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VHybrid - The Ultimate in Flexibility

Biberach/Riß,01st August 2022 – As one of the latest innovations presented at the GrindingHub exhibition, the new VHybrid from VOLLMER was undoubtedly one of the talking points of the show. With the facility to both erode PCD and grind carbide cutting tools in a single operation by combining the two technologies into a single machine, the VHybrid is the epitome of flexibility.

(You can also find the press release with relevant images at: https://www.vollmer-group.com/en/company/press/press-releases)

To celebrate the arrival of the innovation and to develop a greater understanding of the concept, Alexander Schmid, Product Manager for Rotary and PCD Tools at VOLLMER discusses the new arrival in more depth….

Working for VOLLMER since 2007 and being an integral part of the product management team since 2014 with responsibility for the erosion technologies, Alexander says: “We started with two technologies, disc and wire erosion technology. With this technology, we have significant success processing tools via erosion. The concept for the new VHybrid machine is borne out of the extremely successful VGrind technology. This means that we have vertical spindle alignment with the upper spindle being the grinding spindle and the lower spindle having both erosion and grinding. With this functionality, we can erode and grind most of the tooling that is available on the market. Furthermore, as the use of complex tools such as full-head PCD tools is steadily increasing, the demand for machines that enable combined machining, eroding and grinding, is also growing.”

“For Vollmer, the erosion machines have been a remarkable success, and, in the past, customers would have one machine for grinding and another for eroding. For customers that did not know which direction their company would evolve, they would start with a grinding machine and a few years later evolve their technology to enter the erosion market. Having the VHybrid technology in the portfolio perfectly meets the needs of these businesses by giving them maximum flexibility.”

The machine concept

The concept of the VHybrid 260 offers the user the possibility to erode 100% but also to grind 100%.Or, and this is a decisive advantage, both technologies can be used on one and the same tool. The combination of the two technologies on the VHybrid 260 offers the user unbeatable flexibility.

Taking a closer look at the design of the machine that is built upon the VGrind vertical spindle construction concept - the machines are effectively brother and sister. The differences are the programming software, the control system and the integrated erosion generator. Alluding to this, Alexander adds: “From the tool cutter division, we have the Numroto System. On the erosion machines, we have used the Beckhoff system.”

“This is the control system first used by our wire machines and it will be the fundamental basis for all of our erosion and laser machines in the future. In addition to the control, the programming software also plays an important role. With EXLEVEL PRO you can do the programming of the carbide tools which is identical to what can be achieved with the Numroto software for grinding, it can also produce PCD tools applying vein and planar technology. The VStandard software, that is ideal for PCD brazed tools rounds off the whole system.”

“We try to keep the software on our machines as simple as possible. This has been the target from our older machines through to our new models. Our aim is for the operator to invest as little time as possible in transitioning to new machines. Customers can learn how to operate the VHybrid machine comprehensively within a very short time period.”

“We ran field tests with customers in both the wood working and metal business fields. This test period was highly informative and extremely positive, as we could see how the VHybrid 260 conformed to fulfilling our target Unique Selling Points (USPs) under industry conditions. Demonstrating its ability to fulfil the production of a truly diverse range of cutting tools and undertaking the production of PCD tip tools, PCD spiral tools as well as carbide tools – the machine exceeded our expectations.”

The heart of the machine

The demands on the surface quality of PCD tools are increasing from year to year and with the software and the control system already highlighted as two of the three key features that differentiate the VHybrid from the extremely successful VGrind, the

third major difference is the erosion generator. Discussing this, Alexander confirms: “This is the heart of the machine. We call this the VPulse EDM and this is our in-house development. By developing this internally, the evolution of the system is in our hands. We already apply this generator in the QXD 250 and VPulse 500 machines, adding it to the VHybrid 260 will bring the technology to a third machine. However, the generator in the VHybrid machine is the most powerful generator in an erosion machine on the market right now. We have received feedback from the market that our system is the benchmark in terms of efficiency and surface finish.”

“At GrindingHub, we have presented a new setting with the generator where we can take the surface finish down to 0.05µRA. This allows surfaces on PCD tools to be produced on the VHybrid 260 in an unprecedented quality, which is currently only possible with complex and cost-intensive grinding. This raises the question of how EDM can establish itself in the manufacturing process in the future as a result of the process innovation.”

“Tool manufacturers can carry out machining with the VHybrid 260 as usual with safe process control in unmanned operation. Thus, EDM can be used as a key technology for machining small tools such as drills and milling cutters to 1mm in diameter and above, among other things.”

Higher Surface Finishes and Productivity

The surface finish benefits are just one benefit of the VPulse EDM generator. As Alexander adds: “We also have customers that do not require high-quality surface finishes on their tools, these customers want maximum processing speed to increase throughput and tool production rates. This is amazingly easy to programme as the level of surface finish is up to the customer. The VPulse EDM generator allows the customer to choose between maximum efficiency and throughput or the highest quality surface finish. This option gives the customer both flexibility and the facility to customise the process to suit their needs – complete control for the customer.”

“What we also offer with the VHybrid 260 is a base efficiency level that is the benchmark of the industry. Furthermore, with our digital products, we have a performance package that customers can access to get more efficiency out of the machine. Working with optimised machine settings, the performance package provides different possibilities where customers can access the package by the hour or customers can buy it permanently. This is a licensed product that will enable the

user to produce tools at higher production rates to save even more time and money. The performance package will yield productivity benefits of between 10 and 35% above the already impressive levels the machine can achieve. However, this benefit will be dependent upon the type of tool being produced. This performance package is already available on the QXD 250 machine and users will be familiar with the benefits it provides."

Portfolio Positioning

When introducing innovative technology, manufacturers typically target gaps in the market not covered by existing product ranges. In the case of the VHybrid 260, VOLLMER is not only bridging a gap between two different technologies – it is creating a synergistic solution for manufacturers. Looking at where the new VHybrid sits in the VOLLMER portfolio, Alexander adds: "Our existing 6-axis machine, the QXD 250, is perfect for a huge tool range up to 300mm diameter. The VHybrid 260, on the other hand, has a more confined diameter range. Until the arrival of the VHybrid 260, some customers wanting to process PCD tools below 150mm diameter would have to buy the QXD, which is a larger machine. With the VHybrid 260, we have a compact machine specifically for this diameter range. We did our industry research with customers and found an extremely high percentage of PCD tools are below the 150mm diameter range, which the VHybrid 260 facilitates. This caters for the metal industry, much of the wood industry and increasingly commonplace is CFRP machining in the aerospace industry and electronics industries - both require smaller diameter PCD drills. At the moment, we can produce tools from as small as 1mm diameter, but we are investigating how small we can go, and our next target is 0.5mm diameter."

Market Evolution – VOLLMER is a fulliner

Grinding, Eroding an Laser. At VOLLMER, customers will be able to access all the technologies available on the market. Like any new concept, the VHybrid 260 perfectly fills a niche in VOLLMER's portfolio whilst neatly bridging a technology gap for manufacturers. Alluding to the demands of the marketplace, Alexander continues: "The market has not changed in terms of tool volumes manufactured by customers. However, the tools are becoming more complex, and industry is placing ever greater demands on cutting tool manufacturers for more precise cutting tools. With the Vollmer machine portfolio, we can react optimally to the requirements of the customers. For us, we have the entire scope of options – but the most important thing is that the customer buys from VOLLMER, and having the complete range

gives us the facility to serve all of the customers' tool production and sharpening needs."

"The requirements placed upon our machines vary upon the different industry sector. For example, the metal cutting industry has placed a huge emphasis on cutting tool precision - an automotive or aerospace manufacturer may demand very tight tolerances and the best possible surface finish. In the woodworking industry, the focus is more on efficient processing and flexibility. but even in this industry this is also changing, and ever-increasing precision is needed. Last but not least, the VHybrid is able to fulfil these requirements across all industries. One thing is for sure, there is great diversity in our customers' reasons for purchasing, but they all love the flexibility of the new machine."

New technologies in the future

VOLLMER is always striving to yield as many benefits as possible from the evolution of technology for its audience, and the VHybrid is no exception. As Alexander adds: "The innovative technology in this machine is the generator. It is critically important to keep this as flexible as possible with regards to surface finish, productivity and efficiency. With regards to other developments, we work closely with the VGrind team as we have the same base construction and kinematic model. An example can be found with the steady rest, the VGrind has a steady rest for longer tools to prevent deflection and improve surface finishes and stability. On the VHybrid, we can use the steady rest in the erosion process also."

With the fundamental base of the VHybrid based upon the VGrind concept and the Vgrind now evolving with new models arriving like the latest argon and neon machines, Alexander believes VHybrid progress will certainly follow.

"In terms of automation on the VHybrid, we are starting with the HC4, there is also the HC4+ for larger tool dimensions, but we are also planning to have the HP pallet magazine in future. The VGrind also has a new tool clamping system, but this does not mean we will be adopting this technology. We have to assess the needs of the marketplace and integrate existing technology or develop new technology to meet the needs of the market."

Giving the customer what they want…

Taking a pragmatic approach to the future development of technology, Alexander concludes: “On one side we have the technical issues, where customers always want faster production and better quality, but they also increasingly want digitalisation. We have the IoT gateway to connect the machines to the web to give customers the facility to extract data from the machine, but also in the future to bring data into the machine.”

“Another important factor at the moment is automation and reducing the floor area. The cost per square metre of floor area is expensive and customers want to keep the floor space of a machine to a minimum. For the customer, the most perfect machine will always be as small and fast as possible with the ability to machine the biggest possible tool diameters. At VOLLMER, we aim to attain this whilst continually enhancing our quality.”
(approx. 10.000 characters)

Press picture

Caption: Alexander Schmid presenting the new VHybrid 260 to the press at Grinding Hub 2022.

Caption: Alexander Schmid presenting the new VOLLMER VHybrid 260.

Caption: Alexander Schmid with the new VOLLMER VHybrid 260

About the VOLLMER GROUP
With its comprehensive range of machinery, the VOLLMER GROUP – which has sites in Germany, Austria, Great Britain, France, Italy, Poland, Spain, Sweden, the USA, Brazil, Japan, China, South Korea, India and Russia – enjoys global success as a tool machining specialist in terms of both production and service. The range of products offered by this leader in technology includes the most advanced grinding, eroding, laser and machining tools for rotary tools and circular saws in the woodworking and metalworking industries, as well as for metal-cutting band saws. With this offer, VOLLMER relies heavily on tradition and the company's strengths: Local branches, quick decisions and rapid action by a family-run company. The VOLLMER GROUP currently employs approximately 800 workers worldwide, with around 580 of these at the main headquarters in Biberach alone, including more than 75 trainees. The company invests around eight to ten per cent of its turnover in the research and development of new technologies and products. As a provider of technology and services, the VOLLMER GROUP is a reliable partner to its customers.

Further information and relevant images are available at:
https://www.vollmer-group.com/en/company/press/press-releases

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