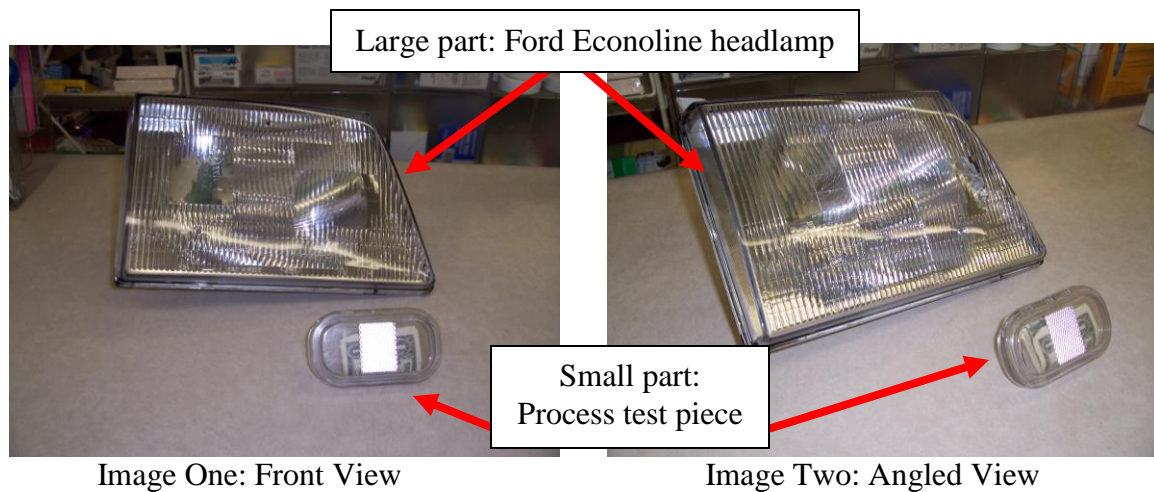


**Category:** Process Development, Problem Solving, and Other

**Example:** Development of a new manufacturing process for automotive lighting

**Situation:** Gluing operations are one of the highest scrap operations in automotive lighting assembly and are very costly; glue-related defects are not repairable, which leads to scrapping a nearly completed assembly.



**Problem:** Develop a new manufacturing process that would reduce glue scrap.

**Action:**

1. Examined alternatives to production methods being used
2. Initial concept: inject glue into sealed track; process worked but not robust – plus still required parts remain in fixtures during glue cure
3. Concept evolved into injecting molten plastic into sealed track
4. Built small test-bed mold for trials (small part, Images One and Two)
5. Performed testing on materials combinations

**Result:**

1. Identified new gating pattern to solve deformation issue due to molten plastic softening plastic substrate parts
2. New process highly robust with proper part & process design; joints are strong and hermetically sealed
3. Manufacturing cell layout reduced assembly labor by one person per shift – plant-wide labor reduction potential estimated at over \$500K
4. Using plastic as seal material means a fully-recyclable lamp assembly
5. Patented in 2000: US Patent 6059483
6. Technology is in production on Ford Econoline headlights (large part, Images One and Two) with other applications being planned
7. Other applications: Intake manifolds; identified and solved problem of nylon adhesion due to understanding of plastic properties