

# RAM

**REACTIVE ADDITIVE MANUFACTURING**

## Large-Scale Thermoset Additive Manufacturing

The world's first large-scale thermoset additive manufacturing machine, RAM enables cost-effective printing of thermoset materials in a wide range of applications including low-cost fixtures, tools, and autoclavable molds for prototype and production parts. RAM has the ability to produce large-scale parts in various resolutions with novel pumping technology reactive deposition materials.



### RAM 816

**Build envelope: 16' x 8' x 3.5'**

Designed for large-scale fabrication, RAM 816 features a roll-in/roll-out table for easy loading, unloading, indexing, and processing. The sophisticated print head can be adjusted to the optimal resolution and print speed.



### RAM 48

**Build envelope: 8' x 4' x 4'**  
**(scalable sizes available)**

The RAM 48 was designed as a cost-effective solution for medium-scale fabrication. The system can be configured modularly for a custom build index.

## The Thermoset Difference:

Thermoset materials strengthen when heated and cannot be melted. While thermoplastics can be reheated, it cannot withstand high temperatures without losing structural integrity.

Thermosets contain polymers which **chemically react** in the curing process to form a powerful bond. The thermoset advantage lies in the cross-linking of polymers between printed layers resulting in **stronger, more thermo-tolerant products**. Thermoset materials significantly **increase z-layer strength**, decreasing thermal expansion compared to thermoplastic materials. Thermoset materials also allow for **increased tool path freedom** as printing can occur between previously deposited soft materials resulting in **significantly shorter layer times**.



### ► Modular Design

The RAM 48 model has a print area of 4-feet by 8-feet, with optional expandable 4-feet by 4-feet sections allowing for unrestricted build dimensions.

### ► Pick and Place

Fabrication is simple with the ability to pick and place items into the print, such as heating channels or sensors to monitor degradation.

### ► Open Layer Time

Unlock your design creativity and make more complex prints by leveraging open layer times to add onto prints even after material has cured.

### ► Print Multiple Objects Simultaneously

Maximize your machine uptime by printing items simultaneously.

### ► Secondary Bonding

With secondary bonding, you can join two printed components, make quick repairs to any damaged areas, and apply coating for a class A surface finish.



**Controls:**  
Proprietary software with touchscreen



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