THE DIGITAL FOUNDRY OF THE FUTURE IS HERE,
AND IT'S FINALLY AFFORDABLE

Viridis**3D**

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ARTICLE TAKEAWAYS:

1. The move to a digital foundry is getting more affordable and accessible

2. Go from CAD to casting in one day with digital technologies

3. Reduced inventory and easy changes are among the benefits

This digital rendering shows a cope, drag and core that was 3D printed on the Viridis3D RAM 123.

Early adopters will be rewarded with fast production of molds and cores, less inventory with digital file storage, easy part changes and other benefits

Change, in and of itself, can be challenging. But figuring out precisely when and how to change — especially when large capital investments are necessary — can be an especially vexing problem when margins are thin and there's little room for error.

Looking on the horizon, it is crystal clear that foundries will be going digital, but, at the same time, questions about when and how that change will take place are less certain.

Consider this: Computer-aided design, or CAD, is a mature technology in the marketplace, but even today, some foundries aren't using it, showing that some businesses set in their ways continue to tiptoe toward the future, no matter the benefits that may await them.

As large foundry customers — primarily big original equipment manufacturers or OEMs — continue to build out their own cycles of digital design, product development and manufacturing, they will eventually expect their suppliers to be all-digital as well, so their whole supply chain can deliver a virtuous circle of benefits.

We're working diligently to bring this future closer to the present, for even the smallest foundries. We're in the beginning stages of offering an all-new and affordable form of 3D printing — Robotic Additive Manufacturing — that has the potential to dramatically streamline operations and give users a competitive edge.

While Robotic Additive Manufacturing isn't the only innovative product being offered to foundries today, it does give a glimpse into the future of foundries, where 3D printing and other digital technologies present a new and improved way of doing business.

Saving Time

Anyone in the foundry business knows that time is money, and that building match plates and molds and cores takes time — anywhere from a few days to a few weeks.

Most methods require highly skilled labor, either a woodworker who can read drawings or a CNC machinist who can program an expensive milling machine.

Over the years, there've been a variety of strategies to reduce the time needed to create a match plate for molds and cores. Some of these innovations have had longer legs than others.

This technology is simple. A print head is attached to a high-precision, multi-axis robot arm from ABB. The arm moves the print head in a Cartesian X and Y direction across a work table that is free of a box.

3D printing of sand molds

One side of the print head deposits a layer of sand, which has been mixed with a reactive additive. The other opposing side of the print head, meanwhile, features 12 print heads that jet a binding agent onto the sand, producing a final level of detail to XX microns, depending on the sand used.

When the job is done, the part cures on the table for about 30 minutes before it's ready for casting. This new technology offers the ability to go from CAD file to casting in just a few hours, depending on the size of the mold or core being build. For the

customers of foundries, this offers an obvious competitive advantage compared to foundries that aren't using such technology.

Counting the Digital Benefits

While the time savings are obvious, the turnkey system also offers the ability to operate without the expense of a skilled woodworker or machinist.

Once a foundry has gone digital, there are many other cost-saving benefits, too.

For one, there is no longer a need to store mold and core patterns. If a digital file of the matchplate doesn't already exist, the existing inventory of patterns can be 3D scanned, stored on a hard drive and the physical asset can be trashed, freeing up space for more productive uses.

What's more, once patterns are on a digital file, changes are easy and less time consuming and costly for both customers and foundries.

As technology changes, so does the pricing which is bringing the difficult decision to change a bit closer to reality for many.

Even if you don't think the time is right for your foundry to go digital, it would be wise to keep your head out of the sand and looking toward the horizon, because digital changes are coming and your ability to compete could depend on when and how you decide to make the change.

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