

Neenah Foundry

3D printed core saves thousands in tooling costs and reduces lead time by weeks.



11-piece weldment (left) was replaced by the cast swing frame (right)

Customer Challenge

Amerequip required a conversion of their 11-piece, laser-cut welded assembly which in turn, would reduce weight, improve quality, and minimize cost through improved production efficiencies with a one-piece design. They were concerned the production schedule was in jeopardy and they would not be able to complete testing and go to Fall production in time to satisfy demand in the 2020 season. Amerequip turned to Neenah Foundry for their guidance and expertise.

The Solution

By working closely with Amerequip, the swing frame was chosen for the conversion. Neenah Foundry created the single ductile iron casting design to be made using a single core in order to keep both tooling and piece price costs at a minimum. It also reduced the current part weight by 2.2 lbs.

In order to accommodate the short lead time for rapid product development samples, Neenah utilized 3D printed cores which were produced at Hoosier Pattern, Inc. using ExOne's S-Max[®] system, thus eliminating the lead time of the core box for samples prior to production.

Conclusion

The collaboration resulted in an improvement of quality, efficiency, and cost savings for Amerequip. Not only did this casting bring a new customer to Neenah, it also brought Neenah the "2019 Casting of the Year" by American Foundry Society.

After final testing by Amerequip this summer, the swing frame is planned to be used on the final product in 2020.

Specifications

Customer: Amerequip Corporation

Part: Single ductile iron casting for compact utility tractor component

Material: Ductile iron

Traditional Method

Method: Manufacture core box tooling

Lead time: 6 weeks

ExOne[®] Sand Printing Method using the S-Max[®] Printer

3D Sand Mold Printing and Casting

Print media: Silica Sand/Furan Binder

Lead time: completed less than 2 weeks

Core box modification cost savings: \$5,000

Weight reduction: 2.2 lbs

About ExOne[®]

ExOne offers Binder Jetting 3D printing — creating parts directly from 3D CAD files. The technology is capable of a geometric complexity unachievable with conventional manufacturing methods.

To learn more, contact: www.exone.com

ExOne operates facilities across the Americas, Europe and Asia.