

Instrument Panel

Issue

The present fabrication methods for the electronics module assembly require excessive touch labor and long cycle times to assemble the module through testing. The current contract called for a lower cost per unit.

Breakthrough Strategy

- Measure** The process flow map revealed an area where “cosmetic” rework was performed without having its time captured in the system. Once the Characteristics Selection Matrix was prepared, several inputs became the focus of the project.
- Analyze** The Process FMEA was prepared using the top five highest categories from the CSM. Many of the parameters that were critical to quality actually have controls in place that eliminate the possibility of bad hardware being processed on to the next operation. Two Gage R&R’s were performed, one on connector bonding and the other on test fixtures.
- Improve** A DOE was performed on the bonding process, which proved to have the highest RPN value in the PFMEA. The results demonstrated that the wrong variables were considered noise. In reality, the application method proved to be more of a contributor to the bonding process than the fixture pressure and cure temperature.
- Control** Changes to the existing criteria in the application and inspection of the bond line were relaxed. The adhesive application method was modified to eliminate the continuous wiping of the surface to remove the excess. A reduction made in cure time reduced cycle time and freed up floor space.
- Results** Design of Experiments done on adhesive cure time and bonding pressure revealed the real problem as application method and adhesive location. Assembly instructions were modified to eliminate rework and to correct inspection procedures.
- Savings** Total cost avoidance of \$105,408 due to reduction in application rework.