

Senga Engineering Inc.

Use Case – Custom Quality Assurance Fixtures, Jigs, and Tooling

Customer Profile

Senga Engineering, founded in 1979, is a privately held veteran-owned company specializing in volume machining, providing precision-machined components to a broad range of industries. Senga currently services the stringent requirements for the connector, medical, aerospace, automotive, energy and defense industries.

Challenge

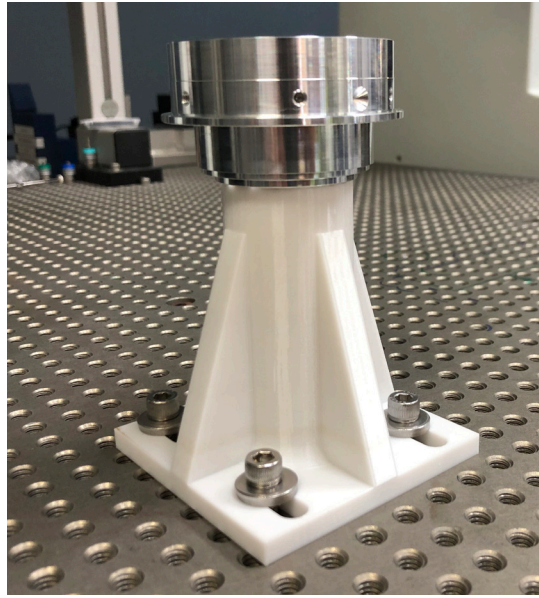
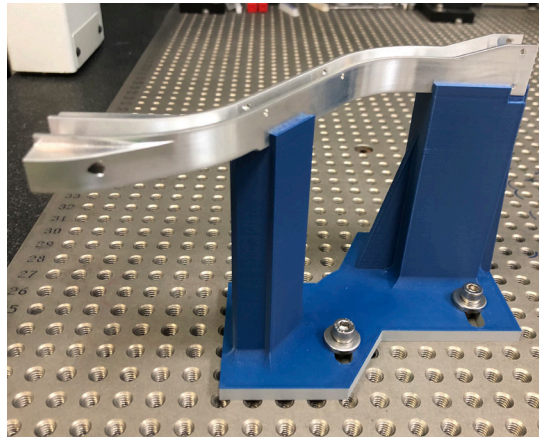
Senga’s annual production volume is over 1700 individual parts per year. These parts require multiple inspections on the shop floor CMM (coordinate measuring machine) including first-article, in-production and final inspection. Traditionally, Senga used v-blocks, clamps, and CMM surface plate pegs to set up the parts for automated inspection. Unfortunately, these fixtures and jigs were clunky, not easily configured and required multiple setups for a full inspection. Heavy fixturing could also damage machines and metal fixtures wore out surface plates very quickly.

Solution

Senga was looking for a solution that enabled a faster inspection turnaround process and the flexibility to design fixtures, jigs, and other tools for its specific requirements. To that end, Senga chose to 3D print customized CMM fixtures using FDM® technology that could be more easily designed and fabricated to alleviate the problems with traditional tooling. The 3D printed fixtures provide easier loading and unloading along with the ability to measure more features with a single set up. Made from durable ASA thermoplastic, the fixtures don’t wear out surface plates or damage machinery. If a fixture is damaged or a customer changes a part’s design, a new fixture can be modeled and printed within the same day from a virtual library.

Impact

The ability to 3D print CMM fixtures and other tools and jigs allows Senga’s quality assurance team the flexibility to customize their manufacturing inspection process. Using any CAD modeling software, they are able to use their Fortus 450mc™ printer to make fixtures and jigs that conform to a wide range of needs in quality assurance while reducing both cost and lead time to make the tools. Savings vary depending on the scenario but in one typical example, Senga reduced the cost of manufacturing the fixture by 93% and the lead time by 80% compared to conventional machining.



Typical examples of the CMM fixtures Senga makes with FDM technology.

Lead Time Savings



80%

Cost Savings



93%

