ChecklistGuro

MSA (Measurement System Analysis) Checklist

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Planning & Preparation

Ensuring the MSA is properly planned and the necessary resources and data are available.

MSA Objective/Purpose

Write something...

Process Description - What is being measured and why?

Write something...

Number of Parts to be Measured (Sample Size)

Enter a number...

Measurement Type (e.g., Continuous, Attribute)

- [ ] Continuous
- [ ] Attribute

Measurement System Requirements (e.g., Precision, Stability)

- [ ] Precision
- [ ] Stability
- [ ] Linearity
- [ ] Resolution

MSA Start Date

Enter date...

MSA Completion Target Date

Enter date...

Who is the MSA lead?

- [ ] Name 1
- [ ] Name 1
- [ ] Name 1

Process Flow Diagram (if applicable)

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Gauge Repeatability (GR&R) - Part 1

Focuses on the variation in measurements taken by a single operator using the gauge multiple times on the same part.

Number of Operators Involved

Enter a number...

Number of Parts Measured per Operator

Enter a number...

Measurement Method Used (e.g., Direct, Vernier, Micrometer)

- [ ] Direct Measurement
- [ ] Vernier Scale
- [ ] Micrometer
- [ ] Caliper
- [ ] Other (Specify)

Describe the part being measured (material, dimensions, specification)

Write something...

Operator ID(s) involved in the GR&R study

Write something...

Date of GR&R Study Execution

Enter date...

Number of Readings Per Part, Per Operator

Enter a number...

Was the Gauge Properly Calibrated Before the Study?

- [ ] Yes
- [ ] No
- [ ] N/A

Gauge Repeatability (GR&R) - Part 2

Calculations and Analysis of the Gauge Repeatability component.

Number of Repeats per Part

Enter a number...

Number of Parts Measured

Enter a number...

Average of All Readings (Operator 1)

Enter a number...

Standard Deviation of Readings (Operator 1)

Enter a number...

Mean Deviation for Operator 1

Enter a number...

Operator 1 Data Complete?

- [ ] Yes
- [ ] No

Notes on Operator 1 Readings (if applicable)

Write something...

GRR Mean Deviation (Operator 1)

Enter a number...

Gauge Reproducibility (RR) - Part 1

Focuses on the variation in measurements taken by different operators using the same gauge on the same part.

Number of Operators Involved in RR Study

Enter a number...

Operator Selection Method

- [ ] Random Selection
- [ ] Qualified Personnel
- [ ] Rotation Schedule
- [ ] Other (Specify in LONG_TEXT)

If 'Other' selected for Operator Selection, please explain:

Write something...

Number of Trials per Operator per Part

Enter a number...

Date of RR Study Start

Enter date...

Approximate Time Allowed per Operator per Part Measurement

Enter time...

Was the order of parts presented to operators randomized?

- [ ] Yes
- [ ] No

If order was not randomized, please explain why and describe the order:

Write something...

Gauge Reproducibility (RR) - Part 1

Calculations and Analysis of the Gauge Reproducibility component.

Number of Operators Participating

Enter a number...

Operator Selection Method

- [ ] Random Selection
- [ ] Experienced Operators
- [ ] Designated Operators

Brief description of operator experience and training related to the measurement process

Write something...

Number of Trials per Operator per Part

Enter a number...

Any observations during operator measurement (e.g., unusual issues, difficulty understanding instructions)

Write something...

Were standardized measurement procedures available to all operators?

- [ ] Yes
- [ ] No

Date of Reproducibility Study

Enter date...

Part Variation

Assessing the inherent variability of the parts being measured.

Number of Parts Selected for Variation Study

Enter a number...

Justification for Part Selection (Why these specific parts?)

Write something...

Number of Measurements Per Part

Enter a number...

Description of Part Variation Assessment Method (e.g., Range, Standard Deviation)

Write something...

Calculated Part Variation (e.g., Standard Deviation)

Enter a number...

Notes on Observed Part Variation Characteristics (e.g., Are there known sources of variation?)

Write something...

Part Variation Acceptable?

- [ ] Yes
- [ ] No
- [ ] Needs Further Investigation

If 'No' or 'Needs Further Investigation', Describe Actions Taken/Planned Regarding Part Variation

Write something...

System Variation

Calculating the total variation within the measurement system, accounting for gauge repeatability, gauge reproducibility, and part variation.

Estimated Part Variation (EV)

Enter a number...

Estimated Gauge Repeatability (GR)

Enter a number...

Estimated Gauge Reproducibility (RR)

Enter a number...

Total System Variation (SV)

Enter a number...

Specification Limit

- [ ] Upper Specification Limit
- [ ] Lower Specification Limit

Ratio of System Variation to Specification Width

Enter a number...

Justification for acceptable/unacceptable System Variation

Write something...

System Variation Acceptable?

- [ ] Yes
- [ ] No

Supporting Data (System Variation Calculation)

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MSA Performance Evaluation

Determining if the measurement system is adequate for its intended use based on established criteria.

Overall GR&R Value

Enter a number...

% of Total Variation (OCR)

Enter a number...

Acceptance Criteria Met?

- [ ] Yes
- [ ] No
- [ ] Not Applicable

Justification for Acceptance/Rejection

Write something...

Is the Measurement System Adequate for its Intended Use?

- [ ] Yes
- [ ] No
- [ ] Needs Further Evaluation

Summary of MSA Results & Conclusion

Write something...

Date of MSA Performance Evaluation

Enter date...

Evaluator Signature

Corrective Actions & Improvements

Identifying and implementing changes to improve measurement system performance.

Describe the specific issue(s) contributing to measurement system non-conformance.

Write something...

Select potential root causes contributing to measurement system variation. (Select all that apply)

- [ ] Operator Training Deficiencies
- [ ] Gauge Calibration Issues
- [ ] Environmental Factors (Temperature, Humidity)
- [ ] Gauge Maintenance Issues
- [ ] Measurement Procedure Ambiguity
- [ ] Part Design Issues
- [ ] Gauge Design Issues

Detail proposed corrective actions to address the identified root causes.

Write something...

Estimated cost of implementing corrective actions (in USD).

Enter a number...

Target completion date for implementing corrective actions.

Enter date...

Method of verification for the corrective actions.

- [ ] Repeat MSA
- [ ] Process Monitoring
- [ ] Statistical Process Control (SPC)
- [ ] Other (Specify)

If 'Other' was selected for verification, specify the method.

Write something...

Responsible party for implementing corrective action.

- [ ] Engineering
- [ ] Manufacturing
- [ ] Quality
- [ ] Maintenance

Signature of person responsible for implementing corrective action.

Documentation & Training

Ensuring proper documentation of the MSA process and adequate training for operators.

Describe the documented MSA Procedure followed.

Write something...

Date of Last MSA Review

Enter date...

Number of Personnel Trained on MSA Procedure

Enter a number...

Which MSA training modules were completed by operators?

- [ ] Gauge Calibration
- [ ] Operator Technique
- [ ] Data Interpretation
- [ ] Measurement System Improvement

Upload copies of training records for operators involved in MSA.

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Document any deviations from standard MSA procedure and rationale.

Write something...

Is the MSA procedure readily accessible to all relevant personnel?

- [ ] Yes
- [ ] No
- [ ] Partially

Signature of Person Responsible for MSA Documentation