



# TECH TALK

WITH DRILLING & BORING TAKING PLACE AT CRITICAL STAGES OF MANUFACTURING, MANUFACTURERS ARE INVESTING INTELLIGENTLY IN TECHNOLOGICALLY SUPERIOR CUTTING TOOLS.

BY BINDU GOPAL RAO

**THE CUTTING TOOL INDUSTRY IS MOVING** towards machining heat resistant super alloys with greater ease than ever before. The demand for machining of these materials is increasing rapidly and this is where the future is going to be. Dedicated sharp geometries with a strong combination of high hot hardness grades is required to machine these. Drilling, boring and tapping are done at an advanced stage of machining and, as a result, customers would like to go for one of the most dependable suppliers.

"3D is already a reality when it comes to manufacturing of some parts. Furthermore, the industry is impacted more and more by digital," says **Mirko Merlo, president & CEO, Walter AG.**

"Dormer PFX drills are manufactured from high

speed cobalt steel, suitable for use in a variety of materials for drilling depths from 3xD to 25xD. A thick web increases the structural strength of the drill for greater rigidity and minimises the risk of tool breakage. In addition, a special point geometry provides additional benefits including excellent centering - eliminating the requirement for a pilot hole and reducing the cycle time of the application. The PFX drills reduce thrust force and power requirements, ensuring accuracy is maintained throughout the depth of the hole. Available in bright finishes across the full range, a smooth-flow coating option is available on stub, jobber and long series drills. This Al-CrN-top coating reduces friction, increases wear resistance and, in combination with the parabolic flute,

1. Dormer PFX drills are manufactured from high speed cobalt steel, suitable for use in a variety of materials.



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eliminates chip packing at greater depths,” explains **Gautam Ahuja, MD, Dormer Tools India.**

Incidentally, Dormer has launched a comprehensive programme of solid carbide taps for machining hardened steels and other difficult to machine materials. To support this, Dormer Pramet has developed five new lines for threading depths up to 3xD under its Dormer brand. Offering a high level of performance and productivity, the taps are recommended for machining hardened materials up to 63 HRC, providing high wear resistance and long tool life even at high speeds.

**DO THE NEW**

The latest technology trends that have emerged in the manufacture of cutting tools are extensively focused on bringing down the cost of cutting and drilling while ensuring an increase in the overall productivity rate.



“New products have been introduced for many processes like turning, milling, drilling, boring and tapping, focussing on the aerospace industry.”  
Gautam Ahuja

2. & 3. Dormer has launched solid carbide taps for machining hardened steels.

4. The range of HSS drills from Dormer.

"One such noteworthy technology we adopted was the use of a Belt Furnace to sinter diamond wire saw beads and diamond segments. This technology reduces the cost of manufacturing to a great extent as opposed to the prior use of a hot press to sinter. A hot press involved the use of graphite and consumed an exorbitant amount of electricity. The belt furnace technology eliminated the use of graphite, while cutting down the consumption level of electricity to a great extent. Another technology that we

introduced is the use of pre-alloyed powders in the manufacturing of our cutting tools. As the cost of cobalt and tungsten kept soaring, it was no longer a viable option to use them," says **Anjan Salgame, MD, Sanwa Diamond Tools.**

The front runners in this industry are naturally continuously investing in R&D to meet the growing needs of their customers. "We launch new products twice a year, and are focussing on developing products for the future. A lot of work has been done in launching products for the aerospace industry, which is growing at a fast pace, to develop products to machine difficult to machine materials (DTMM). New products have been introduced for many processes like turning, milling, drilling, boring and tapping, focussing on the aerospace industry. The high growth and investment of large business houses in this industry provides motivation to us to invest in R&D for



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5. Sanwa's diamond wire saw.

6. Diamond segments from Sanwa.



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7. Walter works with customers, machine builders, universities and channel partners, when developing machining technology.

8. Technology and technological disruption will continuously create opportunities for global companies like Walter.

creating new products for the aerospace industry," says Ahuja.

### FACING CHALLENGES

Though the automotive industry is currently sluggish, it is still growing, though at a low pace. With the introduction of new products, there is a possibility to grow market share, which is the ultimate endeavour for any company. Market leaders can always predict the surge and dip in the industry to a certain extent.

"Facilitating our customers with tools that enhance productivity, while being technologically advanced and cost effective is made possible by ensuring a level of consistency with the R&D. The sluggish market might axe the level of demand but our in-line investment towards R&D over two decades has helped us invest wisely and not digress from R&D. It is a result of R&D that has modernised technology in manufacturing to great lengths. When we started manufacturing cutting tools over two decades ago, the production cost of a diamond segment was Rs 800; the present price of the same diamond segment is Rs 60. Our focus in R&D helped us work



towards backward integration. We are the only company in India to manufacture raw materials such as metal powders that are most integral in the manufacture of our diamond segments. This is how we have stayed at the top of our game," states Salgame.

In today's scenario, the customer throws several challenges to organisations in terms of critical components, close tolerances, competitive cost per components to be achieved; and this gives them an inspiration to keep their tool geometries updated. "Our R&D Team located at the German plant visits India at regular intervals for technology transfer and to meet end-customers. This feedback helps in improving our in-house process as well as customer confidence. We have invested in a new generation machine that gives a higher output and the required quality. Demand sluggishness is a challenge in the automotive sector. Keeping this in mind, our R&D centres – located in different parts of the world – are connected online, implementing new generation tools in every plant. These tools are tried and tested at our German plant and technology transfers are made," adds Kumar.

### NEW VISTAS

Newer segments like export to non-BRIC emerging markets, mining, heavy industrial machinery and medical devices are areas that can help the industry as far as future growth is concerned. In fact, the advent of technology has spared no industry; it is mandatory to keep yourself abreast of the latest developments, the demands in the market and so on.

"In a manufacturing industry such as ours, goods manufactured at competitive prices are what customers demand. While we worked on adopting technology to decrease the manufacturing cost, we could never turn a blind eye to investing a substantial amount of time and resources in our Research and Development department. The current market poses a challenging task of fulfilling the demands of a plethora of customers, but such situations have only helped us emerge successful because of our strong R&D team. The R&D team has always helped us find

## THE CURRENT SITUATION SHOWS A RAY OF HOPE FOR INDIA TO EXPORT TO NON-BRIC COUNTRIES.

suitable alternatives to cater to the ever-growing industry demands," said Salgame.

"We continuously work with customers, machine builders, universities and channel partners to develop the best possible machining technology. This is part of what we at Walter call Engineering Kompetenz. We do take our customers' challenges and together we look for the best solution. On a global base, we still win market share in automotive, but one of our strategic moves in the last few years was to invest a significant part of R&D and capital spend in other segments where we are indeed very successful," adds Merlo.

### AERO PUSH

The aerospace industry is one of the key markets in which Ceratizit has introduced High Performance End Mills with differential pitch and helix. The requirement in these industries are very critical in terms of cycle time and quality.

"Keeping this in mind, our new generation end mills work at much higher feed rates and depth of cuts. This in turn reduces customer cycle time and results in a profitable solution. It is segment-wise and a completely customer-centric approach. For instance, for aerospace customers, there is a new trend of getting lighter parts, so we have a dedicated team capable of delving into R&D support for the development of tooling products in the aerospace segment where composite materials are used. Composites such as CFRP are 70% lighter than steel and 40% lighter than aluminium alloy; presently, it is enjoying high market demand due to its reduced weight, which in turn equates to higher fuel efficiency in aerospace applications. We have special geometries and coating in round tools for effective machining of composite materials perfectly, without allowing surface delamination. In turn, if we speak of the conventional automotive industry, customers are mostly considering cycle time reduction. So yes, there are new high performance geometries, which can run on



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higher parameters (greater cutting speed, high feed and depth of cut) and be applied both for drilling and milling operations," opines **Anil Kumar, director & COO, Ceratizit India Round Tool Solutions.**

### LOOKING AHEAD

The current situation in the industry shows a ray of hope for India to export to non-BRIC countries. This is purely because the non-BRIC nations are looking beyond China, but need the quality to be on par with products manufactured in advanced countries. This is where a country like India holds a competitive advantage, because we have an amalgamation of advanced products and reasonable pricing.

"We have a presence in the mining industry for a long time, while heavy industrial machinery and medical devices are our new focus and we are working in that direction. This is already contributing to our business, to some extent, and we are expecting that this segment grows gradually," says Kumar.

"Technology and technological disruption will continuously create opportunities for global companies like Walter that can leverage on a product portfolio that starts with tools of micro diameters and goes up to a maximum diameter as big as the machine can hold," signs off Merlo. ■



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9. Walter has made a strategic decision to invest significantly in R&D outside automotive applications.