

# THE RAM SYSTEM

Viridis3D™

## Sand Castings In Just A Few Hours

The Robotic Additive Manufacturing systems from EnvisionTEC and Viridis3D are the fastest, most flexible robotic 3D printing options in the foundry and 3D printing industries today.

Using a patent-pending technology, a proprietary print head attached to an ABB robot arm uses exclusive binder jetting technology to print sand molds, mold cores and investment casting patterns for foundry applications. The proprietary systems include easy-to-use Viriprint software that uses a CAD file to print a mold and core in just a few hours.



### Applications

- Pattern fabrication (high volume, low volume)
- Replaces match plate patterns
- Core box production
- Lost Foam (polystyrene)

### Simple Design

- Industrial robots scalable
- Modular design with robot & printhead
- Lower development cost
- Lower overall maintenance cost

### Affordable

- Costs \$1MM less than competing systems
- Rugged, robust design
- Open system architecture
- Designed to operate in a foundry environment
- Reusable unprinted sand

### Easy to use

- Low interval maintenance
- Generous, scalable build volume

### Build envelopes sizes

- RAM 123 (1' x 2' x 3')
- RAM 224 (2' x 2' x 4')
- RAM 236 (2' x 3' x 6')
- RAM 336 (3' x 3' x 6')

### SPECIFICATIONS

<b>Speed</b>	2 1/2 - 3 vertical inches / hour*	2.75 typical
<b>System repeatability</b>	100μ	
<b>Layers</b>	200μ - 500μ	400μ default layer thickness
<b>Part roughness</b>	200 - 300 RMS	Microfinish comparator
<b>Accuracy</b>	+/- 0.010"	
<b>Base Robot</b>	ABB IRB460 (2.5 m)	Palletizing robot
<b>Base sand</b>	Silica Sands, GFN Oklahoma & Wedron	
<b>Sand GFN</b>	115 to GFN65, round or subangular	
<b>Catalyst</b>	Dry acid	Premixed
<b>Resin</b>	Modified furan	
<b>Compatibility</b>	Ferrous & nonferrous sand casting	
<b>Strength</b>	175 psi	Ambient dry
<b>Strength (baked)</b>	>370 psi	Oven baked 350°F

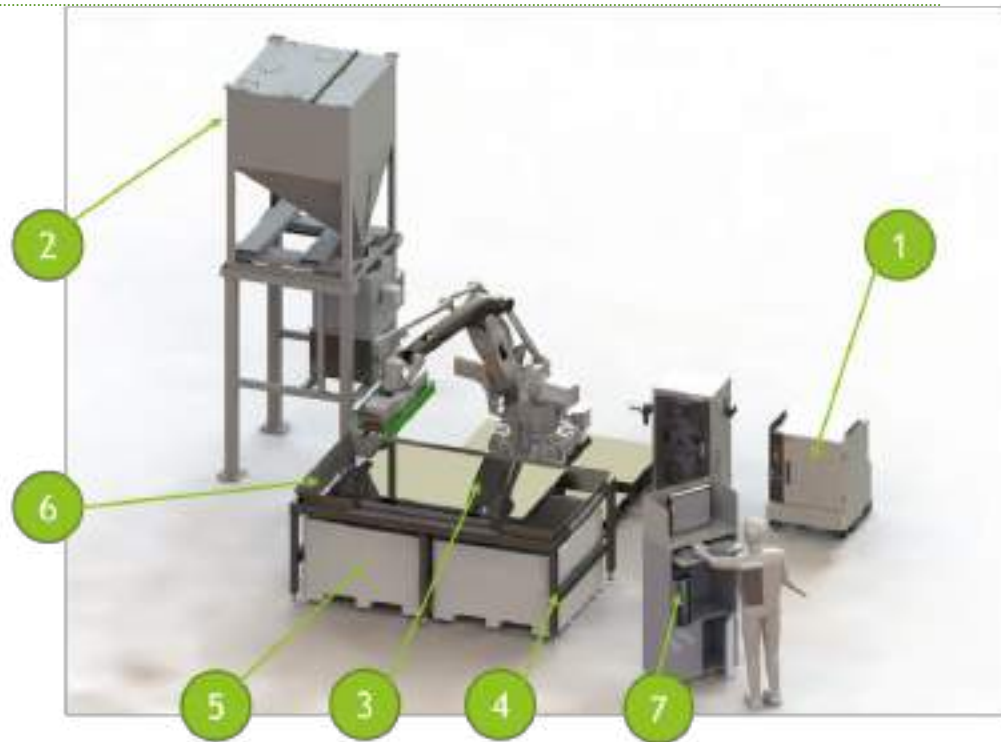


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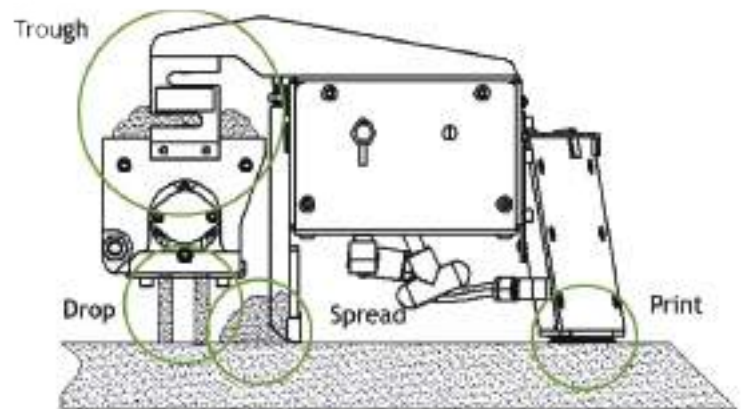
## Printer Overview

1. Robot controller
2. Hopper
3. Build plate
4. Build table
5. Overflow bins
6. Deflector
7. Host computer



## Printhead Overview

- ▶ Printing action takes place in one direction
  - ▶ Print head (facing the robot from the front) prints from **right to left**
  - ▶ Three actions occur every directional pass
1. **Drop** - sand drops from depositor trough
  2. **Spread** - titanium spreader bar spreads sand flat across build table
  3. **Print** - binder is jetted onto sand surface



## RAMBOX – Automated build box

- ▶ Larger configurations
- ▶ Containment system
- ▶ 6' long print swath
- ▶ 'lights out' manufacturing

