



3-D Printer for High Quality, Large-Scale Metal Parts

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WARF: P150236US01

Inventors: Thomas (Rock) Mackie, Brandon Walker

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a 3-D printer designed to balance cost and complexity and capable of producing high resolution metal parts for the automotive, aerospace and other industries.

Overview

Despite recent advances in additive manufacturing, especially rapid plastic prototyping, there is still a need for better 3-D metal printers. Current techniques are relatively slow and not up to the task of producing large, high resolution models.

The Invention

UW–Madison researchers have developed a linear multisource 3-D printer capable of producing large, fully dense metal parts with micron resolution.

The highly practical design employs a mechanically scanned cathode comb, large metal powder bed and vacuum. The design ensures a tightly controlled focal spot size, minimizes the number of beam sources, produces large parts at full density and requires little or no post processing because of the high resolution print head.

Applications

- Prototype car frames and bodies
- Aerospace parts, turbines and jet engine chambers
- Complex single parts
- Custom-designed automobiles
- Large replacement components for ships/aircraft
- Also amenable to high resolution plastic parts

Key Benefits

- Scales to very large sizes
- Faster and more accurate than existing 3-D metal printing techniques
- Simplified electron optics
- Practical design
- Minimal beam distortion or scatter

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WARF
Wisconsin Alumni Research Foundation

| info@warf.org | 608.960.9850

The development of this technology was supported by WARF Accelerator. WARF Accelerator selects WARF's most commercially promising technologies and provides expert assistance and funding to enable achievement of commercially significant milestones. WARF believes that these technologies are especially attractive opportunities for licensing.

Additional Information

Related Technologies

- [See WARF reference number P120012US01 for information on a radial 3-D printer that makes thermoplastic prototyping more efficient and accurate.](#)

Tech Fields

- [Engineering : Additive manufacturing](#)

For current licensing status, please contact Michael Carey at mcarey@warf.org or 608-960-9867

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