



# DESIGN SYSTEMS, INC.

Specializing in Manufacturing Process Design & Integration

## Torque Validation Surveys

Proper fastening is a major issue concerning the quality of vehicles leaving the plant. Torque testing prior to launch and as an ongoing quality validation tool, could significantly reduce downtime and warranty costs.

### Torque testing is used to measure multiple criteria determining the quality of a connection:

- Dynamic Torque - measured by an Electronic Torque Transducer during the tightening process.
- Dynamic Angle- - revolutions required to secure a fastener
- Residual Torque- - Torque required to restart a tightened fastener



### Purpose of Torque Validation:

- Ensure process repeatability
- Validate that engineering specifications are met
- Track repeatability of each tool during production
- Reduce repair/warranty issues.
- Provide supporting data for torque related issues

### Torque Validation Surveys are performed:

- Design Systems provides all tools and services necessary to gather, report and file valid data.
- Database driven analysis allows for results reporting in a consistent format.
- Statistics revalidated on a frequent basis for comparison analysis.
- Data can be used to show negative or positive trends necessary for prompt resolution.

## “BOTTOM-LINE” RESULTS:

- “First time” quality assurance at launch
- Customer satisfaction assurance
- Mitigate warranty claims costs
- Improve product reliability results
- Second audit verifies and documents that specifications have been met
- Dedicated personnel allows “Lower Task Cost” and a higher degree of accuracy
- “Real time” statistics will be documented
- Daily reporting for immediate notification of out of spec processes

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