Viridis3D™

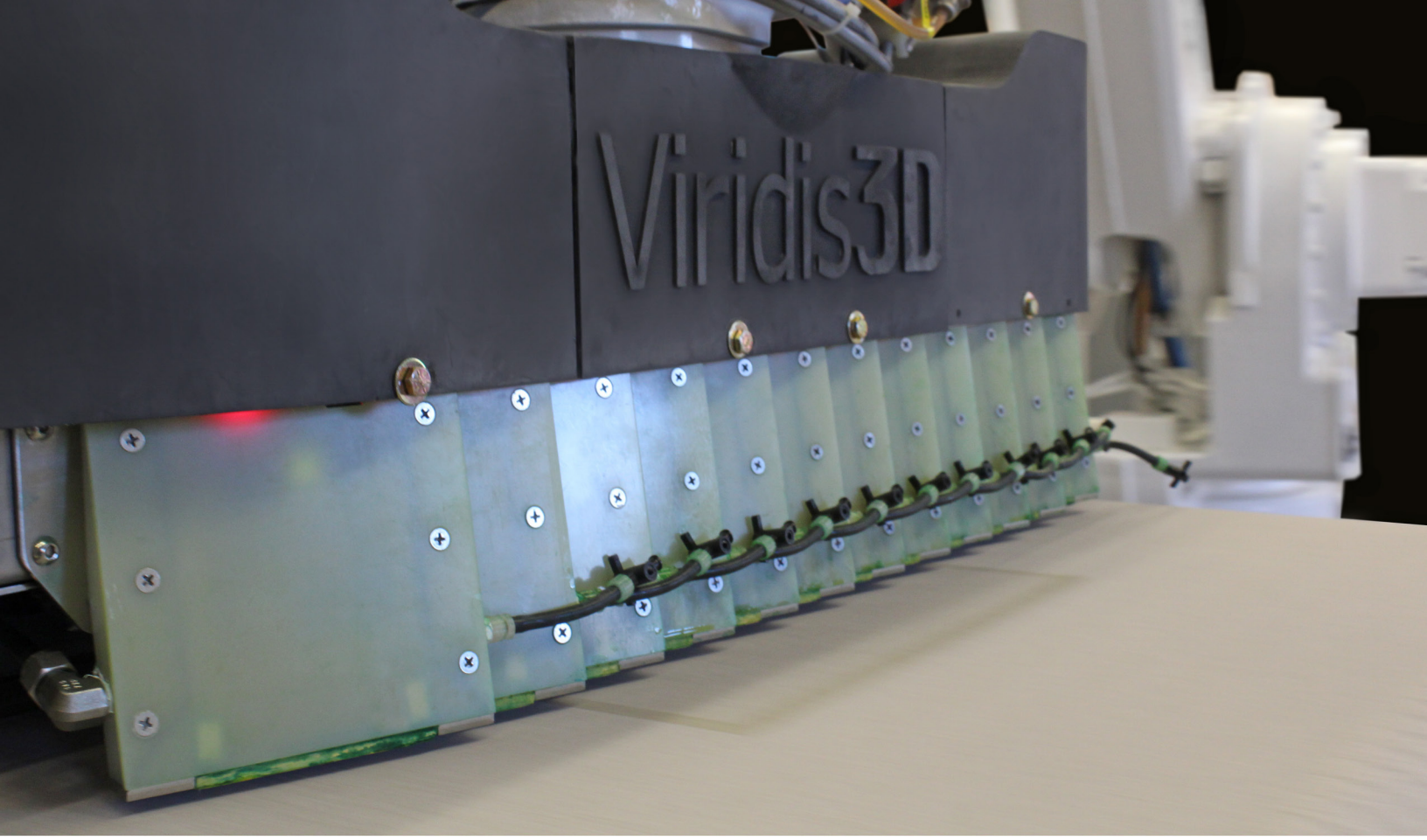
RAM 123 | Robotic Additive Manufacturing

Affordable 3D Printing of Sand Molds and Cores

Based in Woburn, Mass., Viridis3D is a developer and manufacturer of additive manufacturing technology for the metal casting industry. The systems Viridis3D produces are responsible for making sand molds, mold cores and investment casting pattern for foundry applications. Viridis3D fabricates industrial 3D printing systems, materials and software.

Our RAM 123 uses Robotic Additive Manufacturing, or RAM, technology to 3D print large pieces, up to 1' x 2' x 3', on a worktable and outside of a box. It's an easy and affordable solution that delivers quick ROI in a multitude of ways, from quick production times to reduced inventory.

The affordability of the RAM123 robotic sand printing system for the first time lets small, medium and larger foundries bring this technology in-house.



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Technical Details

Viridis3D's Robotic Additive Manufacturing (RAM) system is novel in both its scalability and simplicity. By attaching a printhead to the end of an industrial robotic arm, Viridis is able to print large complex molds and volumes of cores.

The system works by filling an open tray on the back side of the print head assembly with sand (solid consumable) from the hopper sand delivery system. The robot positions the print head over the build table, drops sand, spreads it and prints all in a single pass. When setting up for the next pass, the robot rises in height by the layer thickness to add vertical depth. The process completes until the mold is complete.

CAD software directs the robot arm with print head to lay down thin layers of sand and binder jetting fluid. Curing is quick and backing delivers a strong final product that is ready for casting within hours.

Details

- 28" wide printhead for sand and binder jetting fluid
- Attached to robust ABB robotics and controls
- Cartesian movement
- Base sand: Silica sands, GFN Oklahoma and Wedron
- Sand GFN65, round or subangular
- Modified Furan binder
- Dry acid-based catalyst (premixed)
- Speed: 1 ½ - 2 ½ vertical inches per hour
- System repeatability: 0.030µ
- Layers: 200µ - 500µ
- Accuracy +/- 0.010"
- Compatability: ferrous and nonferrous sand casting
- Strength (ambient dry): 175 psi
- Strength (oven baked 350° F) > 370 psi

Value

- Affordable
- Simple to Use
- Simple, Modular Design
- Low Consumables
- Scalable

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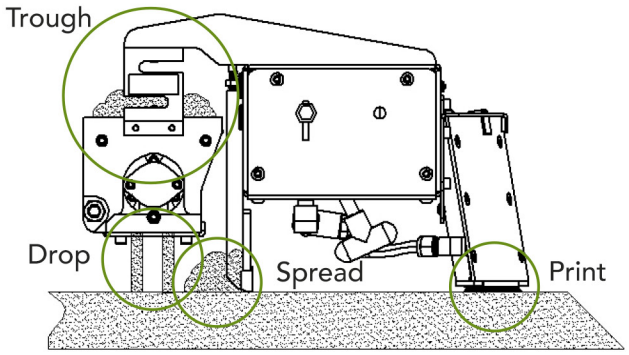
Turnkey

The RAM123, though driven kinematically by an industrial robot, is entirely turnkey. Once the system has been installed and calibrated at your facility, no programming is required for the robot. The robot accurately and repeatedly performs the motion of head cleaning, park (when idling), printing and sand refill (fetch). There is no need nor opportunity for the operator to intervene thus increasing productivity and contributing to ease of use.



The Viriprint software accepts STL formatted files and allows the user to setup and orient their build volume. The result can be saved to a tray file should the user care to print the same job repeatedly or across multiple printers. The print process involves:

- Launching the Viriprint program
- Import STL file to be printed
- Orient, scale, copy and justify parts
- Save tray file, if repeatability desired
- Start print job

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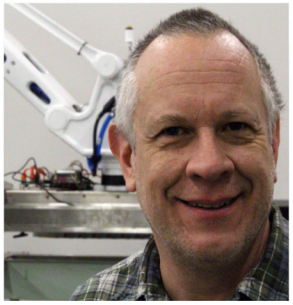
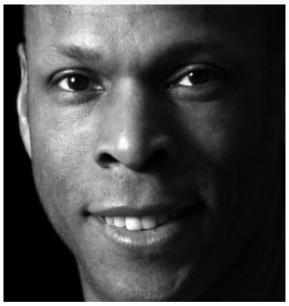
Leadership

Viridis3D was founded in 2010, with the RAM printer project beginning three years later. More than 50 years of combined experience in additive manufacturing.

Prabh Gowrisankaran
General Manager



Dr. Jim Bredt, Ph.D
Head of Engineering



Howard Rhett
Technical Lead/Applications

Viridis3D™
Viridis3D,
10 Roessler Road,
Woburn, MA 01801,
Phone + 781-305-4961

envisionTEC

ENVISIONTEC, INC.
15162 S. Commerce Dr.
Dearborn, MI 48120, USA
Phone +1-313-436-4300

ENVISIONTEC GMBH
Brüsseler Straße 51
45968 Gladbeck, Germany
Phone +49 2043 9875-0

Learn more at:
envisiontec.com/viridis3d