



September 15, 2023

Ni Powder for Hypersonic AM

Mission-critical metallurgy



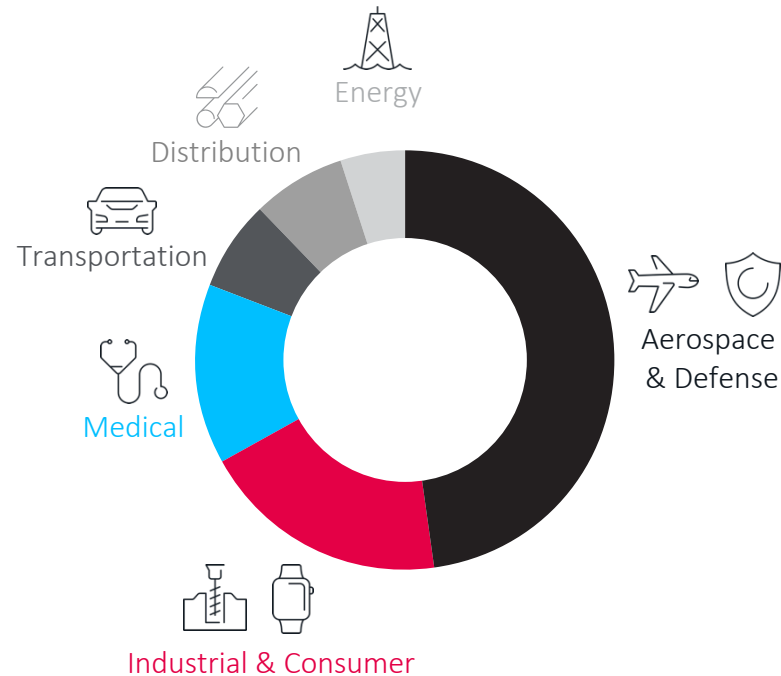
Carpenter Technology: A US-based global leader in specialty materials and solutions

134 years
specialty alloy innovation



Carpenter Steel projectiles
for the US Navy, Reading, PA, 1890

\$2.6B sales



Global presence
Sales, distribution, manufacturing



500+ high-performance alloy grades

- Stainless steels
- Titanium-based
- Nickel-based
- Super alloys
- Tool and die steels
- Alloy steels
- Cobalt-based

Plus made-to-order compositions

DoD and OEMs trust Carpenter Technology for mission-critical metallurgy



200+ metallurgists developing stronger, tougher, corrosion-resistant alloys

Carpenter Additive: A leader in additive manufacturing

Range of capabilities with \$200M invested to date

R & D

- Dedicated R&D center
- Dedicated R&D equipment
- R&D and project management from industry and academia

POWDERLIFE

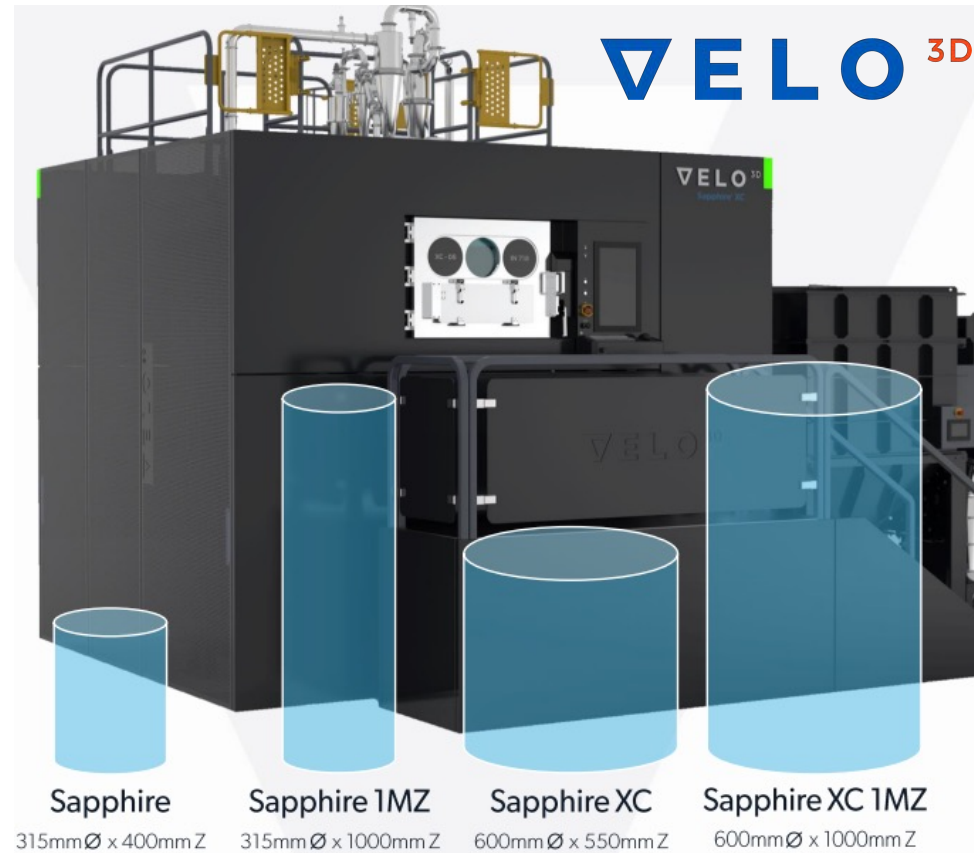
- Mitigate risk, improve safety, and maximize economics
- Closed-loop powder management solutions
- Intelligent hardware for bulk powder handling
- Software designed to capture the digital thread

AM FEEDSTOCK

- Powder: Ti, Ni, Steels
- Global footprint of powder atomization capability
- One of largest gas atomized producers in the world
- Standard and customized production

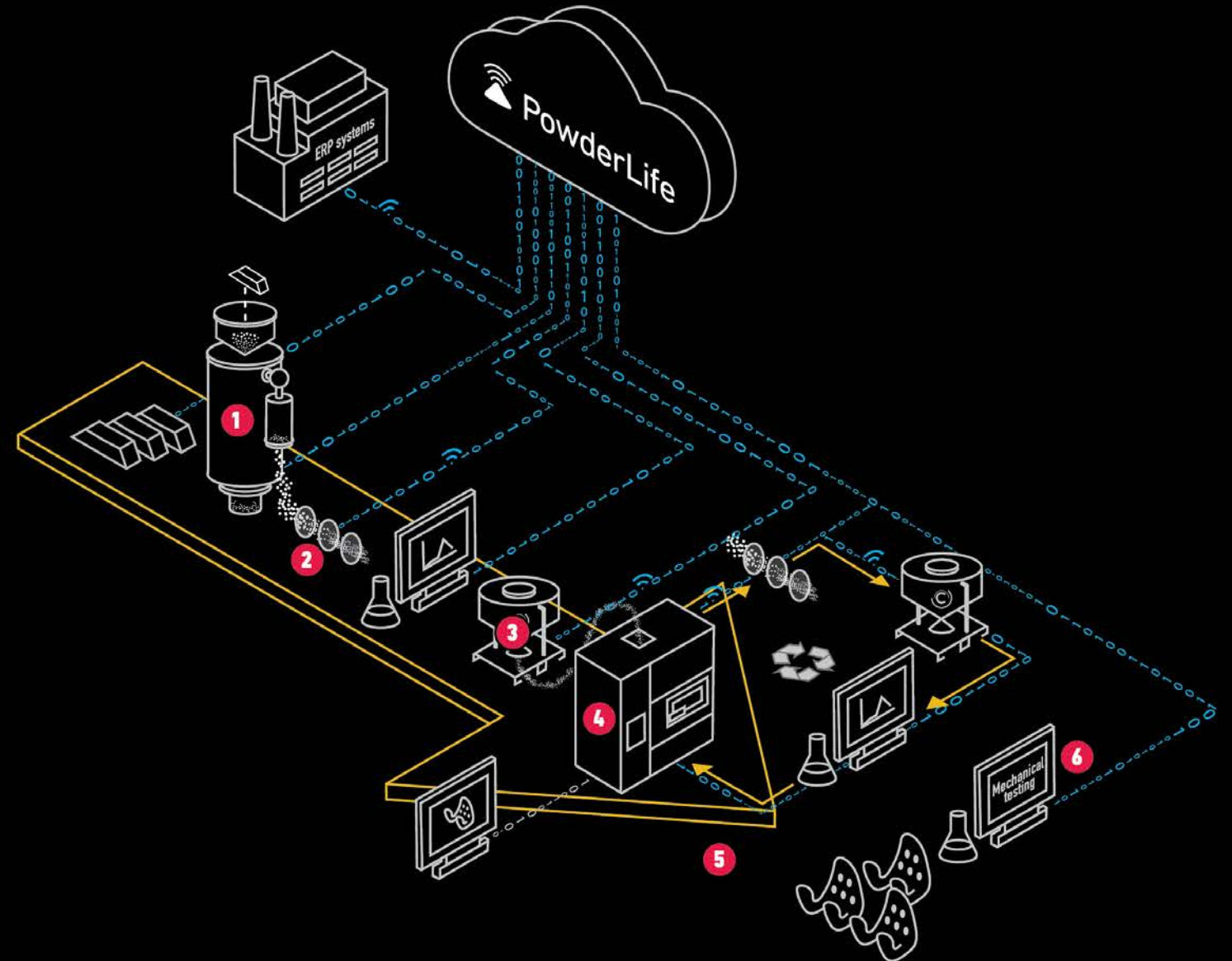


World-scale atomizer + the latest US-based, large-format, multi-laser printer



Powder-to-product under one roof, 30 minutes from Redstone Arsenal

1. World-class atomizer
2. Quality-assured powder
3. Safe powder storage
4. New generation of larger, faster 3D printers for prototyping and production
EOS, Nikon, Quintus, Velo3D
5. Post-processing
6. Part inspection and testing



Mission-critical metal for freedom

Next-generation metallurgy for next-generation warfighter needs, from vertical lift to missiles and munitions. Our advanced alloys give manufacturers the strategic advantage with industry-leading strength, corrosion resistance, and high-temperature performance.



America's allies in alloys

CarpenterTechnology.com/Defense

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