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Q&A: Kennametal Becomes GE Additive Beta Partner to Advance Binder Jet

As [Kennametal](#) becomes the latest company to partner with GE Additive on our Binder Jet technology with cemented tungsten carbide, [Brian Birkmeyer](#), product line leader at GE Additive, catches up with [Jay Verellen](#), general manager at Kennametal Additive Manufacturing.



(L-R: Jay Verellen, Kennametal and Brian Birkmeyer, GE Additive)

How you would summarize Kennametal's additive journey to date and how is additive shaping your future approach to manufacturing?

Jay Verellen: Our additive journey is strategic and customer-focused. Here's what I mean: Kennametal's mission is all about performance for our customers. And we see 3D printing as a key innovation-enabling technology, because it offers opportunities to improve performance and deliver value for our customers—through light weighting, optimized design, shorter lead times, etc. So, our adoption of additive is a strategic extension of our core materials and manufacturing capabilities and aligned with our mission.

In terms of our journey, Kennametal has been creating 3D-printed prototypes, wear components and cutting tools for about a decade. In 2019 we launched our additive manufacturing business unit within our Infrastructure segment focused on leveraging our capabilities in 3D printed tungsten carbide and Stellite for wear applications. And across the enterprise, we use a variety of additive platforms to innovate new metal cutting products, such as our 3D-printed reamer for electric vehicle machining.

With additive, we have another tool, along with our expertise in traditional formative and subtractive manufacturing processes, to deliver performance and value for our customers, and we see great long-term opportunity.

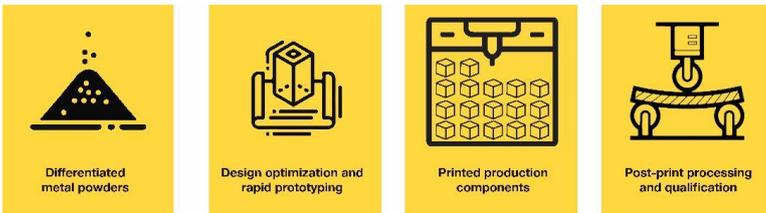
What are your customers looking for from your additive manufacturing offer?

Jay Verellen: Our customers are looking for solutions to challenges—whether that's helping increase uptime for an oil well or ramping production of new electric vehicle components. So, they partner with Kennametal to help them unlock the full value of additive manufacturing and deliver better performing solutions, faster—which enables them to run longer and be more productive. But you can't just add powder to a machine and press print. Our customers turn to us because we offer deep expertise and end-to-end additive capabilities, from high-proprietary materials, like tungsten carbide and Stellite that they can't get anywhere else, to design optimization performance, all the way through to fully finished components for serial production. Our comprehensive capabilities and reliable supply chain make it easy for them to do business with us, and that, in turn, makes it easy for them to concentrate on what they do best.

And how do you typically work with them?

Jay Verellen: Early, often and in-depth. I mentioned previously that we have end-to-end capabilities from powder to finished part, so we partner with our customers from start to finish. It starts with understanding the customer's particular challenge and how we can leverage additive to solve it—whether that's shorter lead time, a complex geometry, lighter weight or all those things!

Then we work with them to select the right materials for the best performance and to design, iterate and scale for serial production. We also support post-print processing and qualification where needed. It's really about building better together, so we guide them through every step of the AM journey.



Kennametal's four-step approach. Image courtesy of Kennametal

Both GE Additive and Kennametal have a rich heritage in materials development and materials science. How does that material legacy inform your additive manufacturing strategy and development?

Jay Verellen: I love talking about the materials science because that's really at the core of what Kennametal does. Our fundamental competency in material science is what delivers exceptional performance for our customers across all our manufacturing capabilities, including additive. Kennametal has long been the recognized leader in tungsten carbide and Stellite, and our additive manufacturing strategy for wear solutions is built on our core capabilities in these materials.

When we combine the design flexibility of additive manufacturing with the performance of our materials, we give customers a real step change in wear and corrosion solutions for their most challenging applications. And that's why we're so excited about this partnership with GE—because working together, we'll be able to leverage GE's Binder Jet technology to take our leadership in cemented tungsten carbide to the next level and deliver innovation for our customers.

Kennametal already has experience with metal binder jetting. What have been some of your positive experiences, surprises, and where is there room for development with the technology?

Jay Verellen: We've been leveraging metal binder jetting for some time now. As I said previously, you can't just buy a machine and expect to hit print when working in the kinds of specialized materials we're using. There are unique challenges around process complexity and scaling the technology, even given our deep experience. And these are challenges you simply can't foresee until you experience them across the flow path.

On the positive side, we have systematically developed key processes to a high level of manufacturing readiness and can confidently and consistently supply low- and high-volume serial production, as evidenced by the thousands of field-proven components in service with our customers. As noted, our strong material science foundation, solutions mindset and firm customer orientation are really our guiding lights.

Based on that previous experience, why have you decided to partner with GE Additive's Binder Jet team, and what was the process in getting to that point?

Jay Verellen: We recognize that strategic partnerships on target materials and processes are important to drive growth and innovation in AM. GE Additive is a proven leader in Binder Jet technology, developing processes and equipment with scaled production in mind, and we know they share our commitment to customer-centric innovation. We've been impressed with what we've seen so far, and this partnership is the right next step for us to enable further scaling of our operations to meet customer demand.

What do you and your team hope to get out of the beta partner program?

Jay Verellen: The key to a successful partnership is the way in which the members leverage each other's core strengths to advance existing capabilities and drive new solutions. The GE beta program provides Kennametal access to next-generation binder jetting while also providing GE the opportunity to further develop machine and process improvements as we learn together. By combining the deep knowledge of both organizations, we look forward to leading the industry in process development and 3D printing of cemented tungsten carbide.

What gets you excited about additive?

Jay Verellen: I could probably list a hundred different things that excite me about additive, but I'll focus on two. The first is how AM is changing the way the world is built TODAY. We are well past the "novel" stage and are using additive to solve real-world, in-the-field challenges for our customers every day. Each AM part that Kennametal makes helps our customers be more productive, and there is a tremendous sense of satisfaction in that.

The second is how AM is going to change the way the world is built in the future. The application possibilities are expanding exponentially as the industry continues to innovate and grow. I wake up excited every day that Kennametal is part of shaping what's next.

Find out more about this partnership at the RAPID + TCT show in Detroit, May 16-19 at the Kennametal [booth](#) (#4015) and the GE Additive booth (#2620).