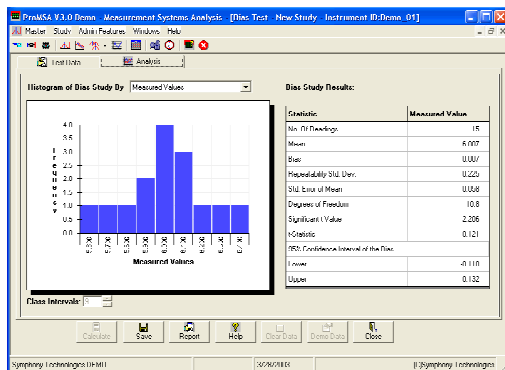
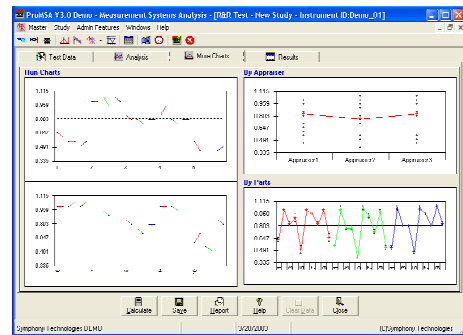


ProMSA Ver 3.2: Feature Sheet

ProMSA is math-anxiety-free, comprehensive and dedicated software for **Measurement Systems Analysis** conforming to the **Third Edition of AIAG's MSA Manual (including the errata published later by AIAG)**.

Repeatability & Reproducibility (R&R) Study

- ✓ R&R using
 - Range and Average Method
 - Crossed ANOVA Method
 - Nested ANOVA for Destructive and Non-replicable Tests
- ✓ Facility for Variable number of Samples, Trials and Appraisers
- ✓ Advanced Control Chart analysis
- ✓ Traffic signals for Part to Part Variation, Repeatability and R&R
- ✓ Computation of
 - Components of Variation (AV, EV, PV, R&R and TV)
 - Percentage Contribution
 - Signal to Noise Ratio
 - Distinct Data Categories (nDC)
 - ANOVA Table

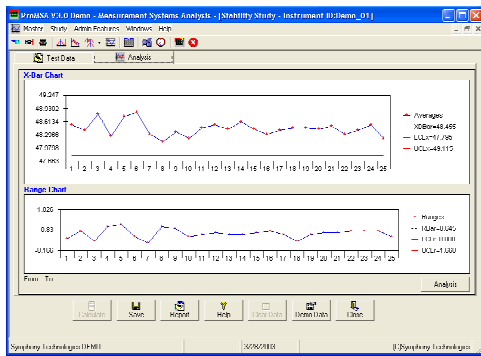
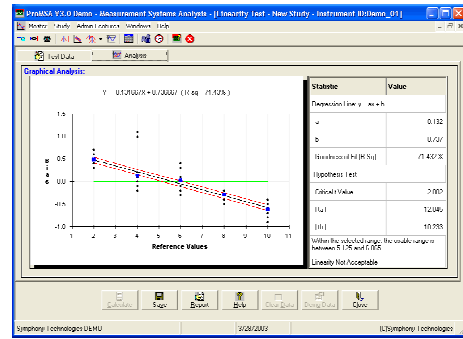


Bias Study

- ✓ Statistical derivation of Bias Value
- ✓ Significance of Bias using t-test
- ✓ Traffic signal for Acceptance of Bias
- ✓ Histogram for advanced Analysis

Linearity Study

- ✓ Computation of Bias and Spread at multiple levels over the entire operating range
- ✓ Regression Analysis with Confidence Intervals
- ✓ Calculation of Goodness of Fit
- ✓ Traffic Signal for Acceptance criteria
- ✓ Hypothesis Test



Stability Study

- ✓ User-definable subgroup size
- ✓ Average (X-Bar) Chart
- ✓ Range (R) Chart
- ✓ Analysis using Western Electric Rules
- ✓ Traffic Signal for Out-Of-Control and Trend Situations

Attribute R&R: Cross Tab Method

- ✓ Cross Tabulation across appraisers and with Reference Decision
- ✓ Evaluation of Interrater Agreement using **Cohen's kappa parameter**
- ✓ Calculation of Effectiveness of Measurement System
- ✓ Calculation of Miss Rate and False Alarm rate

Effectiveness	% Appraiser			% Score V Attribute		
Source	A	U	L	A	U	L
Total Inspected	50	50	50	50	50	50
# Matched	42	49	40			
False Negative				U	U	U
False Positive				U	U	U
Missed				U	U	U
95% UCL	92.03%	96.67%	89.97%			
Calculated Score	84.00%	90.00%	80.00%			
95% LCL	70.00%	70.00%	66.70%			

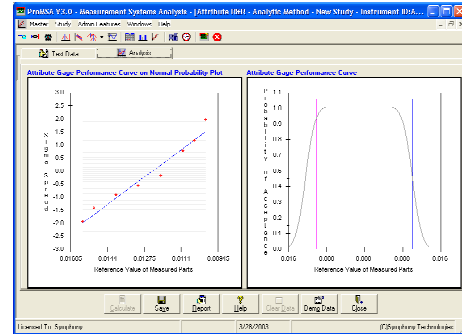
Effectiveness	% Appraiser			% Score V Attribute		
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# Matched	42	49	40			
False Negative				U	U	U
False Positive				U	U	U
Missed				U	U	U
95% UCL	92.03%	96.67%	89.97%			
Calculated Score	84.00%	90.00%	80.00%			
95% LCL	70.00%	70.00%	66.70%			

Attribute R&R: Signal Detection Method

- ✓ Evaluation of Zone of disagreement between appraisers
- ✓ Evaluation of %GRR
- ✓ Cross Tabulation across appraisers
- ✓ Evaluation of Interrater Agreement using **Cohen's kappa parameter**

Attribute R&R: Analytic Method

- ✓ Evaluation of Probability of Acceptance
- ✓ Normal Probability Plot
- ✓ Gage Performance Curve
- ✓ Computation of Bias and Repeatability for Attribute Gage



Other Features

- ✓ Gage Database with Test Frequency
- ✓ History View for all studies
- ✓ Reminder Service for Test Schedule
- ✓ Reports in MS Excel format for ease of saving, printing and e-mailing
- ✓ Comprehensive On-Line Help

Instrument ID	Instrument Type	Storage Location	Department
Demo_01	Vernier	Shop 1 Lab	Manuf
Demo_02	Micrometer	Lab	Manuf
Demo_03	Balance	Lab	Manuf

Instrument ID	Test Type	Test Method	Last Test Date	Part No./Refer...	Next Due
Demo_01	Line	-	3/20/2003	0.0	4/24/2003
Demo_01	Linearity	Ring-Average	3/20/2003	Part	4/27/2003
Demo_02	Bias	-	3/20/2003	6.0	4/27/2003
Demo_02	Linearity	-	3/20/2003	-	4/27/2003
Demo_03	Dist	-	3/20/2003	0.0	4/27/2003

Test	Instrument ID	Test Date	Study By	Acceptable?
Dist	Demo_03	3/20/2003		Yes
Line	Demo_01	3/20/2003		Yes
Linearity	Demo_01	3/20/2003		No
Linearity	Demo_01	3/20/2003		No
Dist: Range...	Demo_01	3/20/2003		Conditional

Evaluation version of ProMSA

An evaluation version of ProMSA can be downloaded from Symphony Technologies web site at

www.symphonytech.com



Symphony Technologies Pvt. Ltd.

B/4, Saket, Vidnyan nagar,
Bawdhan, Pune 411 021
India
Tel: 91-20-22951276
Fax: 91-20-22952158
Email: mail@symphonytech.com
Web: www.symphonytech.com