Quality Digest: Nov. 10, 2020

The Relationship between Gage Management and Quality Data

Presenter

Derek Benson
Application Support Manager
PQ Systems, Dayton Ohio

Moderator

Dirk Dusharme
Editor in Chief
Quality Digest

Who am I and Who are we?

I have a 4 year old…


data
quality
management
reporting
staff
collection
reviewed
updates
needs
covering
responsibility
information
may
place
changes
support
working
top
results
level
associated
defined
recording
procedures
processes
programme
clear
manipulation
relevant
Data
practice
work
policies
analysis
systems
objectives
guidance
action
business
risk
address
charged
complete
requirements
Policies
periodically
timely
monitoring
assessed
day
reported
form
delivery
necessary
provision
regular
policy
used
Systems
agreement
body
ensure
training
basis
corporate
example
senior
governance
taken
external
standards
arrangements
regularly
body's
service
clearly
commitment
needed
supported

Define Gage Management

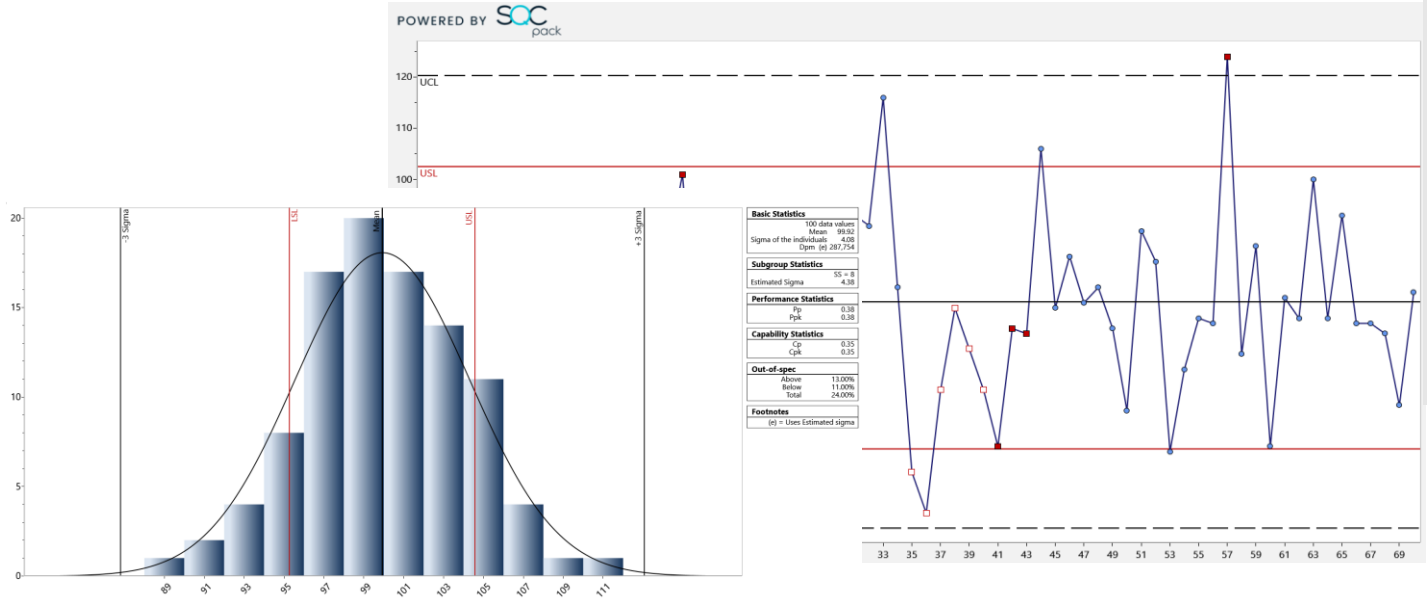
- Inventory Control
- Gage Accuracy
- Auditing / Documentation
- MSA

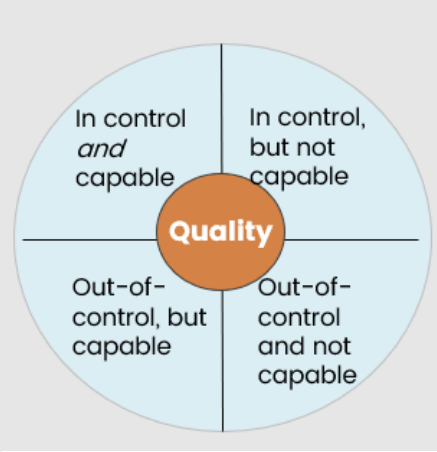
Effective Gage Management will improve Product Quality, save you money and promote growth!

Define Quality Data

SYSTEMS

Make it right the first time





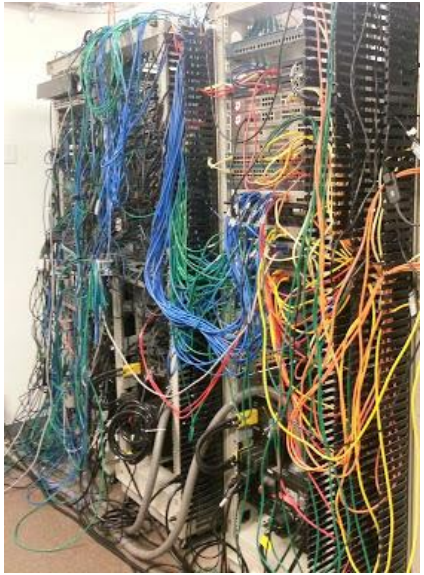
Mistakes with Quality Data

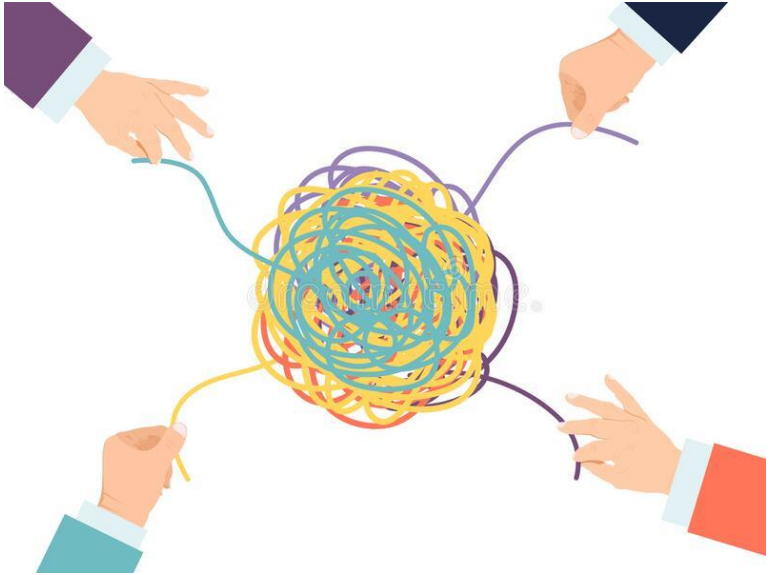
- Treating common-cause variation as special-cause

- Treating special-cause variation as common-cause

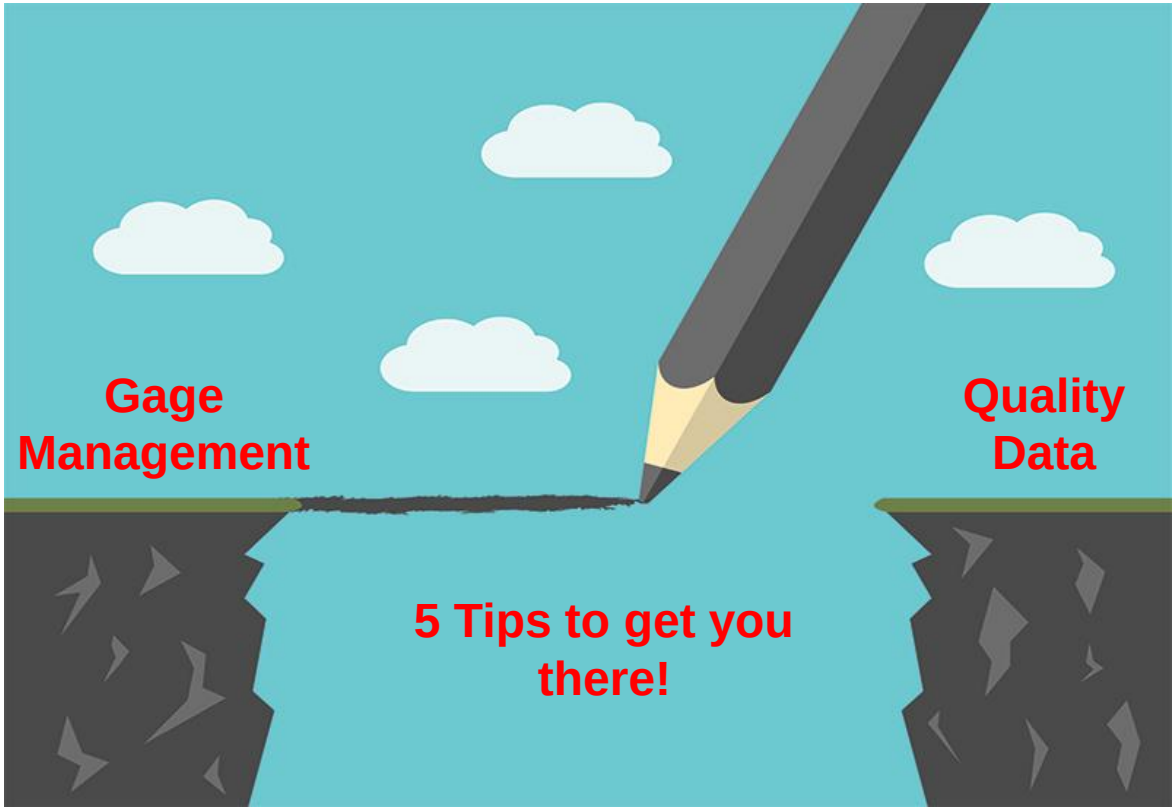

CUSTOMER COMPLAINTS
Penelope's Pen Caps

Kept separate…





If we accomplish nothing else…



Tip #1 – Reduce boundaries by involving the same people

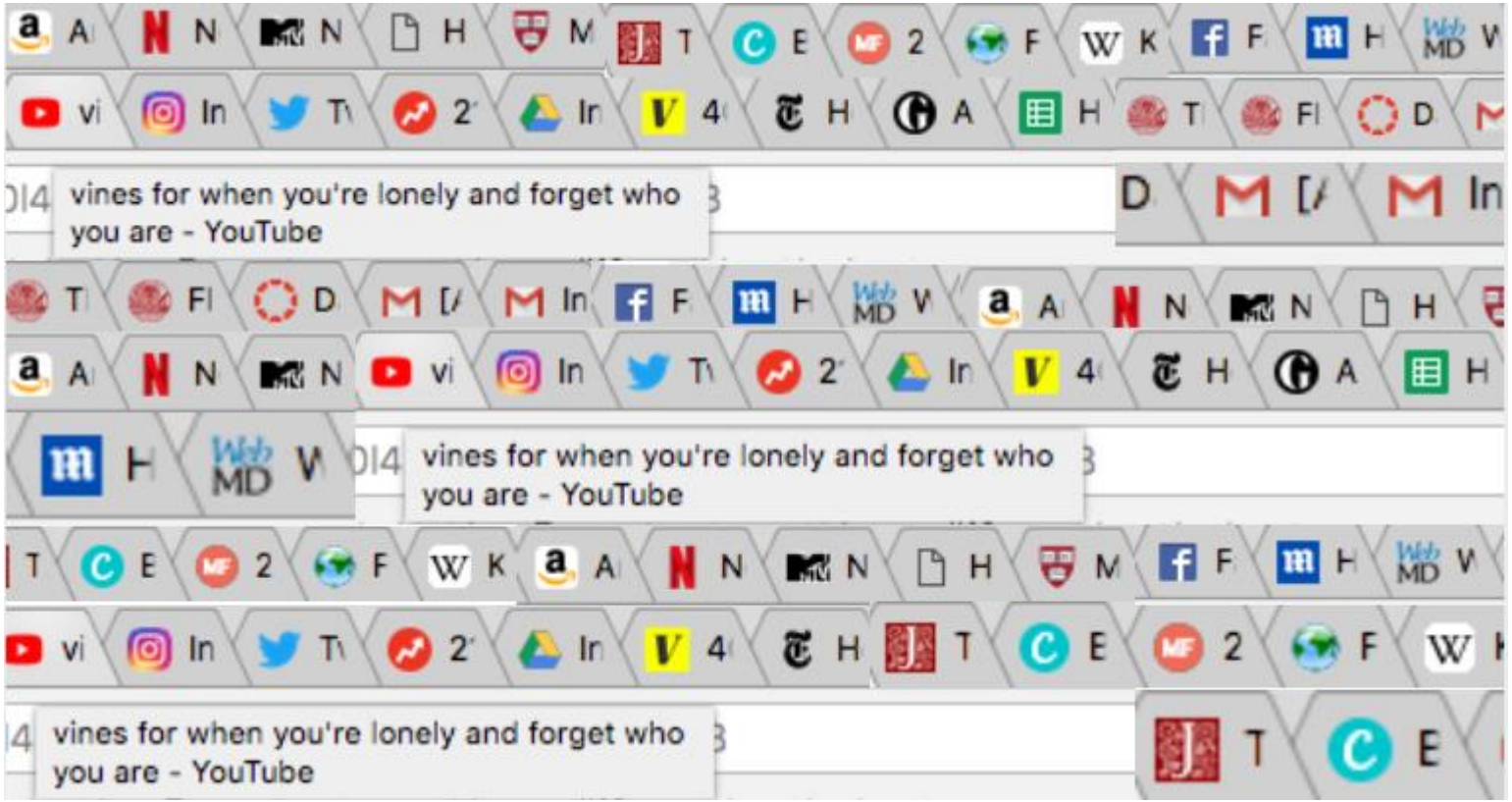
PQ SYSTEMS

"Gage management is his job"

"The quality techs take care of all that"

"Our bosses, who do neither, are the ones looking for the answers"

Is this you?


vines for when you're lonely and forget who you are - YouTube
vines for when you're lonely and forget who you are - YouTube
vines for when you're lonely and forget who you are - YouTube

Tip #2 – Keep organized

- Implement a formal check in/out system
  - Make it part of your company culture
- Make time for gage management
  - It's a leading indicator of customer satisfaction.
- Strive to have your SPC systems become "gage-aware"
  - Awareness of maintenance/calibration status
  - Awareness of history
  - Awareness of any known uncertainty/bias

Tip #3 – Documentation

- If possible, consolidate into a single system with all the answers!
- Document “Part-Usage” in your gage management system.
- Document “Gage-Usage” in your quality data collection system.
- Be prepared to extract a list of suspect parts following a calibration failure.
- Be prepared to extract a list of involved gages following returned product.

Parts associated with gages
PQ Systems

11/8/2020

All Gages

Gage number: DX-34585

Part name	Description
Part 2	Brake cylinder - Pontiac
Part 3	Brake cylinder - Chrysler
Part 5	Brake hose fitting - Pontiac

---- Parts: 3

Gage number: M-01002

Part name	Description
Part 4	Brake hose fitting - Ford

---- Parts: 1

Gage number: MASTER-06001

Part name	Description
Part 2	Brake cylinder - Pontiac

---- Parts: 1

Gage number: MASTER-06002

Part name	Description
Part 2	Brake cylinder - Pontiac

---- Parts: 1

Gages associated with parts 11/8/2020
PQ Systems

All Parts

Name: Part 1

Gage number	Gage type	Current location	Last calib date	Calib due date
PQS CAL 0001	Caliper	Gage Room		
PQS CAL 001	Caliper	Gage Room	4/13/2020	1/10/2020
PQS CAL 02	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 03	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 04	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 05	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 06	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 07	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 08	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 09	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 10	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 11	Caliper	Gage Room	11/12/2019	1/10/2020
PQS CAL 12	Caliper	Gage Room	11/12/2019	1/10/2020

---- Gages: 13

Name: Part 2

Gage number	Gage type	Current location	Last calib date	Calib due date
DX-34585	Micrometer	Quality Lab	8/26/2019	6/26/2020
MASTER-06001	Master Blocks	Quality Lab	7/4/2019	7/3/2020
MASTER-06002	Master Blocks	Gage Room	7/18/2019	7/17/2020
PM-Cal-0001	Caliper	Plant Floor	5/3/2019	11/1/2019

---- Gages: 4

Name: Part 3

Gage number	Gage type	Current location	Last calib date	Calib due date
DX-34585	Micrometer	Quality Lab	8/26/2019	6/26/2020
PM-Cal-0002	Caliper	Plant Floor	5/6/2019	11/4/2019

Tip #4 – Assess Measurement Accuracy

- Don’t assume your gages are accurate.
- Never use a gage that’s behind on calibration.
  - Implement systems that prevent it from happening, where possible.
- Calibrate routinely per gage manufacturer recommendations.

BONUS

- VERIFY gage is holding accurate throughout calibration interval.

Calibration Intervals

But what is the right interval? How often should the technicians calibrate the gage?

Too often – waste of time and money!

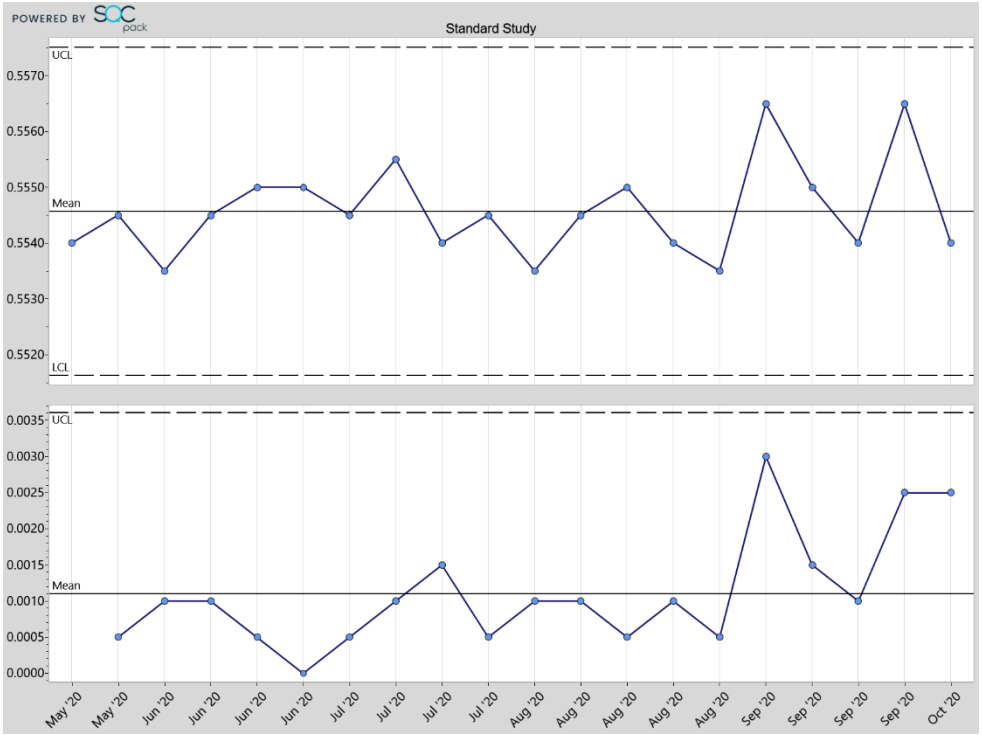
Not often enough – possibly using a bad gage to check your parts!

Stability Study

Checking to see if a gage is consistent and predictable between calibration cycles.

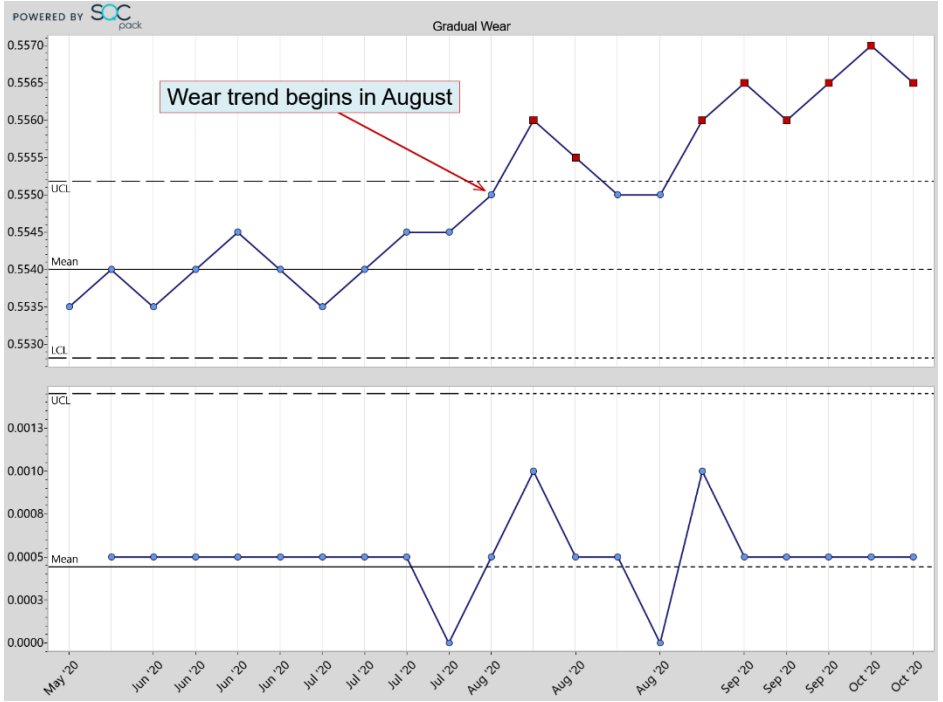
Stability Study

Results



Stability Study

Results



Tip #5 – Measurement Reliability

PQ SYSTEMS

Now that we know the gage is accurate, can we trust the results?

Measurement System Influencers

- Materials – Pieces/units to be measured
- Machine – Gage or tool used to take measurement
- Method – Procedure followed
- Manpower – Who is taking the measurements
- Mother Earth – Surroundings / climate

Tip #5 – Measurement Reliability

- When possible, study your measurement system to confirm it is adequate for the job.
  - Variable and Attribute R&R Studies
  - Uncertainty studies
  - Linearity Studies

Defining Variable R&R Study

PQ SYSTEMS

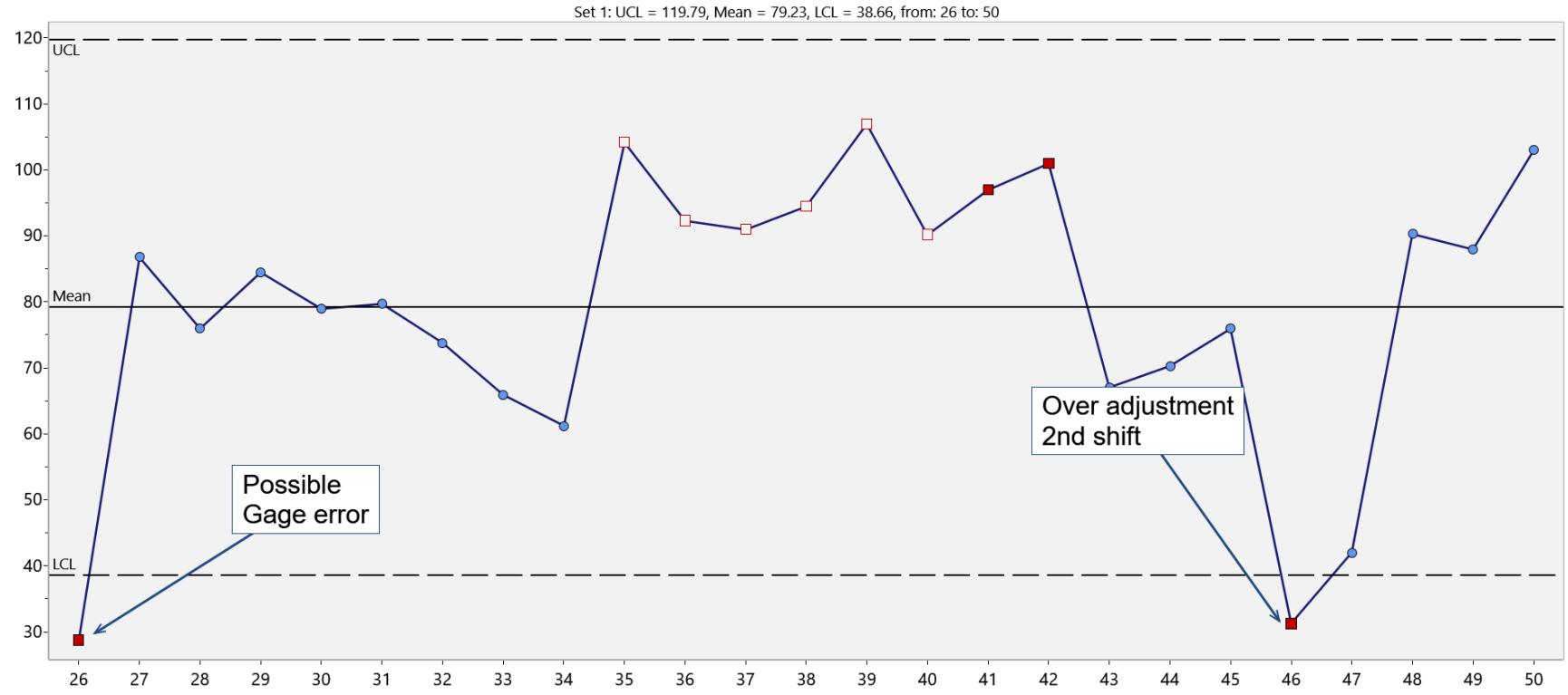
Is your measurement system capable of distinguishing differences among the units produced by a process?

Variable R&R Study Results

- Examine the %RR values to determine the percentage of variation that's due to the measurement system – rather than differences in parts.

<10% generally considered acceptable
10-30% may be acceptable (room for improvement)
>30% not acceptable – need to improve

Trust your SPC



Long-term Trends

- From users working on focused desktop applications, using local/isolated data - to users collaborating with shared data.
- From using desktop applications to using web based/cloud applications
- From storing data locally to storing data on a server to storing data in the cloud
- From doing all IT work internally – to using the Web and Cloud as main providers of technical resources

In Summary…

1. Reduce Boundaries
2. Get Organized
3. Connect the dots in your documentation
4. Assess measurement accuracy
5. Save time for MSA

PQ Systems Software

SQC pack

GAGE pack

Derek Benson
937-813-4694
Derek@PQsystems.com
www.pqsystems.com