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Collaborative tooling solutions

Tooling manufacturer Arno Werkzeuge believes that working closely with its customers from an application perspective is the only way to build lasting partnerships and deliver effective machining solutions. PES reports.

Machining is a little like Formula 1 racing – every little screw is tuned to increase performance.

For turning processes, thinking outside the box is essential, especially when it comes to getting the right combination of tool, insert and cutting fluid that is paramount for optimum performance.

Generally, with cutting tools, manufacturers and customers working collaboratively often produces the best results. It's important that the tooling manufacturer understands what the customer is trying to achieve and draws on experience to deliver the right solution.

In Formula 1, there's nothing that isn't constantly scrutinised in order to glean more improvements. Yet only the driver and the car manufacturer who have mastered the overall package can reap the world championship crown.

According to Arno Werkzeuge, despite constant optimisation and tweaking of specifications, turning tools have by no means reached the limit of their potential for improvement. Responsible tool manufacturers not only think about selling as many cutting tools as possible but also are sure to include the tool holders and coolant supply in the equation.

Be open to third-party expertise

As a manufacturer, Arno Werkzeuge is directly involved in the continuous development of tool holders and coolant supply. Thanks to its willingness to work



Clamp holders with internal coolant channels produced by hybrid processes at Arno, increase process reliability and improve surface quality in machining processes through optimised cooling

closely with customers, the family-run company not only has a wealth of expertise from real-life applications but

also offers a wide range of holders with and without coolant supply.

"Users can rely on the best overall

packages for small and large batches and for Swiss and fixed headstock lathes. Our focus isn't to maximise sales figures for high-margin products – it's to find the best solution for our customers," assures sales manager Dieter Wollensack. "I also find being totally honest is the best approach. Sometimes I'll say something's not possible, even if it risks losing the business."

Innovative when it comes to cost per part

New products and solutions are the end result when tooling manufacturers have this type of mindset. One example of this is the clamping holders with through-tool cooling for inserts that Arno Werkzeuge developed in 2022. They're produced using a hybrid manufacturing process and combine additive technology with conventional CNC milling.

The result is a tool holder that Arno says, achieves better surface quality because coolant flows directly where it's needed. Three precisely aligned channels guide the coolant exactly to the cutting edge from above and underneath without obstructing chip evacuation. The special geometry of the cooling channel creates a nozzle effect that offers



Bringing coolant directly to where it's needed: hybrid holder from Arno Werkzeuge, combining additive technology with conventional CNC milling



Arno's clamping holders, which are manufactured using a new hybrid process, significantly increase the tool life of cutting tools and produce better surface quality

significantly improved cooling compared to conventional channels. The outlets never need adjustment and since they're much closer to the cutting zone, the coolant reduces the cutting temperature effectively.

"Experienced users will recognise the benefits immediately – greater process reliability, less vibration, better surface quality and, as some customers have reported, up to threefold improvements in tool life," Dieter Wollensack adds.

Hybrid holders: more productivity from additive

The shanks of the hybrid holders from Arno Werkzeug are produced using conventional CNC milling, however the complex head part of the holder is attached directly to the shank using a 3D printing process. "This gives us a totally new design freedom and outstanding stability," says Werner Meditz, head of technology at Arno Werkzeug.

"The geometric design of the cooling ducts can be precisely optimised so that coolant is guided through the holder to

the cutting tool at maximum efficiency and reaches the cutting edge directly from above and from underneath," he explains. "This cools the tool flanks in a way that was previously unthinkable. At the same time, the number of attachments required at the top of the head is reduced to the absolute minimum. The chip breaks as needed and is optimally evacuated regardless of the cutting depth.

"The result? We get a lot more coolant to where it needs to go. The innovative hybrid holder is exactly what clever users want – and this all comes from a tooling partner thinking out of the box."

Bread and butter work

Applications not only cover high-end machining operations but also processes involving frequent workpiece changes. At Arno Werkzeug, for example, you will find a wide range of turning holders for external machining, where the length is easily adjustable using a scale.

"The Arno Special design is extremely simple and practical when it comes to



Arno Werkzeug thinks of its customers: three precisely aligned channels guide the coolant precisely to the cutting edge from above and underneath without obstructing chip evacuation. The special geometry of the cooling channel creates a nozzle effect, which greatly improves cooling

adjusting the length and coolant access," confirms Mr Meditz.

The holder and through tool cooling are easy to install and ensure repeatable process reliability. The fact that they are nickel-plated, high tensile and precisely finished promises top quality and a long tool life. The efficient cooling system, which also feeds coolant directly to the cutting edge through three channels, not only ensures long tool life, but also allows higher cutting speeds with optimised chip control.

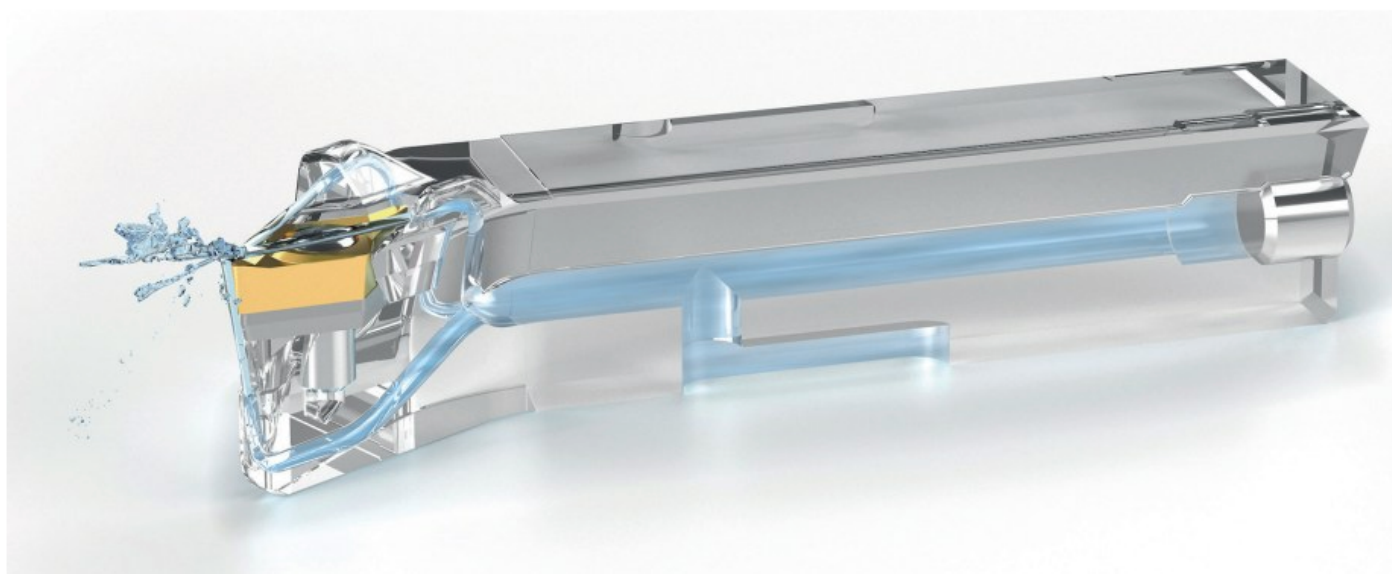
Wide choice of boring bars

For internal boring, the designers at Arno Werkzeug have developed suitable boring bars for a wide range of applications. The range includes bars made of steel and solid carbide, each with two possible coolant hole exits. Depending on the turning process, users can choose between a coolant channel

from above (IKO) for through holes, and a coolant channel from underneath (IKU) for blind holes. Accordingly, chips are guided forwards away from the cutting edge (IKO) or behind the cutting edge and flushed out (IKU). This reduces wear.

Boring bars come in right-hand or left-hand versions with different shank diameters and a wide variety of clamping holders and many approach angles. Combined with suitable mini indexable inserts from Arno Werkzeug, components as small as 4.8mm diameter can be machined, regardless of material. And here, we're only talking about the standard range, not customised products. All Arno boring bars are nickel-plated, high tensile and precisely machined for optimum performance and long tool life.

Arno Werkzeug
www.arno.de/en



Since the head of the clamp holder is sintered using a 3D process, channels are created to guide coolant to the cutting tool with extreme efficiency and cool the cutting edge from above and underneath