Use Case
FDM

Valeo

Use Case – Inspection and Sorting Fixture

Customer Profile

Valeo, headquartered in France, is a global technology leader specializing in automotive and mobility components. The company partners with automakers and new mobility businesses to deliver innovative solutions in electrification, driving assistance systems, interior experiences, and lighting. Recognized for its commitment to sustainability and advanced engineering, Valeo drives the development of safer, smarter, and more efficient mobility, shaping the future of transportation worldwide.

Challenge

A customer-supplied HVAC (heating, ventilation, and air conditioning) heat exchanger pipe was failing to meet specifications on multiple occurrences. The pipe, which has multiple bends, was not aligning with its junction point on the HVAC unit. This necessitated manual inspection of every incoming pipe to ensure conformance prior to assembly. However, inspecting thousands of these pipes daily using a CMM (coordinate measuring machine) would be prohibitively slow and expensive, slowing or halting production and incurring thousands of dollars of additional cost per hour.

Solution

To minimize the downtime and expense of developing a machined fixture, Valeo designed and 3D printed a go/no-go check fixture on a Stratasys Fortus 900mc™ production system using ASA thermoplastic material. 3D printing offered an optimal solution since the Fortus 900mc provided the required accuracy and the fast iteration needed to match the fixture to the tube's dimensional specifications. The Fortus 900mc was also big enough to accommodate the fixture's large size.

Impact

3D printing substantially streamlined the pipe inspection process and yielded the following results:

- 98.7% reduction in inspection time per pipe vs. CMM (20 seconds vs. 25 minutes)
- 83% lead time reduction compared to a machined alternative (2 weeks vs. 12)
- $10,000 savings compared to a machined aluminum fixture

Using the 3D printed fixture also proved to be as effective as a CMM, if not superior, and enabled visual defect identification, prompting supplier process improvements that ultimately eliminated scrap. This rapid response effectively resolved customer quality concerns, resulting in zero defects. Ultimately, this solution proved so effective that other fixtures were printed for quality checks on every pipe within the facility.

Inspection Time Savings
98% Per Tube (20 sec vs. 25 mins)

Lead Time Savings
83% for Fixture Creation (2 weeks vs. 12)

Lower Cost
$10K Per Fixture