



Cutting NEWS

V-Series HELIOS®

Proven Technology for the Holmaking Industry

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A Changing Industry

Ron Bevels, District Manager

The story was told of a five year old granddaughter sitting in her grandfather's lap who asked, "Did God make you?" "Yes, He did," was the grandfather's response. "Well, did God make me?" the curious child again questioned. "Yes he did," smiling as his wrinkled face lightened with joy, "Why do you ask?" Running her soft, tender hand across his face, then feeling her own smooth, silky skin she hastily replied, "He seems to be doing a much better job these days, don't you think!"

As I reflected and smiled at this story, viewing the wrinkles Father Time has so graciously afforded me over the years, it reminded me of our cutting tool industry. For more than a quarter of a century, I have been involved, either in the use of or selling of cuttings tools. I know of no other industry that has advanced so far and is even doing a much better job these days. Behind every new innovation, even before a creative mind has dreamed the concept and a draftsman or engineer has placed in print, the cutting tool industry has been working to make it happen. It is a changing industry!

Recently, I called on a manager in the Medical Industry in Tennessee who said, "There is no shortage of cutting tools



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these days. Not counting the major cutting tool manufacturers, there are people in their basements, out of their garages, and in the vacant building next door knocking on my door every day offering me free tools to test." He went on to say due to modern technology, access to the internet and accessibility to new equipment this trend does not stop, and their tools are good." I smiled and agreed as I continued to aggressively convince him why I had the best offering.

Change has certainly come to this market, as well as "good tools." Someone once told me: "People are always telling me that change is good. But all that means is that something you did not want to happen has happened." Let's face it folks, "if what I did not want to happen" is here, how I handle myself becomes of paramount importance! Some ancient statesman said, "What you leave behind is not what is engraved in stone monuments, but what is woven into the lives of others." The impression or image you leave will stick with your customer long after you are gone and your tools have been tested. If it is all about you, there is one of you under every rock. If you project the image

of a strong, successful company backed by a team of experts who will be there to partner with your customers and see that their goals are achieved, you are not the lone ranger. I love the cell phone commercial that says, "I'm not alone, all these are with me!" as he boards the train. The ticket master says, "They better have tickets." If

"Learning to accept and empower change will give us the steps to move with the flow"

your company has tickets, you have made a statement. There is strength in numbers!

With change there is an energy that permeates its environment. If we can learn to tap into this energy, we will find the needed resources to manage when inspiration seems to vanish. Rather than mourning about what we cannot change, use this energy to come up with new and innovative ideas to challenge your customers and distributors. Learning to accept and empower change will give us the steps to move with the flow.



Short Cuts

NEXUS

Features and Benefits

Feature- Premium HSSE Substrate

Benefit- Increased Toughness of Substrate Prevents Chipping

Feature- HSSE specific WD1 Coating

Benefit- Dramatically Increases Surface Hardness

Feature- Available in Stub and Jobber Lengths

Benefit- Proper Lengths for Maximum Rigidity

Feature- Diameters from 1.0mm to 12.7mm

Benefit- Wide Variety of Diameters in Metric and Fractional Sizes

Feature

Cutting the "Tuff Stuff"

Contributor: Josh Dingivan, District Manager

Drilling, on average, accounts for over 60% of all metal removed from machined parts. It is usually one of the final steps in the fabrication of mechanical components, and thus has considerable economical importance.

In processing stainless steel, there are a few absolute elements that must be considered. These elements are the material composition, the drill, and the external parameters such as; speed and coolant method. The cost-effective, high output drilling of stainless steel has proven complicated due to nickel content (in 316 series about 8%) which makes it an austenitic grade. It is the nickel present in the material

that creates significantly more heat during drilling versus carbon or alloy steels. If the drill is spinning too fast in stainless, it may work-harden the steel under the point, making the processing of the hole that much more difficult. Aside from excessive spindle rotation speeds, too much pecking can also result in work hardening of the part. The result can range from poor drill life and inaccurate hole sizes, to tap breakage and thread tearing issues following the drilling operation. Additionally, stainless steel is typically low in phosphorus and sulfur. In carbon steels these two elements form non-metallic inclusions that cause chips to break off and prevent overheating

of the drill. If the chips do not come off quickly, the drill will retain heat, ultimately causing it to fail.

As heat is ultimately the key factor to control, coolant is a big concern. More specifically: coolant concentration and type. For stainless,

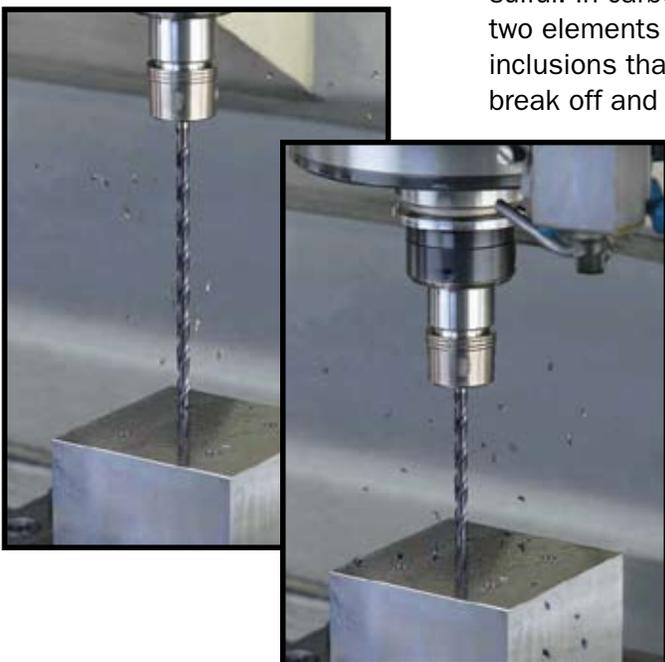
semi-synthetic or synthetic coolants (diluted with water) are the best, as

they both have excellent cooling properties. When using these types, it is critical to maintain a

concentration percentage of 8% to 10%. Tool life and work hardening becomes exponentially more prevalent when concentration falls below these levels. Straight oils (undiluted) provide excellent lubricity, but have very poor cooling properties. As a result, straight oil is simply not ideal for drilling stainless steel of any kind. If you are using coolant-through drills under high pressure, remember to consider using a coolant with high pressure additives that will help control issues of foaming or coolant separation.

With the innovation of better cutting tools, holemaking in stainless steel becomes more economically efficient. As previously illustrated, friction or heat is the worst culprit to the standard drill, but with improved point geometries these obstacles are avoided. Innovative drills utilizing high helix angles of 40 degrees and unique flute form design help to reduce machining heat and prevent work hardening. The advent of modern point geometry and point thinning have

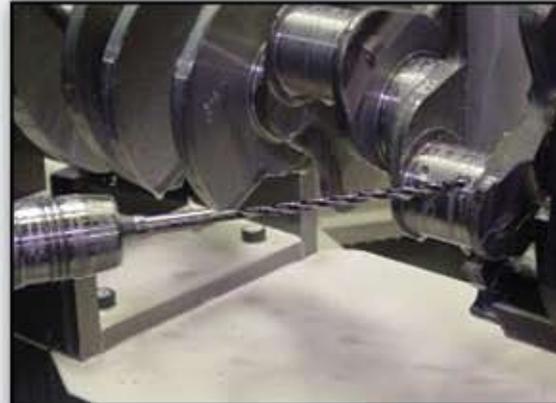
"Drilling, on average, accounts for over 60% of all metal removed from machined parts"



resulted in steel-based drills that output small broken chips, even in stainless steel, making non-step drilling possible. The evolution of substrates to premium grade vanadium high speed steel

“Innovative drills help to reduce machining heat and prevent work hardening.”

garners greater heat resistance and toughness, thereby preventing chipping that is often associated with drilling stainless steels. Finally, with an extremely sharp cutting edge to reduce friction and help chip curling, holemaking is economical when working with stainless steel. If even more performance is desired, and through the tool coolant technology is accessible, the same aforementioned features can be attributed to coolant-through carbide drills for ultimate productivity and life.



Short Cuts

EXOCARB®-FTO 3D • 5D
Features and Benefits

Feature- Premium Micrograin Carbide

Benefit- Superior Strength and Rigidity

Feature- NEW “WAVY” Point Form

Benefit- Longer Tool Life with Stable Low Thrust and Torque

Feature- NEW WD1 Coating

Benefit- Inhibits Wear on the Cutting Edge and Margin of the Drill

Feature- NEW Length/Diameter Ratio

Benefit- Additional Flute Length for Improved Chip Evacuation

Feature- NEW V-Style Coolant Notch

Benefit- Increased Flow Velocity and Flow Volume

Insider

New 10xD HELIOS® Drills!

OSG has expanded the HELIOS® line to include 10 times diameter drills! Now you can drill 10, 15, and 20 times diameter without pecking or the use of internal coolant.

HELIOS® new patented technology gives it the ability to process deep holes without the use of internal coolant supply. State-of-the-art flute design improves chip evacuation, making it feasible to drill up to 20xD without pecking. Patented thinning decreases thrust by nearly 50% when compared to the competition during testing. By utilizing OSG's WXL® coating, HELIOS® can handle a wide range of materials with up to three times greater wear resistance versus conventional coatings.

Industry News

Holemaking

Tim Grimm, District Manager

One of the most fundamental features in machining materials of any type is drilling holes. Almost all parts have holes for features, such as; locations of fasteners for part mounting, delivery of fluids or oils, holes to be threaded, or as simple as aesthetics or part lightening for weight reduction. All areas in the manufacturing industry rely on holemaking technologies to manufacture their parts; and bring cost savings and performance gains in the relentless pursuit of making money, securing business and providing quality parts to their customers.



The following are examples of the industries served by the manufacturing landscape in Wisconsin, and a general statement of how the industries are doing.

Automotive: Depressed, but not dead

Agricultural: Moderate growth to stable market

Mining and Heavy Construction:

Stable to slightly declining

Die Mold, and Die Stamping:

Slightly depressed, but small growth in some areas

Medical: Small base here, but moderate to good growth

Aerospace: Small base, but stable environment

Energy: Moderate to stable growth

Here in Wisconsin and the Upper Peninsula of Michigan, the industry base in manufacturing is spread over many different areas which has allowed for a more stable environment in the economy of manufacturing.

We are primarily a job shop based manufacturing environment with some larger

manufacturers existing throughout the area. Numbers are sluggish but positive things and much testing is still happening! Some of the trends seen here are the use of higher technology tooling appearing over the last five to ten years, and the supporting equipment such as high-pressure coolant delivery systems employed to get the most from the new tools appearing in the industry. Many of the new technology tools are used across several of the industries or even all industries; which makes testing and subsequent application to other areas in the industry almost too easy to justify your next opportunity at the customer!

“Numbers are down but positive things and much testing is still happening!”

Solid carbide coolant-through and advanced HSS-CO designs are both examples of some of the newest deep holemaking technologies.

These drills lend themselves to a wide range of materials, parts, and machines, offering no-peck solutions that give away to huge cost savings and superior quality holes. There is a huge range of materials for specific drills to overlap and succeed!

What is helping these tools succeed is due in large part to their advanced design, new technology coatings (which makes them almost non-material specific), advanced

substrates, and extremely consistent manufacturing processes. Solid testing, before the

tools hit the street, is important to get end users solid speed and feed rate information in order to succeed right out of the box. The first time is also a magic bullet to get you on the machine, stay there, and pick up new opportunities. Gone are the days of telling someone “Well the SFM range for your material is 150-550 SFM.” Now we can be within 5% with total confidence that we will succeed and impress.

It is an exciting time to be in the Cutting Tool Industry with all these new drilling technologies emerging and having a great laboratory like the Great White North to test them in!

Testimonial

The Shocking Truth

Sam Lewis, District Manager

As a former machinist, I can say we are a funny bunch. We have all got our own way of doing things, our reasons for doing so, and are not always easily persuaded.

When you tell a machinist what to run an OSG tool at, you get a deer in the headlights look or maybe the four eyeballs look. One eye-popping high performance tool is the V-series HELIOS® drill. When explaining its capabilities, you get more deer, more headlights, and more guys with four eyeballs.

Recently, a distributor in Denver had the opportunity to test the HELIOS® drill. His customer was drilling a 21/32 hole in a 4140 casting that was approximately twelve inches deep. There were sixteen holes per casting, and the drilling alone was taking about two and a half hours to complete. The distributor and I explained the process to the customer numerous times, to numerous people, all who reacted like those mentioned earlier. It took some convincing that this would work.

After reminding the customer that OSG would stand behind the performance claims if ran properly, they ordered up one drill on our performance guarantee.

"I cannot thank you enough for introducing this tool to our company"

Upon the drills arrival, we reiterated the education and sales process we had gone through when they ordered the drill. Again, deer, headlights, and four eyeballs, then a reluctant "OK, OK, OK, we will run it just like you said!"

We received a report, written by the Manufacturing Manager, after the testing was completed. An excerpt from the report read as follows: "We typically run our aircraft drill at .7 IPM. We were able to run the HELIOS® at 750rpm and 3.5 IPM. This particular operation usually takes us two and a half hours. With use of the HELIOS® drill we were able to reduce the run time to 45 minutes! I cannot thank you enough for introducing this tool to our company."

OSG's GTC industry prowess is clearly demonstrated with these tools. I am fortunate to be one of the people throwing these on the spindle and educating rather than competing against them. Any shop where peck drilling is employed is truly missing the boat if they are not using the HELIOS® drill.



Short Cuts

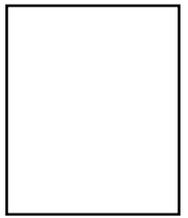
HELIOS®

Features and Benefits

- Feature-** Newly Developed Flat Flute
- Benefit-** Dramatically Improves Chip Evacuation
- Feature-** Newly Developed Low-resistance Point Thinning
- Benefit-** Produces Half the Thrust Resistance
- Feature-** Newly Developed Compound Flute Lead Construction
- Benefit-** Allows Non-step Drilling up to 20xD
- Feature-** Newly Developed WXL® Coating for Drills
- Benefit-** Improves Wear Resistance



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ENGINEERED



PEACE OF MIND

All Dried Up with
No Coolant-Through?

V-Series HELIOS® Drills

Proven Technology For Deep Hole Drilling

Contact OSG for more information.