SICAM

Prototypes to Production Solution

FIRST ARTICLE INSPECTION

FAI+ Beyond the Standard

One of the common challenges in 3D printing is dealing with uneven shrinkage during the cooling process, which can lead to dimensional inaccuracies.

We've developed an enhanced approach to First Article Inspection, we call **FAI+**. This process **goes beyond the standard inspection** by compensating for the uneven shrinkage of the part due to geometry variations.

Our FAI+ process includes a modification stage where we adjust the part geometry to account for this shrinkage, ensuring that the **final product remains consistent across multiple production runs**.

This is similar to how an injection molder modifies a mold cavity to compensate for the uneven shrinkage of the part. The goal is to **correct the variation** of the shrinkage so the measured variation is representative of the process variation.

How It Works: 10 Layers of the First Article Inspection

1. INTRODUCTION: FAI is typically conducted when a new part, component, or assembly is being introduced into production. This can be a completely new design, a design change, or the introduction of a new supplier.

2. REGULATORY REQUIREMENTS: In some industries, such as aerospace and defense, regulatory bodies like the FAA (Federal Aviation Administration) and AS9100 standards mandate FAI as a requirement.

3. DOCUMENTATION: Comprehensive documentation is a critical aspect of FAI. This includes the engineering drawings, specifications, and any other relevant documents. These documents serve as the basis for the inspection process.

4. FAIR (First Article Inspection Report): The main output of the FAI process– A detailed report that provides evidence that the manufactured part or assembly meets all design requirements. Includes measurements, test results, photographs, and any deviations from the design specifications. This report is often a requirement for customer approval before mass production begins.

5. INSPECTION METHODS: The specific methods used for inspection can vary based on the complexity of the part or assembly..

6. SAMPLING: The sampling plan for FAI may involve inspecting every part in small production runs or a statistically significant sample. The choice of sampling method depends on the production volume and the level of risk associated with the part's application.

7. RESPONSIBILITY: FAI is typically a collaborative effort involving different departments, including engineering, quality control, and production.

8. APPROVAL PROCESS: Once the FAIR is complete, it needs to be reviewed and approved by relevant stakeholders, including the customer if required. Approval signifies that the part or assembly meets all requirements and can proceed to full-scale production.

9. RECORDS RETENTION: All FAI documentation, including FAIRs and associated records, must be retained for a specified period, often in compliance with industry regulations.

10. CONTINUOUS IMPROVEMENT: FAI is not a one-time process. It serves as a foundation for ongoing quality control and continuous improvement efforts throughout the production lifecycle.

Our commitment to quality extends beyond standard practices, offering an enhanced FAI+ process that ensures your parts are not only correct but optimized for consistent production.

Precision is Priority at SICAM

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