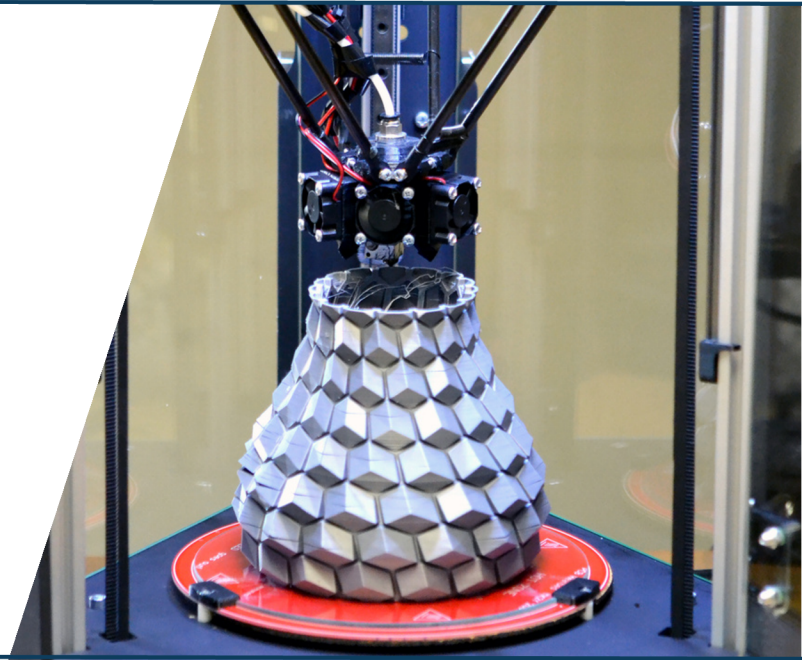


ABOUT THE TECHNOLOGY

ADDITIVE MANUFACTURING

A game-changing process in the evolving world of Pressed Materials

Additive Manufacturing (3D printing) builds parts layer by layer from powdered materials, offering precision, design flexibility, and near-net-shape efficiency. As an extension of the pressed materials ecosystem, it reduces waste, allows for rapid prototyping, accelerates production, and represents a major growth area for the industry.



How It Works

- A digital 3D model is created using CAD software
- Metal powder or other substrate is spread in thin layers
- Layers build up to form the final geometry and the material is fused where needed
- The part is finished through sintering or other secondary processes

Additive Manufacturing is how we test, iterate, and build smarter products and components.



North Central Pennsylvania
Pressed Materials Consortium

Want to know more? Visit pressedmaterials.org or contact our Regional Innovation Officer, John Williams at jcw5919@psu.edu

Features and Benefits

- Synergy with metal powders being produced for conventional PM
- Complements pressing and sintering by enabling complex or custom shapes
- Ideal for short runs, lightweight components, and high-performance parts
- Advances innovation without replacing legacy manufacturing lines
- Allows for rapid changes without re-tooling.

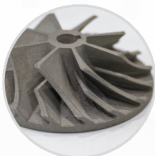
Example Applications



- Lightweight brackets for aerospace and drones



- Customized medical implants or surgical tools



- High-performance gears or heat exchangers

- Prototyping new part geometries for automotive use

- Custom tooling and jigs for production lines

Key Advantages Over Other Processes

AM Offers...	Compared To...
Design freedom and geometric complexity	Limits of subtractive machining
On-demand production and lower cost	Volume production for cost-effectiveness
Faster prototyping and iteration with less custom tooling	Slower, tooling-intensive setups
Mass customization	Inflexible mass production
Consolidation of multiple parts	Multi-step assembly processes

Real-World Innovation: High Performance Components for Next-Gen Aviation

Pressed materials are enabling new applications, like GE Aviation’s GE9X engine, the first with FAA certification to feature over 200 metal 3D-printed turbine blades. These parts are 30% lighter than traditional versions and boost fuel efficiency by 10%—achievements possible only through additive manufacturing.

Future Potential

By building on powdered metallurgy expertise, North Central Pennsylvania can quickly prototype and scale complex, high-value parts for fast-growing sectors like aerospace, advanced automotive, energy, and medical devices, where lightweight, high-performance components are in demand.

