Reverse Engineering for an Aeronautical Component Manufacturing Firm

Enventure helped an aeronautical component manufacturing firm reverse engineer old parts and reduce redesign cycle time.

About the Client

The Client has an extensive knowledge base and technology portfolio that can be applied to aerospace manufacturing, from assembly automation to material handling, to quality assurance and testing, they have the depth of knowledge and scale of resources to deliver world class manufacturing for Aerospace Industry. They have spearheaded thousands of unique automation projects to market across diverse industries and processes. The aeronautical industry has seen major innovative contributions from the Client over the last 2 decades, of their existence.

Business Need

The Client needed to re-engineer and upgrade a first generation passenger aircraft. Since the original design files were no longer available, some of the components had to be reverse engineered to complete the re-engineering of the assembly.

Why Enventure

The Client chose Enventure based on Enventure's unique advantages, such as:

- Years of experience in CAD CAM and CAE technologies
- Innovative reverse engineering methods
- Accurate measuring instruments
- Access to excellent test facilities
- Ability to prototype using part numbers

The Solution

Enventure, with the help of a renowned material testing lab, first arrived at the material properties including the treatment and surface finish of the samples provided.

With state-of-the-art measuring technologies and conducting a thorough analysis of wear and tear characteristics and the mating requirements of the samples, the geometrical dimensions of the components were arrived at. Enventure then developed 3D models of the subject parts, mating parts and the total assembly to verify the fitment and allowable tolerances.

Detailing of the components was then done, according to the Client's manufacturing standards.

A first sample was developed with soft-tooling method and delivered along with the engineering drawings and material test reports to the customer.

Benefits

The following were the benefits to the Client arising from Enventure's involvement in the project:

- Reduced redesign cycle time
- Accurate measurement and model building
- Guaranteed results
- Cost Advantage

Conclusion

Reverse engineering is often done as part of re-engineering, especially when the product owner does not have the finer engineering details of a component. During this project, Enventure re-engineered several parts from a first generation passenger aircraft, to keep the craft airworthy.

Enventure, with its experienced re-engineering team, could recreate the part models and manufacturing drawings, by studying the available data, like worn out parts, mating information, functional requirements etc.

The project enabled the customer to upgrade a larger assembly to the latest specifications quickly, instead of totally re-designing the unit, which could have taken more time and cost.

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