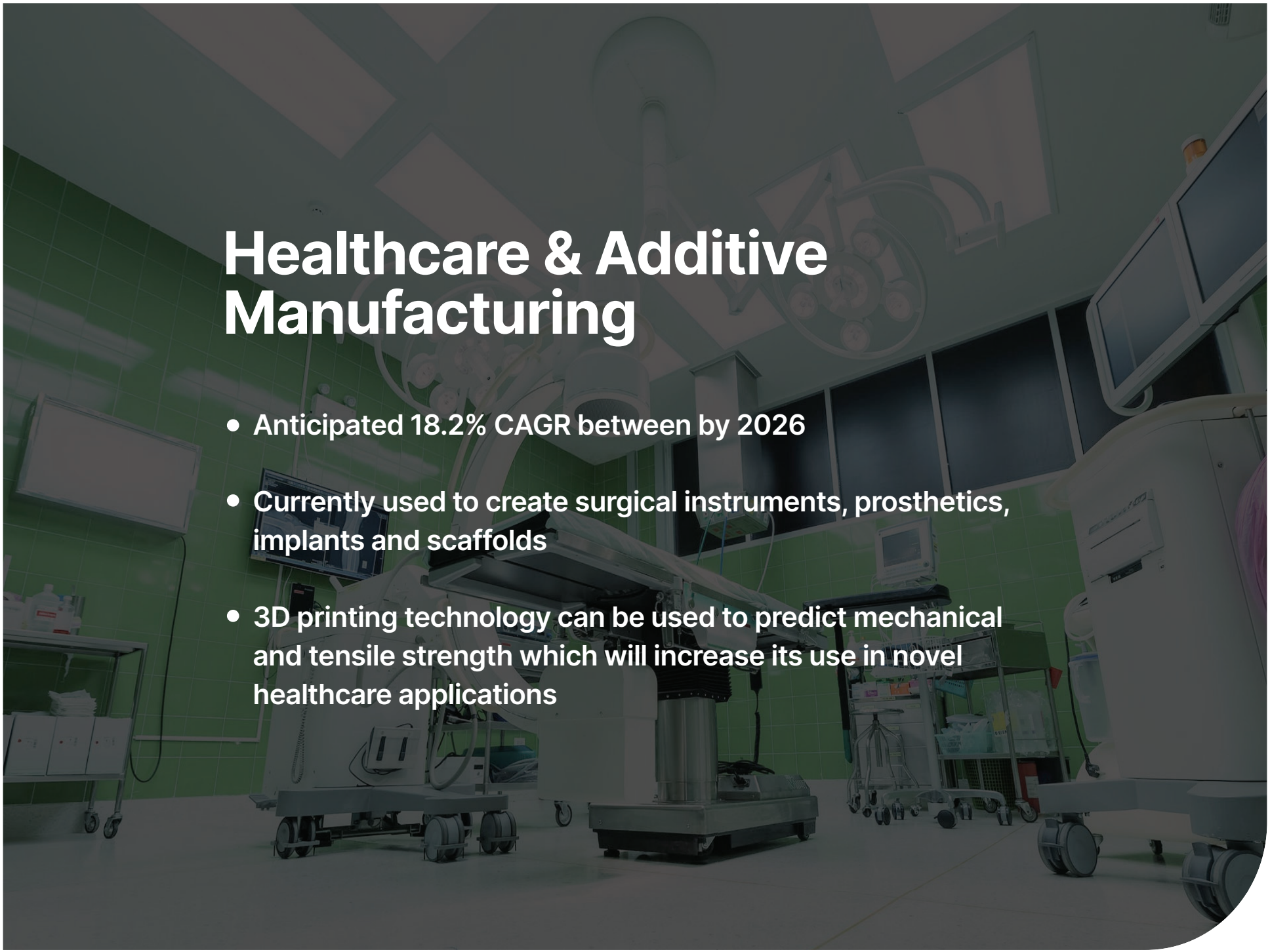
3D METAL PRINTING VS. CNC MACHINING.

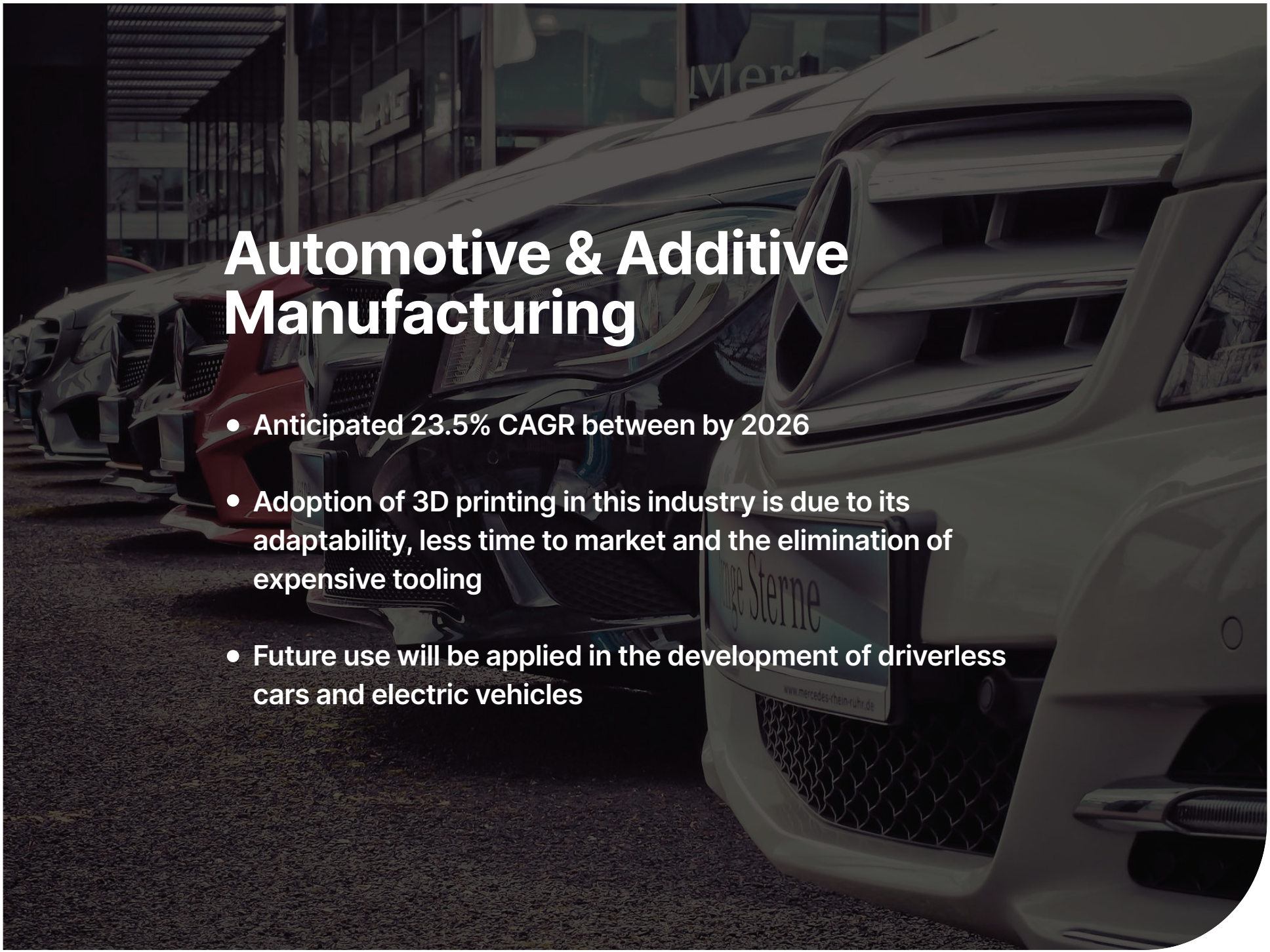
WHAT'S THE DIFFERENCE AND WHICH IS BETTER?

Additive manufacturing (or 3D printing) is the process of generating 3D objects derived from a virtual model through layering material. It's expected to see a 31.4% CAGR (compound annual growth rate) between by 2026 and is replacing traditional CNC Machining; the subtractive process of using computerized controls and machine tools to remove layers from a stock piece material to produce a custom-designed part. In short, 3D metal printing looks to be the next big thing in manufacturing, especially for the industrial, automotive, and healthcare industries. But why is CNC machining being supplanted? And what are the advantages of manufacturing? We've compared the two.



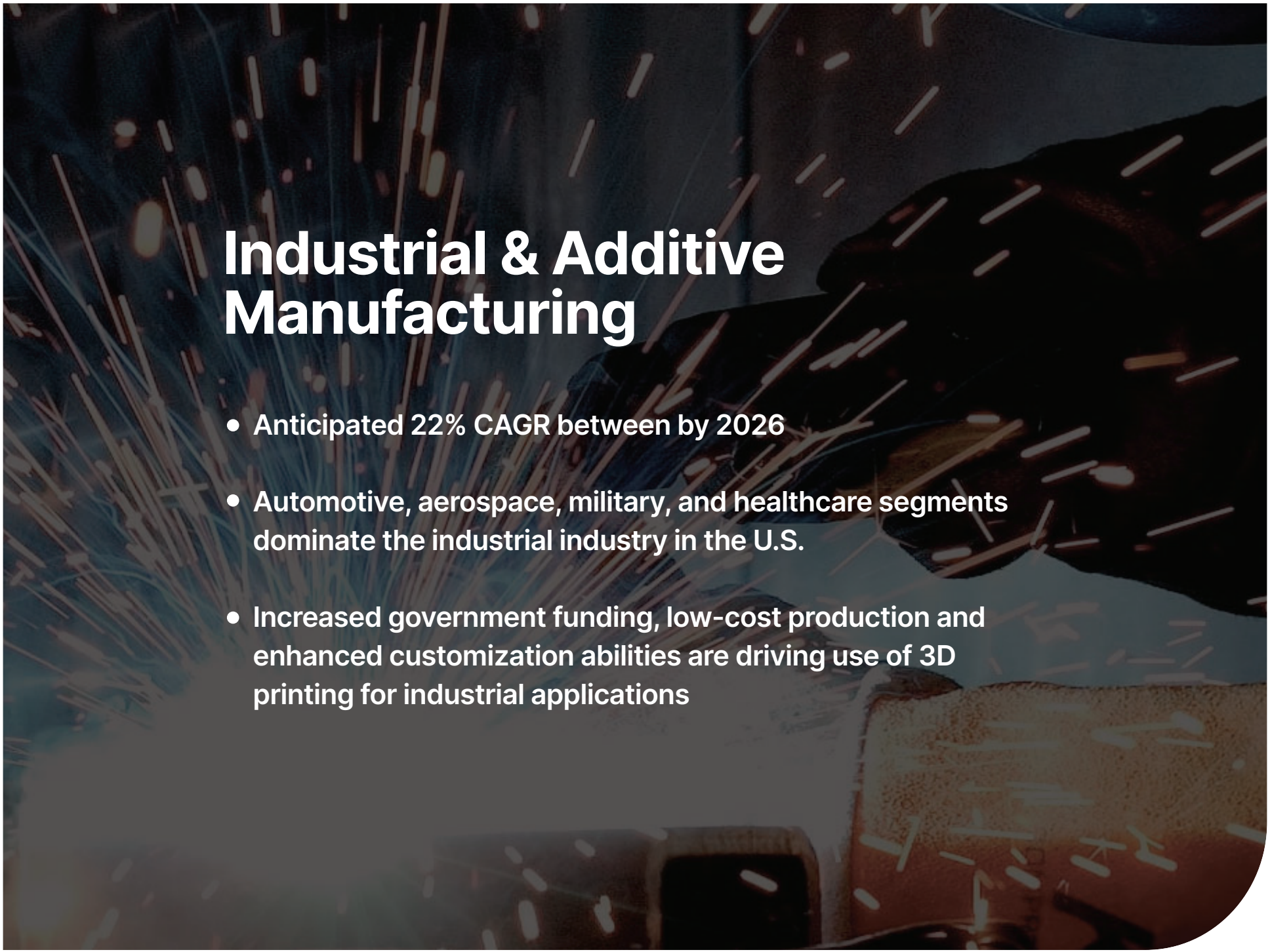
Healthcare & Additive Manufacturing

- Anticipated 18.2% CAGR between by 2026
- Currently used to create surgical instruments, prosthetics, implants and scaffolds
- 3D printing technology can be used to predict mechanical and tensile strength which will increase its use in novel healthcare applications



Automotive & Additive Manufacturing

- Anticipated 23.5% CAGR between by 2026
- Adoption of 3D printing in this industry is due to its adaptability, less time to market and the elimination of expensive tooling
- Future use will be applied in the development of driverless cars and electric vehicles



Industrial & Additive Manufacturing

- Anticipated 22% CAGR between by 2026
- Automotive, aerospace, military, and healthcare segments dominate the industrial industry in the U.S.
- Increased government funding, low-cost production and enhanced customization abilities are driving use of 3D printing for industrial applications

EASE OF USE

Additive Manufacturing

- 3D printing is known to be simpler than machining
- No supervisor required once printing has started

VS

CNC Machining

- A skilled operator is required to ensure correct placement of part, rotation speed, cutting path and to select the proper tools
- Post-processing requirements are lengthy and involved
- Cannot walk away from machine

TOLERANCE

Additive Manufacturing

- Due to ‘heat and reform process’ 3D printing has less tolerance
- However, this method has the superior ability to work with miniscule amounts of material and create designs that are thin and hollow (which has many benefits for the aerospace industry)

VS

CNC Machining

- Better for heavy duty, end-use parts

COMPLEXITY

Additive Manufacturing

- Can create parts with complex geometries that traditional manufacturing processes cannot replicate

VS

CNC Machining

- Requires custom tools to be created for parts to be shaped

ENVIRONMENTAL FRIENDLINESS

Additive Manufacturing

VS

CNC Machining

- “Additive” literally means adding material on top of itself. 3D printing develops parts from the “bottom up,” meaning less material is wasted and used.

- CNC Machining relies on “subtractive manufacturing.” This is the process of chipping away at a material (like a block of metal) to form a part.

- Much material is wasted and metal shavings require extensive cleanup

COST

Additive Manufacturing

- For low volume output, 3D printing is more cost effective

VS

CNC Machining

- For high volume output, machining is more cost effective

FLEXIBILITY

Additive Manufacturing

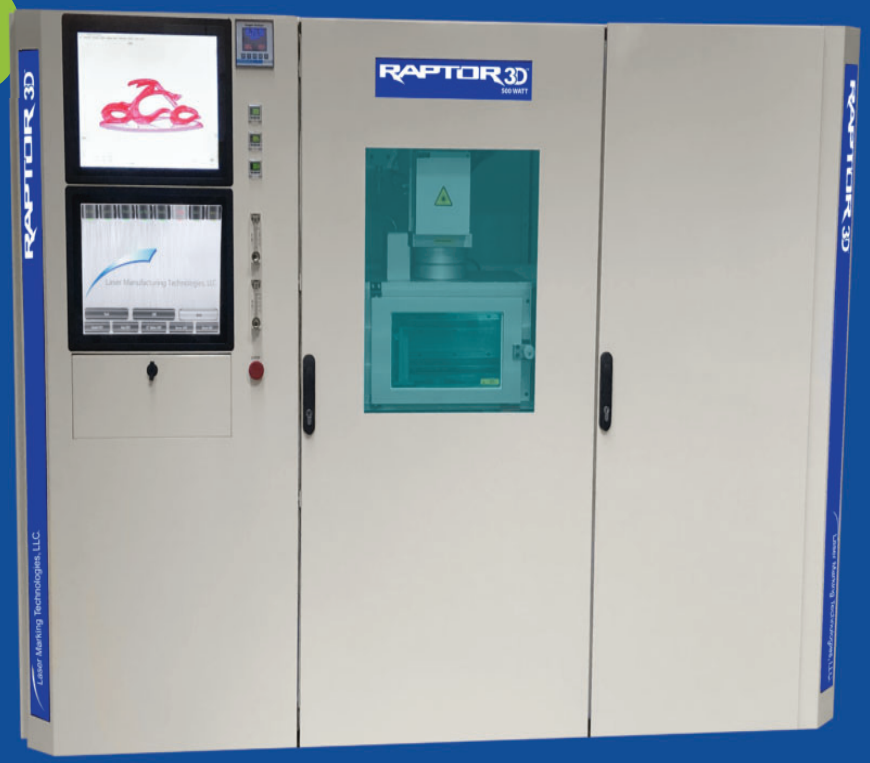
- Designs can easily be tweaked with a few buttons

VS

CNC Machining

- Virtually none. And entire redesign and new tools may need to be created

OUR 3D METAL PRINTING SOLUTION: THE COBALT RAPTOR 3D



The Cobalt® Raptor 3D™ offers a new way for manufacturers to enter into the 3D additive market with a trusted partner.

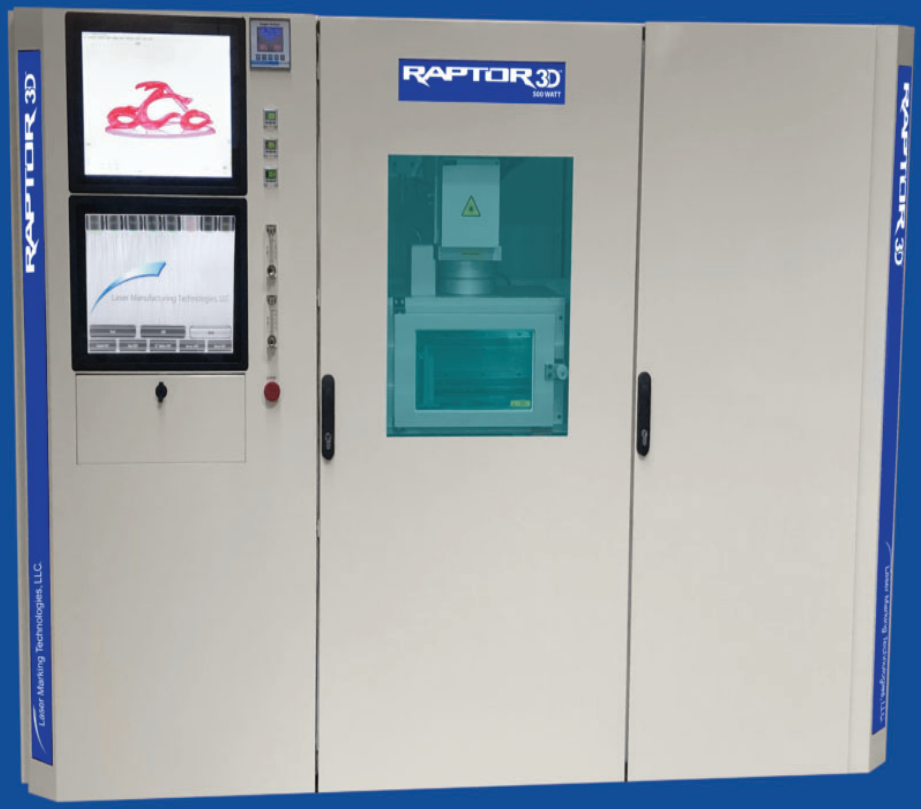
Laser Power:
500W- Water Cooled

Scan Speed:
200 inches per second

Software:
Windows10/OmniMark100/STL
Slicer/Magics compatible

Materials:
Stainless Steel, Inconel, Titanium, Tool Steel, etc.

Laser Source Type: Ytterbium Fiber
Laser Wavelength 1080 ±2nm



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