

Gage R&R Study - ANOVA Method

**\* NOTE \* There are no operator values, or they are all the same. The operator factor will be  
omitted from the analysis.**

One-Way ANOVA Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | SS | MS | F | P |
| C5 | 9 | 8689.44 | 965.493 | 300.053 | 0.000 |
| Repeatability | 20 | 64.35 | 3.218 |  |  |
| Total | 29 | 8753.79 |  |  |  |

*α to remove interaction term = 0.05*

Gage R&R

Variance Components

|  |  |  |
| --- | --- | --- |
| Source | VarComp | %Contribution (of VarComp) |
| Total Gage R&R | 3.218 | 0.99 |
| Repeatability | 3.218 | 0.99 |
| Part-To-Part | 320.758 | 99.01 |
| Total Variation | 323.976 | 100.00 |

Process tolerance = 70

Gage Evaluation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Source | StdDev (SD) | Study Var (6 × SD) | %Study Var (%SV) | %Tolerance (SV/Toler) |
| Total Gage R&R | 1.7938 | 10.763 | 9.97 | 15.38 |
| Repeatability | 1.7938 | 10.763 | 9.97 | 15.38 |
| Part-To-Part | 17.9097 | 107.458 | 99.50 | 153.51 |
| Total Variation | 17.9993 | 107.996 | 100.00 | 154.28 |

Number of Distinct Categories = 14

Probabilities of Misclassification

Joint Probability

|  |  |
| --- | --- |
| Description | Probability |
| A randomly selected part is bad but accepted | 0.006 |
| A randomly selected part is good but rejected | 0.007 |

Conditional Probability

|  |  |
| --- | --- |
| Description | Probability |
| A part from a group of bad products is accepted | 0.071 |
| A part from a group of good products is rejected | 0.008 |



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omitted from the analysis.**

One-Way ANOVA Table

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | SS | MS | F | P |
| C5 | 9 | 24626.9 | 2736.33 | 6203.75 | 0.000 |
| Repeatability | 20 | 8.8 | 0.44 |  |  |
| Total | 29 | 24635.8 |  |  |  |

*α to remove interaction term = 0.05*

Gage R&R

Variance Components

|  |  |  |
| --- | --- | --- |
| Source | VarComp | %Contribution (of VarComp) |
| Total Gage R&R | 0.441 | 0.05 |
| Repeatability | 0.441 | 0.05 |
| Part-To-Part | 911.962 | 99.95 |
| Total Variation | 912.403 | 100.00 |

Process tolerance = 90

Gage Evaluation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Source | StdDev (SD) | Study Var (6 × SD) | %Study Var (%SV) | %Tolerance (SV/Toler) |
| Total Gage R&R | 0.6641 | 3.985 | 2.20 | 4.43 |
| Repeatability | 0.6641 | 3.985 | 2.20 | 4.43 |
| Part-To-Part | 30.1987 | 181.192 | 99.98 | 201.32 |
| Total Variation | 30.2060 | 181.236 | 100.00 | 201.37 |

Number of Distinct Categories = 64

Probabilities of Misclassification

Joint Probability

|  |  |
| --- | --- |
| Description | Probability |
| A randomly selected part is bad but accepted | 0.002 |
| A randomly selected part is good but rejected | 0.002 |

Conditional Probability

|  |  |
| --- | --- |
| Description | Probability |
| A part from a group of bad products is accepted | 0.017 |
| A part from a group of good products is rejected | 0.003 |