

Yamaha Rides Again

Background

When a client came with a very rare, and very damaged custom cast clamp from a vintage Yamaha motorcycle, and no hope of ever finding another one, we had just the solution.

A crack on the top of the clamp meant the casting was no longer safe to install. Because it was used exclusively on a very low production racing motorcycle, there were few if any remaining parts in the world. With a decent part in hand, we had just the process to reproduce an exact replica.



The original triple. A crack near the top bolt mean this part was no longer serviceable.

Our Process

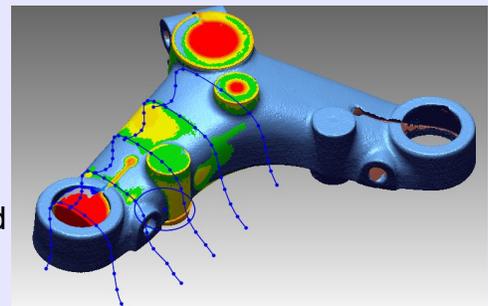


The raw scan data from our HDI Advance scanner

As with most of our projects, it all starts with a good quality 3D scan. The triple clamp was coated with a light powder surfacing agent, to cut down glare on the high polish surface. We captured the clamp on our automated rotary table, with 8 scans from the top, and an additional 8 scans on the bottom. The scans were aligned and merged to a suitable 3D triangulated mesh surface in Flexscan3D.

The Results

We chose RapidForm XOR software to create a new, high quality parametric CAD model. XOR offers a fantastic suite of tools to extract real geometry from any scan. We were able to clean up minor defects, ensure everything was perfectly round and flat while keeping as close as possible to the original form of the part. XOR automatically extracted the lofted curves, hole centers, and critical geometry directly from the scan, which saves a huge amount of time when reconstructing a challenging casting such as this.



Reconstructing the model in RapidForm. The lofted curves were generated automatically from the 3D scan



Final model, ready for fabrication

With a little time, and good judgement, we were able to produce a complete 3D cad model based on the original castings.

RapidForm creates a clean, high-quality parametric CAD model, with a modifiable parametric history, which makes it a breeze to make changes to the final model, to take advantage of modern manufacturing methods and techniques. Just because a part was originally build using traditional techniques, doesn't mean it needs to be reproduced the same way. The

client chose to CNC cut the final form from solid aluminum billet material, which means a stronger part in less time, and no more cracks.