ONE OF A KIND

FDM Components Help Win Discovery Channel's Biker Build-Off

"Rapid manufacturing gave us a major edge."

- Jesse Hanssen, Klock Werks Kustom Cycles

"The parts met all our requirements for accuracy and strength."

- Todd Snedeker, Klock Werks Kustom Cycles

Brian Klock with Discovery Channel Biker-Build-Off competition-winning bike.

Real Challenge

Klock Werks Kustom Cycles builds one-of-a-kind motorcycles including choppers, bobbers, and baggers. Recently, the Mitchell, South Dakota-based company was selected to appear in the Discovery Channel's Biker Build-Off. Klock Werks had 10 days to build a custom bike that was then driven to and displayed at the 66th Annual Sturgis Motorcycle Rally where visitors voted it the best bike at the show.

Real Solution

"Direct digital manufacturing gave us a major edge in the competition," says Jesse Hanssen, Klock Werks mechanical engineer. "The [Fortus] FDM system enabled us to build anything we could imagine."

In building a custom bike for the competition, Klock Werks called upon their own line of bagger parts, purchased some components, and others were one-of-a-kind creations that could not be purchased off the shelf. Most of these unique parts had complex geometries and many also needed to also meet strict functional requirements such as a gauge pod which had to withstand cyclical vibrations without breaking.

"Normally, these parts would be produced from injection molded plastic or machined aluminum," says Hanssen. "But it takes three to four weeks to build parts using either of these methods because they require tooling. Klock Werks had to fabricate all of the components during a five-day filming segment." In addition, the cost of building the parts needed for the competition would have been between $15,000 and $20,000, which would have been far too expensive.

Klock Werks engineers designed the gauge pod, fork tube covers, headlight bezel, floorboard mounts, floorboard undercovers, and wheel spacer cover in SolidWorks. "FDM put no limits on our imagination," says Hanssen. "We built all of these parts in five days from polycarbonate. The cost of producing the parts with FDM was less than a quarter of the cost to injection mold or cast them."

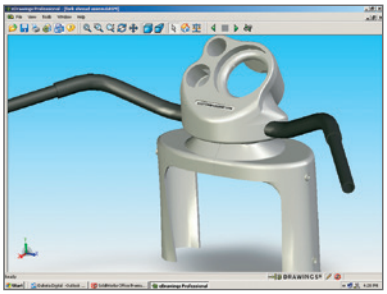
“The finished parts met all of our requirements for both geometric accuracy and mechanical strength,” says Klock Werks partner Todd Snedeker. “The ability to produce fully functional parts using direct digital manufacturing methods was instrumental to our success. Many of the parts on this bike could not have been produced by any other method in the time-frame required. FDM saved us a considerable amount of money and made a major contribution to our winning the Biker Build-Off at Sturgis Week.”

After winning the competition, the Klock Werks team raced the bike at the Bonneville salt flats, where they set an AMA Land Speed Record. “The WFB (World’s Fastest Bagger) proves the durability of polycarbonate parts at 147 mph.,” says partner Brian Klock. “Thanks to our design team and the team at Stratasys.”

For more information on Klock Werks call 605-996-3700 or go to www.kustomcycles.com.

Gauge pod built from poloycarbonate.

Painted polycarbonate gauge pod installed directly on the bike.



CAD illustration of gauge pod.

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