





Automated Measurement System Analysis, AMSA



AMSA is real time data collection programming which consist of four engines:

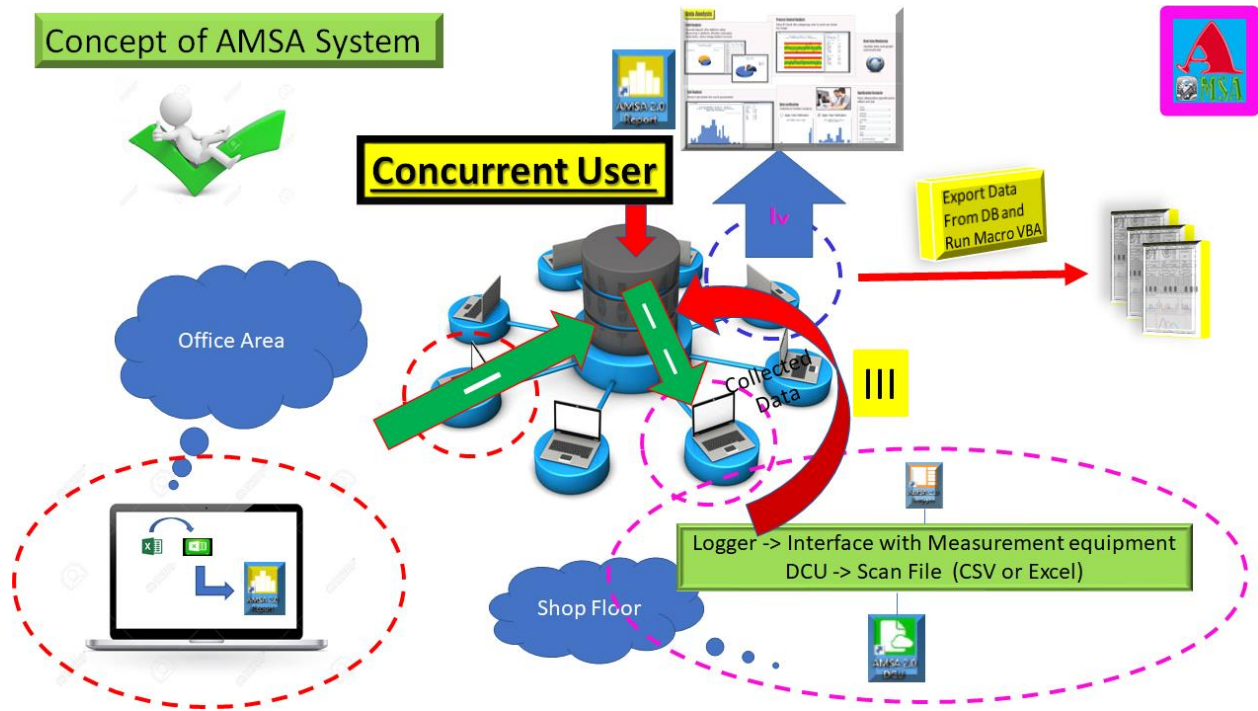
1. Service Module 
2. Report Module 
3. Logger Module  Interface with Small tools such as Vernier, Micrometer
4. Data Collection Unit, DCU  Collect data from Text or Excel Files

Service will perform send data to Report and receive data from Logger & DCU. This engine will be running as a background unit.

Report is using for two propose:

- 1) Generate Product configuration (Electronic QC Sheet)
- 2) Create Basic Statistical Report such as Yield & Pareto Charts, Process Capability (Cp&Cpk), Statistical Process Control (X-bar, R-Chart) and Trend Analysis (I-MR)

Logger & DCU are doing the same duty which is collecting data from shop floor and send to Database.



1st Step: Create Electronic QC Sheet and send to Database

Perform Product Configuration by:

- 1) Key in Database
- 2) Copy Customer Form Excel format to AMSA format and load into Database (Recommend)
- 3) Cloning from existing product (Recommend for Same Dimension different size)

2nd Step: Retrieve Electronic Form and collecting data either using Logger or DCU and send data to database

3rd Step: You can get Basic Statistical Report such as Yield & Pareto Charts, Process Capability (Cp&Cpk), Statistical Process Control (X-bar, R-Chart) and Trend Analysis (I-MR) by open the Statistical Report

4th Step: Export data and Run Macro to get your excel report

Sample Report: 1 Basic Statistical Reports from Database

Data Analysis

Yield Analysis

Overall report, the defects ratio, Show top 3 defects (Pareto concept), Total data, time range defect occur

Process Control Analysis

Xbar R Chart (fix subgroup size 5) and can show by stage

Cpk Analysis

Show Cpk index for each parameter

Data verification

Statistical Outlier analysis

Apply Data Verification Apply Data Verification

Real-time Monitoring

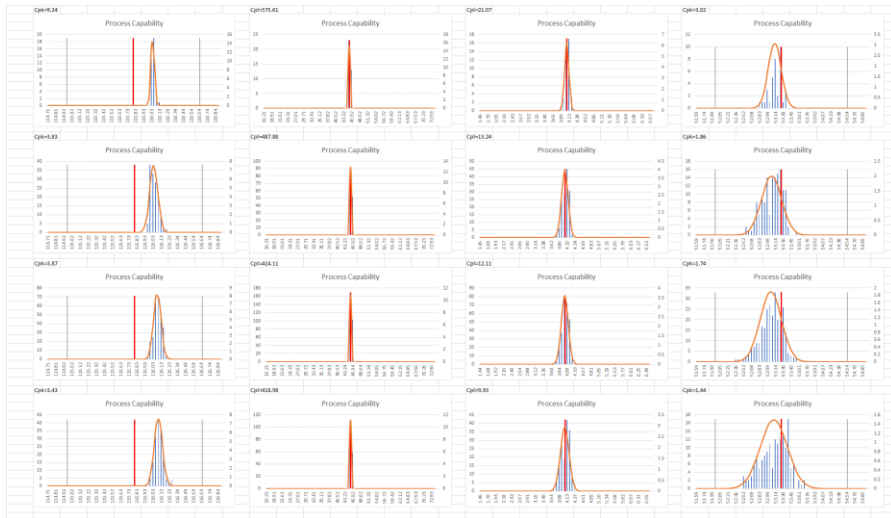
Update data and graph automatically

Specification Scenario

How alternative specification effect ed Cpk

Product: Product1
 Test Mode: Production
 Lot Number: N/A
 Parameter: Diameter
 Units: mm
 Auto Data Verification
 Use USL/LSL from Software Interface

Rigorous Statistical Report: Cognitive Computing Analysis



Cum Yield	f _{ij}					Normalize					Date	Yield	QTY	Defect		
Date	1	2	3	4	5	Sum	Pool Est	1	2	3	4	5				
Pass	40	10	140	130	198	518	1	40	10	140	130	198	05May20	100.00	40	0.00
Fail	0	0	0	0	0	0	0	0	0	0	0	0	07May20	100	140	0.00
Total	40	10	140	130	198	518	1						08May20	100	130	0.00
Yield	100.00	100.00	100.00	100.00	100.00								09May20	100	198	0.00

f _{ij}	e _{ij}	Sum Sq	SS/e _{ij}
40	40	0	0
10	10	0	0
140	140	0	0
130	130	0	0
198	198	0	0
0	0	0	#DIV/0!
0	0	0	#DIV/0!
0	0	0	#DIV/0!
0	0	0	#DIV/0!
0	0	0	#DIV/0!

Chi-SQ = 0
 Critical Value at (α=0.05,df=4) = 3.941439
 Conclusion : Reject H₀ ⇒ Significant Different between these groups

