



Rotating Equipment Specialists

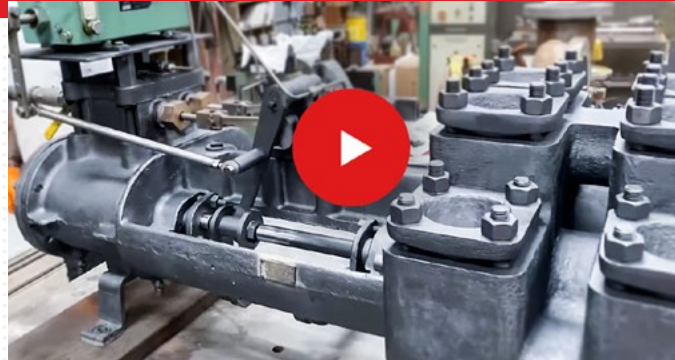
AN OVATION HOLDINGS COMPANY

CASE STUDY

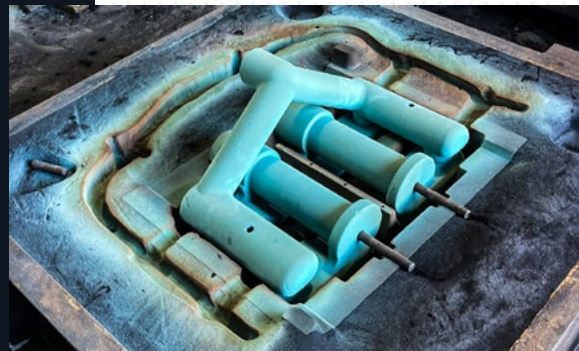
Industry: Refining

Reincarnation and Replication: Bringing a 1950s Worthington Pump Case Back to Life

A piece of vital machinery, a 1950s-era Worthington duplex direct-acting pump case, which has been tirelessly serving a San Francisco Bay Area refinery for almost 70 years, finally gives up the ghost. Who do you call when the original manufacturer no longer supports this stalwart of your operations? **Easy. You call Conhagen.**



Watch Video



Cores In Mold

Objective

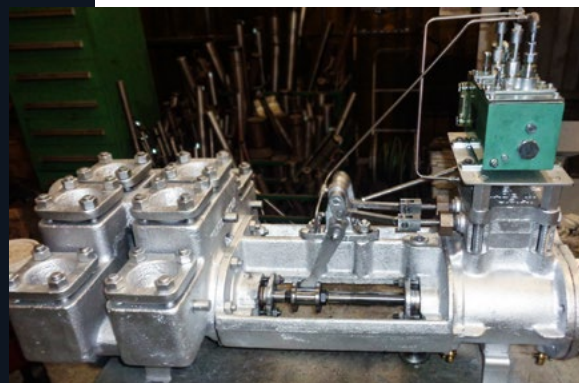
Speed and reliability were our watchwords here. We knew we had to make this right, and make it quick. Although we saw room for improvements – streamlined flow passages, low-stress pressure boundaries – the customer wanted an exact replica. And, that’s what we set out to achieve.

Solution

We rolled up our sleeves and began the process of reverse-engineering the ancient pump. We scanned it using our cutting-edge GOM ATOS-5 industrial 3D measurement technology. This 3D image was then carefully translated into Rhino3D for processing. The result? A solid model and detailed drawings that were ready for the mold designer.

Our plan was to use binder jet 3D-printed sand molds to cast the part. Despite the challenge of buoyant mold cores, we had our sights set on making the modern foundry process work. After careful analysis, we decided to print hollow sand cores and reinforce them with steel bars. Yes, there were risks, but our foundry partners were confident in the solution. The steel bars became part of the casting, later to be removed and becoming ports for the pump’s piston rods.

The mold and cores were printed in two days in Ohio and were driven overnight to the foundry in Texas. The foundry worked diligently for two long days assembling the mold and pouring the casting. A day more for cooling and knock out. And voila, the casting arrived in California for machining and assembly just nine days after the buoyant force issue was realized.



Results

A triumph of engineering and collaboration! Thanks to our expertise and close relationship with the foundry, the previously obsolete pump case was reincarnated, ready for another 70 years of service.