Additive Manufacturing in the Casting Industry: An Innovation Perspective

Brandon Lamoncha
Discussion Points

• Who We Are
• Innovation Landscape
• Our Experience in the Global Market
• Challenges
• Enablers
• Questions
Our Story

Located in Columbiana and Leetonia, OH

3rd Generation Pattern Shop and one of the largest sand core producers in the USA

3D Printing for over 7 years

Serves diverse array of industries from Agriculture to National Defense
Conventional Core Production Facility

44708 Columbiana-Waterford Rd.
Columbiana, OH 44408
Current Printing Facility
The Global Innovation Challenge

- Low Profit Market Sector
- AM: Mature Technology but High Cost
- Selling to Second/Third Generation Owners
- Challenging Offshore Pressure
- Regulatory Impacts
Achieving Success in This Environment

• Committed to Excellence & Integrity
• Positive Operational Culture
• Responsive to Industry Needs
• Excel in Service & Speed to Market
• We Never Stop Innovating
Tech Advantage: Speed to Market
Example: Design Validation – Before Tools are Cut

Print

Cast

Cut Tooling
Tech Advantage: Consolidation Of Parts

• Eight sand cores
• Cut, mated, and glued
• Requires stacking tolerances
• Extensive skilled labor hours
• Lower accuracy

• Single sand core
• Removal of stacking tolerances
• Increased accuracy, integrates with existing tooling
• Increase productivity
Full Production Example: Provide both Speed & Part Consolidation
Large Castings

• Mold sections can be assembled to create large castings

• The size limit of the printer is not a constraint to casting size
Hybrid Projects

• Can use existing components and only swap out the complex core

• This case the water-jacket needed updated for better cooling

• All other cores were used to keep costs down
Production Jobs

• 30,000 EAU or more

• Cores Coated and ready to drop in Mold at customer facility

• DISA or Hunter Molding Lines

• Ship on returnable dunnage system to reduce cost

• Can ship with other conventionally blown cores
Domestic Casting Base Tech Enablers

AFS Additive Manufacturing Division (AM4MC):

AFS Technical Support
3D Printed Hard Tooling Committee
3D Printed Sand Casting Committee
Expandable Patterns (3D Printed Investment Casting Tooling)
Humtown Wins Manufacturer of the Year!

Have you heard the news? Well if you haven’t, let us be the first to shout it from the mountain top (literally)… Humtown was recently selected as the 2020 Manufacturer of the Year by the National Association of Manufacturers (NAM) in the small to medium enterprise category!

In making this selection, NAM’s panel of expert judges specifically cited Humtown’s utilization and commercialization of 3D printing. Humtown has led an industry-wide transformation in bringing 3D printing to foundries, becoming one of the world’s leaders in 3D sand additive manufacturing.

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