

## Case Study

## Eliminating Weld Porosity

Since 1891, [The Bonnot Company](#) has designed and manufactured extrusion equipment. Its customized equipment allows their customers to streamline their production processes. Headquartered in Akron, Ohio, The Bonnot Company's equipment is utilized worldwide.

### The Challenge

One of the unique features of a Bonnot Extruder is a hollow screw which facilitates additional process temperature control through a re-circulating liquid. Although the screw was pressure tested as part of a standardized ISO quality procedure, a leak of the liquid medium was discovered upon installation at a customer site. The leak, most likely caused by some impact, was isolated to a weld near the exit end of the screw.

When Bonnot contacted Godfrey & Wing, their situation was not atypical. Bonnot had a leak in their part, which they never experienced. The leak was discovered as it was installed at their customer's facility. The start-up of this product to Bonnot's customer was critical, so Bonnot needed this leak sealed quickly.

### The Solution

Godfrey & Wing determined that the vacuum impregnation process, including use of our Impco Weld Seal Brush-On Sealant, would be the fastest and most effective way to seal the part. [Impco products](#) allow for sealing of aluminum & steel castings, weldments, and macro porosity. WeldSeal is designed specifically to seal iron and steel weldments. The very low viscosity enables it to wick into welds to properly seal any porosity.



### The Results

Bonnot sent the part to Godfrey & Wing for analysis and repair. Once the part was received, Godfrey & Wing did the following.



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### The Results continued

1. Discovered the leak location by applying pressure inside the part. The part was submerged in soap and water so that any bubbling would reveal leakage.
2. Cleaned the outside surface to avoid any contamination during the impregnation step.
3. Connected the part to a vacuum pump to remove the air.
4. Applied WeldSeal on the part.
5. Released the vacuum to ensure that the applied sealant remained in the pore.
6. After the sealant cured, we applied overpressure from the inside. The leak was confirmed sealed since no bubbles appeared during the pressure test.

Godfrey & Wing dedicated a host of resources and shared the sense of urgency. This allowed Bonnot to regularly communicate to their customer of the status as well as deliver a properly functioning product on time. The part was sealed within a day of Godfrey & Wing receiving it, thus minimizing delays to the customer production.

### In Summary

Porosity is an inherent aspect of castings and weldments. Although porosity cannot be completely eliminated, it can be sealed through vacuum impregnation. Bonnot and their customer found value in vacuum impregnation by reducing scrap costs and eliminating production delays. Contact Godfrey & Wing to learn how vacuum impregnation services and systems can reduce your costs, space, and labor.

### About Godfrey & Wing

Godfrey & Wing is a privately held, global leader in vacuum impregnation products and services serving the aerospace, automotive, and general manufacturing industries worldwide. Headquartered in Cleveland, Ohio since 1948, Godfrey & Wing operates manufacturing and production facilities in North America, Europe and Asia. For more information, visit [www.godfreywing.com](http://www.godfreywing.com) or call +1 330 562 1440.

