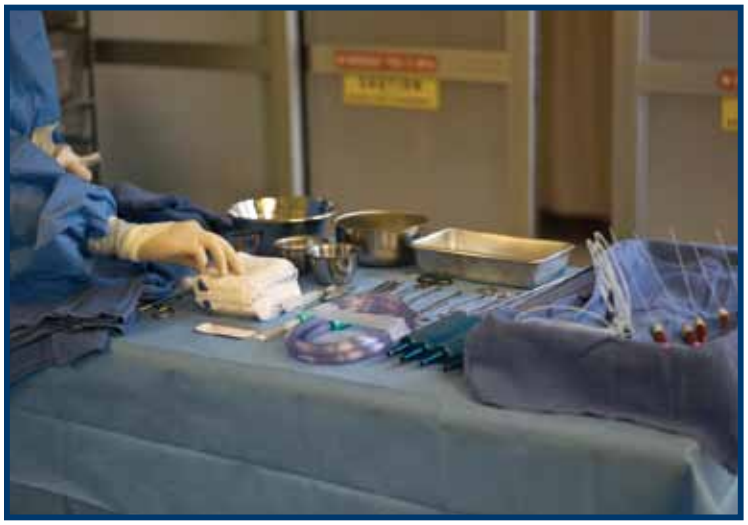
Steve Lauman, District Manager

Many machine shops and job shops have lost substantial business in the downturn of the economy. Companies that had a lot of business tied up in the automotive or heavy equipment industries have been hit hard. This has forced shops to seek opportunities in markets that are steady and more resilient to market fluctuation. What industry better fits this characteristic than the Medical industry? The advantages are quite obvious in light of its reputation for being less cyclical yet profitable. But entry into this arena occasionally comes with the need to take on a learning curve and the willingness to adapt to new processes.

"Companies that had a lot of business tied up in the automotive or heavy equipment industries have been hit hard."

When a company succeeds in meeting the quality and procedure requirements that the medical industry imposes, they still quite often face the need to take on materials and processes that are more demanding than the typical carbon steel part. Take medical implants and medical instruments for instance. These medical parts typically require difficult-to-machine materials like 316 stainless steel or a high heat alloy like titanium. With these materials, the need to adapt becomes prominent.

One challenge difficult-to-machine materials present is the need for accuracy versus the need for speed and through put. In 316 stainless steel, a commodity grade cutting tool will generally wear faster and the part finish diminishes quicker at higher processing speeds. The initial response is usually to slow down the process to maintain the needed accuracy and finishes, thus sacrificing efficiency and through put. Successful manufactures have overcome this dilemma by looking at the big picture - from machine tool down to the cutting tool itself. The key is to optimize the rigidity and accuracy in each facet of the manufacturing process. These types of material will generate more vibration in the process than a commodity steel. The best way to control such an issue is with a highly rigid and accurate process.



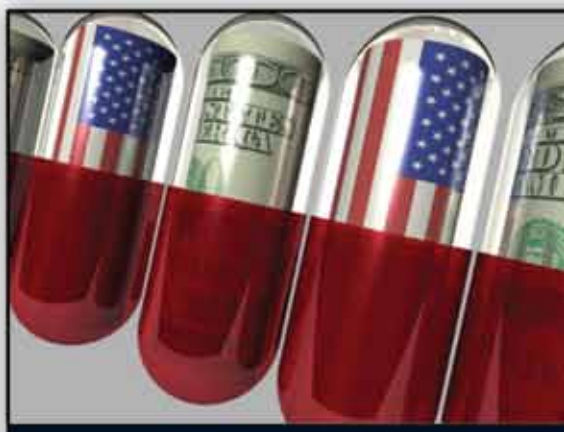
Recently, a local company I know of was awarded a new opportunity in the form of a 17-4 PH stainless steel handle for a medical instrument. This machine shop is very adept in machining a variety of carbon steel and alloy steel parts. To their surprise, however, their skills and success in these materials did not translate into success with this new part. After taps were breaking on the first hole and end mills chipping out after one part, they saw the need to adapt right away and sought help from the cutting tool and machine tool contacts they had.

My involvement concentrated on providing them the best tool for the material at hand. All the existing tools came from a general purpose line that simply could not work in this demanding material. The taps, drills and end mills were breaking at an alarming rate. It was easy to see that they were headed in the wrong direction. The general purpose tools they were using simply could not handle the heat or vibration generated in the stainless steel.

"More importantly, this customer's willingness to adapt had enabled them to seek additional projects in the medical market."

The solution to their tapping and drilling problems came in the form of a more rigid variable flute end mill that could minimize vibration and increase tool life. Switching to a tool designed with proper geometries and coating suited for stainless steel helped this customer decrease cutting tool costs. More importantly, this customer's willingness to adapt had enabled them to seek additional projects in the medical market.

While most job shops are not in a position to purchase a new machine, they do have the option to consider more accurate holders and specialized cutting tools that can greatly improve tool life and through put. A tool manufactured to higher tolerances is going to run truer and engage the part accurately. These specialized tools are also designed with newer coatings and technologies that can withstand high temperatures. Ultimately, tools designed for these hard-to-machine materials will yield longer tool life and better part finish compared to multipurpose tools. At first glance, a high performance tool will cost more than a general purpose tool. However, the cost per hole will ultimately come down from the longer tool life and faster cycle times.



Short Cuts

U.S. employer health care costs up 7.3 percent in 2009

Average health care costs for U.S. employers rose by 7.3 percent in 2009, surpassing inflation and the growth rate in overall health care spending, according to a report conducted by Thomson Reuters, parent company of Reuters.

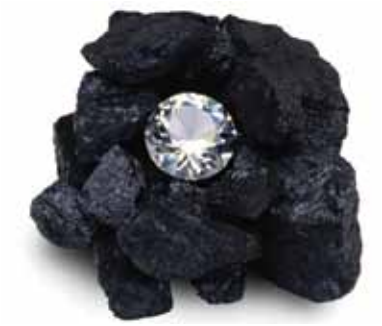
Overall U.S. health care spending, including Medicare, Medicaid, and other payers, grew by 4.8 percent in 2009, the report found. Smaller employers with 5,000 or fewer workers saw costs rise the most, with health care spending up 9.8 percent.

Medium-sized employers of 5,000 to 50,000 people had a 10-percent rise in costs compared to 6.5 percent in 2008.

OSG Insider

Digging for Untapped Potentials

Matt Phayre, District Manager



Seeking to advance our sales in High Tech Tools, I combed through my medical account base for untapped potential. My search brought to mind a book I had read several years back, "Diamonds in Your Own Backyard." One thing I have learned is that the diamonds are there to be discovered if you dig deep enough. Sure enough, I dug deep and I dug into one of the nation's premier medical mold shops.

This customer's business is built around two focused materials, thermoplastics and elastomers, which are used in items like multi-component parts for the health care market. They have mold manufacturing and production capabilities in five locations throughout the United States that house over 375,000 square feet of manufacturing space. Their mold facility located in West Berlin, New Jersey falls within my responsibilities.

With one of the largest dedicated multi-component facilities in North America, this customer has been using some of OSG's taps and EXOCARB® end mills for many of their parts. However, upon further investigation, this account still has more potential that can be cultivated. They have recently expanded its mold manufacturing facility at their West Berlin plant. New high speed CNC machining centers and EDM machines with robotic tool changing capabilities were added to boost productivity.

Like any other industry, the medical market is very competitive. Customers expect the best product and service when they need it. In a nutshell, no stock means no order. Our customer was feeling an increased pressure to deliver special molds with drastically reduced lead times. To meet these needs, they upgraded and redesigned their operation to optimize work planning with an increased focus on clean manufacturing processes.

"They were impressed with the presentation and OSG's commitment to the highest standards."

After assessing this customer's goals, OSG distributor Oberg Brothers and I knew the new machines they purchased must meet the requirement for total accuracy. At the same time, it is only part of the package as accuracy begins at the spindle and evolves to the tip of the cutting tool. Accuracy means no run-out or keeping it to the minimum at best. We suggested OSG's induction unit for the most accurate holding of both carbide and high speed tooling. They decided to order both the induction and also the more portable shrink unit. Additionally, we suggested they take advantage of the long-term cost savings of our stainless steel shrink fit holders and collets as well. After review and consideration, the customer agreed to our purchase recommendations. Ultimately, their order included the induction unit, the heat shrink unit, shrink holders and collets.

Shortly after their purchases, OSG Regional Manager Brant Pascavis and I provided this customer with a tutorial on the operation of the machine and training on the correct operation procedures for this new unit. Noticing that they were now into the high speed milling arena, Brant and I later returned to teach a seminar on HSM. Several months later, our High Tech Department Head Steve McBride visited the plant to conduct a second seminar. Both the plant manager and machinists attended were impressed with the presentation and OSG's commitment to the highest standards.

Since that time, this customer has discovered our WXS® end mills for hard milling of material up to 65 HRC. Previously, they were using more common standard carbide mills from various manufactures. After switching to OSG, they quickly realized the improvement in tool life, cycle time

and quality of cut. The end result and time savings nullifies any additional cost. Aside from the WXS®, they now use our EXOCARB®-Aero SUS End Mills for some stainless applications as well as our VPH® and EX-GOLD® Series Drills.

A customer this size usually has multiple possibilities. Following up on the account to investigate their needs has proven beneficial. We should always sell all the products in our market basket and not limit ourselves just to a success in one or two tools. Sometimes opportunities might be scarce, but they are out there if you are willing to work at it and dig hard.

Letters to the Editor

We want to hear from you!

OSG values your opinion and input. Please write to us if you have success stories you would like to share, or have suggestions regarding our product or service. Please include your address, phone number and e-mail address for verification. Editors review all letter submissions for publication. No letter may exceed 800 words, and OSG Cutting News reserves the right to edit or reject any contributions. Pseudonyms or anonymous letters are not published.

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Attn: OSG Cutting News

Address letters to:
OSG Cutting News, Letters to the Editor, OSG Tap & Die, Inc., 676 East Fullerton Avenue
Glendale Heights, IL 60139.

Those who have written letters being considered for publication will be contacted by OSG Cutting News.

Short Cuts

Health care reform affects employers nationwide

Health care reform aims to expand access to care for millions of uninsured, but could further squeeze employers who are still trying to shake off a depressed economy.

Under the bill, employers with 50 or more workers must provide health care cover or face a $2,000 fine per employee starting in 2014. But for companies with fewer workers, the pending reforms aimed to offer relief for those unable to afford coverage for their workers.

Testimonial

EXOTAP® - Industry Solution for Difficult Materials

Mike Harris, District Manager

In manufacturing, components that contribute to success often include quality, precision and fast production at minimum cost. This equation sounds simple, but can be difficult to achieve for some machine shops. In the medical industry, manufacturers often handle difficult-to-machine materials such as titanium and stainless steel. Tool cost could skyrocket if the appropriate tool isn't selected for the application. With the help of the right cutting tool, however, customers can reduce tool usage and minimize cost drastically.

Recently, I received a call from a national distributor that has an integrated supply contract with a large OEM medical account in Warsaw, Indiana. This customer is one of the world's leading designers, manufacturers and suppliers of orthopedic implants. They offer devices and solutions for fixation and fusion, motion preservation, minimally invasive spine surgery and biologics.

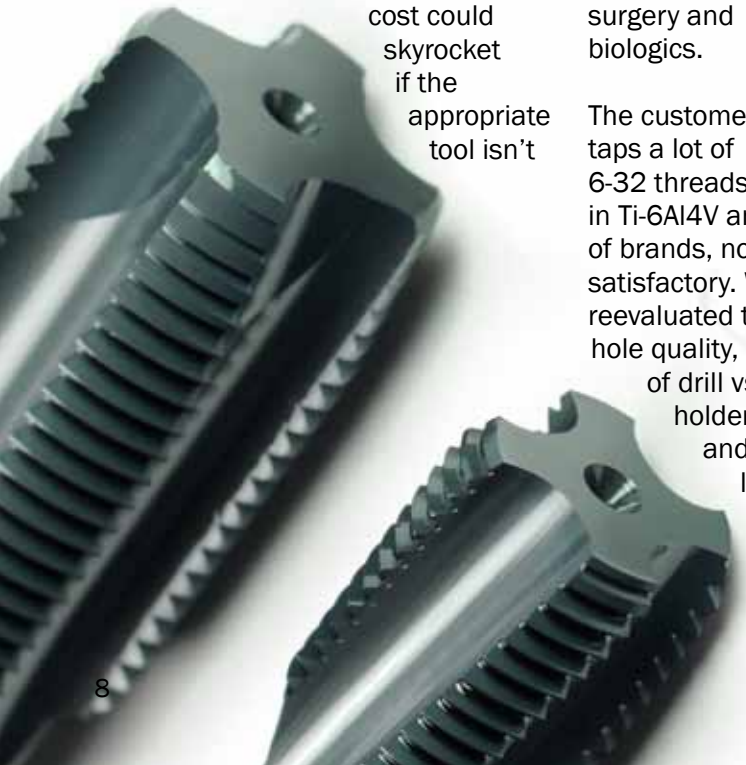
"With the help of the right cutting tool customers can reduce tool usage and minimize cost drastically."

The customer taps a lot of 6-32 threads in Ti-6Al4V and has tried a variety of brands, none of which were satisfactory. We sat down and reevaluated the process, hole size, hole quality, cutting speeds, depth of drill vs. depth of thread, tool holders, work piece holding and coolant. Everything looked fine and yet no matter what brand he tried, he would get between 20 to 50 holes per tap and was using over 75 taps per month.

So, I made the recommendation that he try OSG's EXOTAP® VC-10 TI and sent in a couple of taps to test. The EXOTAP® VC-10 TI is OSG's ultra-premium tap made from VC-10 Powered Metal High Speed Steel. It is available in a variety of coatings and pitch diameter limits, in both cutting and forming styles.

The customer said he would get them tested right away and would get back to me in a day or two. After three days my curiosity was getting the best of me. I decided to call and check on the results of the testing. When I got a hold of the customer he said he hadn't heard anything from his shop and would check on it. One day later, he called to tell me that the tap was still running. The following week I got in touch with the customer again and he happily informed me that his shop was going from approximately two taps a day to two taps a week!

The moral of this story is that if your customer is tapping titanium and you want to help him reduce cost, recommend OSG's EXOTAP® VC-10 TI taps. When no other tap seems to do the job, EXOTAP® VC-10 TI tap is the industry solution for difficult materials and applications.



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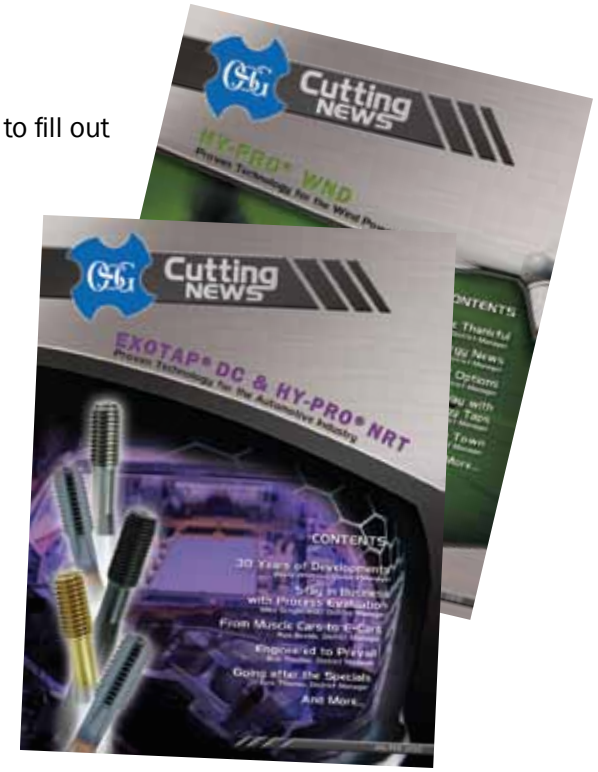

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❒ **Automotive** ❒ **Medical** ❒ **Others**

Engineer Insight

Engineered, Pain-Free

Ed Goodman, Application Specialist

The current economic recession that we have been experiencing has provided some unique challenges for the cutting tool industry. Because this is the worst recession since the 1930s, most people alive today have never experienced a downturn like this. The automotive industry took one of the hardest hits. People are afraid to spend money for a new vehicle because of the uncertainty of their job situations. One industry that has been least impacted by the recession is the medical industry. Because of the modern advances in medical technology along with the "Baby Boomers" reaching an age where body parts are wearing out and are in need of replacement, the medical industry continues to grow.

"One industry that has been least impacted by the recession is the medical industry."

I have somewhat of a unique perspective when it comes to medical manufacturing. While I spend my days trying to optimize tooling for machining medical parts, I am one of those "Baby Boomers," and had to have a total left hip replacement last October. After consulting with my orthopedic surgeon, we decided on a combination of materials that made the most sense for somebody of my age and physical build. The prosthesis we decided on had a femoral stem made of titanium, a femoral head made of ceramic, an acetabular shell made of cobalt-chrome and an acetabular bearing made of cross-linked polyethylene. These are four very different materials when it comes to manufacturing.

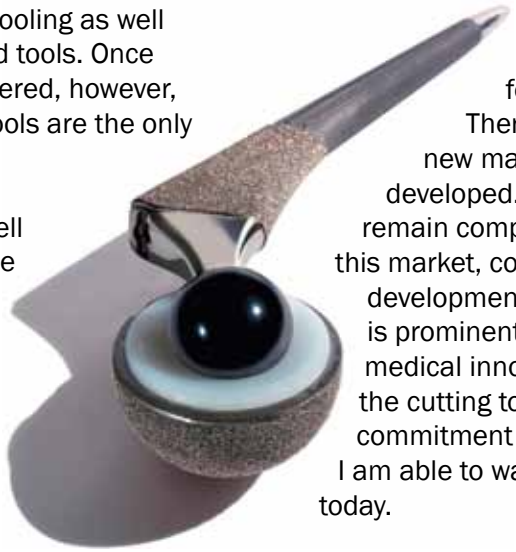
The femoral stem is press fit into a hole drilled down the center of the femur. It is attached to the new ball-shaped femoral head that fits into the hip socket. It is made of titanium and has a special surface that allows the bone to adhere to the stem.

The femoral head is manufactured from a proprietary ceramic. Most ceramics can be machined in a "green," or unsintered state with standard carbide tooling as well as diamond coated tools. Once the ceramic is sintered, however, diamond coated tools are the only option.

The acetabular shell that attaches to the pelvic socket is constructed of cobalt-chrome. Cobalt-chrome is typically one of the most difficult materials to machine. Tools designed for Heat Resistant Super Alloys (HRSAs) are the best tools for machining cobalt-chrome.

The acetabular bearing is the liner in the cobalt-chrome shell. It is the part that actually comes in contact with the ceramic femoral head and is typically the first part to wear out. The new liners are made from a special cross-linked polyethylene. Because of this new polymer, the wear rate has been reduced significantly. The life expectancy of a hip replacement has increased from 10 years several years ago to near 30 years today.

There are a wide variety of materials being machined for the medical industry. From stainless steel surgical instruments to carbon fiber reinforced PEEK orthopedic implants, the medical industry is forever evolving. There are always new materials being developed. In order to remain competitive in this market, continuous development of new tools is prominent. Because of medical innovation and the cutting tool industry's commitment to development, I am able to walk pain-free today.



2010 Catalog

2010 Cutting Tool Solutions

Introducing the new 2010 OSG Cutting Tool Solutions Catalog

The revamped 2010 catalog features new product lines for taps, drills, end mills and other premium tooling. The newly expanded catalog is available beginning April 15, 2010.

An online version of the new catalog can be accessed at: ***www.osgtool.com***.

Customers can also request a free paper version by contacting OSG at: **800-837-2223**.

Catalog Corrections

2010 Cutting Tool Solutions Catalog Correction

There is a correction in the 2010 Cutting Tool Solutions Catalog regarding VPH®-GDS (Page 88 to Page 90). Please replace the section with the appropriate sticker, which is included with your catalog.

Thank you for your understanding and cooperation.
We apologize for any inconvenience this may have caused.

Other Corrections:

Page# 96-97: List 2000 Shank Diameters on the 6.1mm~7.5mm cutting diameters should be 8mm instead of the 4mm referenced.

Page# 289: List 114 is not left handed as listed.

Short Cuts

Cosmetic surgery industry continues to grow at rapid rate

A procedural survey conducted by the American Academy of Cosmetic Surgery (AACS) says more than 17 million cosmetic surgery procedures were performed in the United States in 2009.

The total number of procedures performed by AACS members has increased by eight percent since 2008. Among AACS member practices, the biggest increase in invasive procedures in the last five years are in blepharoplasty (eyelid lift), abdominoplasty (tummy tuck) and rhinoplasty (nose). For less-invasive procedures, the biggest increase over that five-year period is in laser resurfacing, chemical peels and fillers.

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but do you have OSG quality?

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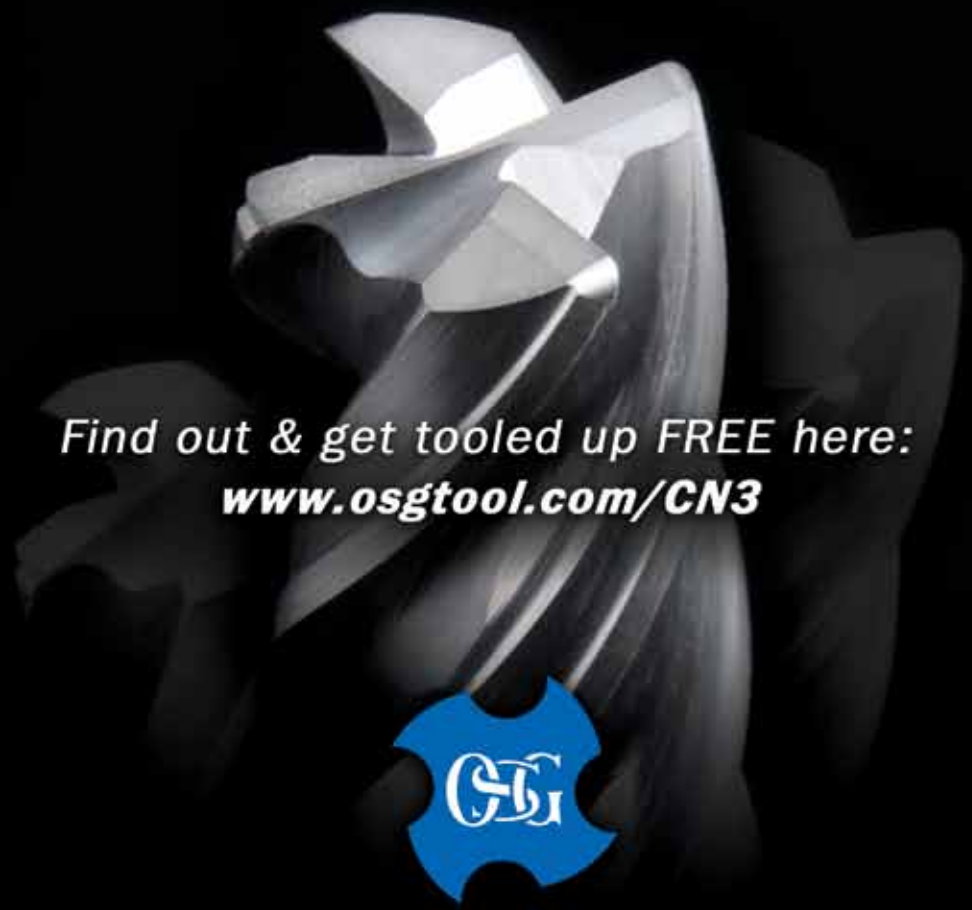

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ENGINEERED Peace of Mind

In the last 5 years, OSG has released 154 new products or 4824 new items.
Featured Above: New Product #150-151, EXOCARB® AERO-UVX End Mills
The latest evolution in variable lead geometry, with differential flute geometry ideal for milling Nickels Alloys, Stainless, and Titanium.