

Why cast metal with 3D printed sand?



Faster delivery times, new design freedoms, optimized processing, and overall cost savings

OEMs and foundries are optimizing their products and business models with binder jet additive manufacturing technology from ExOne. By 3D printing molds and cores, castings with complex designs are delivered with fast turnarounds while saving money on patterns, tooling, and labor. Here's a quick guide to the many benefits of binder jet additive manufacturing:

Speed

Reduce delivery times

Regardless of complexity, deliver molds and cores within hours or days, not the weeks and months needed for traditionally manufactured patterns. ExOne S-Max® binder jetting systems can print capacities of up to 1,900 liters under 24 hours, enabling fast turnarounds.

Design Freedom

Optimize final parts and mold package design

Embrace the freedom of design to optimize core packages and produce complex designs not possible with traditional manufacturing processes. Intricate, bespoke, and organic geometries for both final parts and rigging and riser design deliver higher-quality castings.

Less Labor Required

Do more with less

Intricately cored castings required delicate assembly from skilled labor, a hard-to-find resource. Reduce the need for and cost of labor by 3D printing complex core assemblies as single parts.

Rapid Iterations

Change designs without a cost penalty

Save time and money while reducing waste and optimizing products with additive manufacturing. The digital workflow offers the flexibility and responsiveness to make changes directly to a CAD model without scrapping existing or creating new patterns and molds for core shooters.





Agile, Cost-Effective Production

Win new business with flexible manufacturing

Stop turning away jobs because the numbers don't make sense and win customers with low cost and fast turnaround projects. Without hard tooling the minimum order number is one and complex cores can be printed at a lower cost per part, making rapid prototyping or short run production profitable.

Streamline Production

Complexity and dimensional accuracy lowers overall processing costs

Binder jetting is a production-ready technology that helps foundries operate more efficiently. Benefits are often seen in downstream operations as 3D printed molds and cores produce castings with a high dimensional accuracy that often require less post-processing, optimizing machining time and tool life.

Reduce Scrap

High-quality 3D printed molds and cores produce high-quality castings

Binder jetting prints cores and molds with a high level of detail and can utilize simulation software to help ensure done-in-one-pour castings. Defects from core shift during assembly or gas pockets caused by core gum are eliminated by printing complex, consolidated core designs.

Localized Manufacturing

Production when and where it's needed

Global pandemics, freight haulers blocking international shipping routes, extreme weather events; manufacturers understand how fragile supply chains can be. 3D printing technology enables localized manufacturing and reshoring efforts by allowing decentralized manufacturing on-demand.

Advance Lightweighting

Produce topology optimized parts

New geometries are made possible by additive manufacturing and designers are optimizing products by consolidating multiple-part assemblies into monolithic cores that create complex designs with reduced weights.

Eliminate Patterns and Core Boxes

Replace physical inventory with digital storage

Print direct from CAD files without the need to store patterns or core boxes. Eliminate the added time, labor, and expense of creating physical tooling while removing the risk of lost patterns or repair for degraded core tooling.

