

QC Report

March 2000 Issue 1

For Quality Control and Process Improvement Professionals

Should You Use Acceptance or Modified Control Charts?

Donald S. Holmes

There are some processes which, due to their nature, are expected to have unavoidable shifts in their average value but which are still able to satisfy customer established specifications. This situation occurs when the standard deviation of the process, at the various average values of the process, is very small relative to the tolerance width. In usual statistical process control terms, such a process is not in-control but may be able to produce an acceptable product. Charts that are useful for this type of situation are described in both Duncan (1) and Montgomery (2). You will need to look for "acceptance control charts" or "modified control charts" in those texts. We will show you how to build one in the next QC Report. But first we need to warn you that there is needless confusion about what the charts should be called.

It will appear as you read this literature that there are three different charts being generated for this situation. That is incorrect. There is one type:

A. Erhan Mergen

- a chart which allows you to detect, using Xbars for example, when the process will be producing an unacceptable level of nonconforming products.

Confusing factor #1

This type of chart should be called an "acceptance chart" - not an "acceptance control chart" - since it deals only with the decision as to whether or not the process should be accepted or rejected. So, when you are reading about these charts in the texts mentioned, just ignore the word "control".

Confusing factor #2

The construction of acceptance charts requires that you decide what type risk you would like to consider (AQL, RQL, or a combination of AQL and RQL) when setting up the limits. If you decide to use an AQL type of risk setting, the chart will be referred to by some folks as a "modified control chart" and by others as just an "acceptance control chart" - but don't forget to drop the word "control" when you are explaining this to someone else.



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We also recommend dropping the term "modified" since it implies something other than acceptance may be going on here. (Duncan uses "acceptance"; Montgomery uses "modified") Everyone seems to agree that charts using RQL or combination RQL-AQL to establish risk levels should carry the word "acceptance" as a part of their title. Please forget "modified" - it, just adds to the confusion.

There are really two different issues: acceptance and control. These two issues are independent of each other. However, if your process is "in-control", we certainly do hope it is also meeting specs. Don't be confused!

*Follow up article in next QC Report

What's New?

Stochos realizes that shop-floor SPC presents some unique problems, so we've designed a new, more in depth, user configurable data entry screen.

A Case Study for the Paper Industry

The image to the right is an example section of a data entry screen, recently configured for a paper mill. As part of its shop-floor design, preconfigured industry-specific forms make for easy one step, paperless data collection.

SPC Direct is an on-line, real-time, user-definable statistical process control monitoring and analysis database. The system can accept manual and direct gage input as well as automatically poll larger process control data acquisition systems.

Please call Stochos at: 1-800-426-4014, for more information.

PaperMill					
Customer				Grade/Calper	Date/Time
Name	Name	PO	Grade	Date	
Bob	Mill Corporation	35212	300C	1/14/00	
Joe	ABC Milling	120899	200C	12/8/99	
Joe	ABC Milling	120899	200C	12/8/99	
Joe	ABC Milling	120899	200C	12/8/99	
Tom	Mill Corporation	32111	300C	12/7/99	
Base Weight (gsm)					Calper (um)
Max: 420.00	Max: 420.00	Max: 420.00	Max: 420.00	Max: 525.00	
Nom: 400.00	Nom: 400.00	Nom: 400.00	Nom: 400.00	Nom: 500.00	
Min: 380.00	Min: 380.00	Min: 380.00	Min: 380.00	Min: 475.00	
Read 1	Read 2	Read 3	Read 4	Average	Read 1
400	401	402	401	401.00	500
402.00	402.00	402.00	402.00	402.00	502.00
405.00	405.00	405.00	405.00	405.00	505.00
400.00	400.00	400.00	400.00	400.00	500.00
400.00	400.00	400.00	400.00	400.00	500.00
Moisture (%)					Topliner Appearance
Max: 7.5	Max: 7.5	Max: 7.5	Max: 7.5	Max: 5.0	
Nom: 6.0	Nom: 6.0	Nom: 6.0	Nom: 6.0	Nom: 3.5	
Min: 4.5	Min: 4.5	Min: 4.5	Min: 4.5	Min: 3.0	
Read 1	Read 2	Read 3	Read 4	Average	Dirt
6.1	6.1	7.6	7.5	6.8	3.6
6.3	6.3	6.3	6.3	6.3	3.6
6.1	6.1	6.1	6.1	6.1	3.7
6.0	6.0	6.0	6.0	6.0	3.5
6.2	6.0	6.0	6.0	6.1	3.6

Employee Profile

Stochos welcomes *Tom Alway* to our sales team. Tom is a graduate of Michigan State University with a B.S. degree in Agricultural Engineering Technology. For the past 9 years, Tom has worked in the refractories industry as a Network Administrator, Plant Buyer, Production Supervisor, Quality Control Supervisor, ISO Coordinator, and Statistical Management System Coordinator. Prior to that, Tom had spent 2 years as an assistant plant manager at a fruit processing plant. He is currently active in the development and implementation of ProActive Process Improvement, Stochos' latest software.



www.stochos.com

Go to www.stochos.com to visit our new web page featuring: FAQ'S, Customer Support Forms, Downloadable Updates, Product Slideshows, QC Reports and much more!

Stochos, Inc...

The year past.

Stochos successfully completed several new and enhanced products making 1999 a year of growth and achievement. Our new products include, *ProActive Process Improvement (PPI)* and *Quality Action Report (QAR)* for Windows™. We have enhanced both our *Quality Management and Shop-Floor Data Collection System* and *SPC Direct for Windows™*.

Visit our newly designed web site with new features including customer support forms - downloadable version updates - Frequently Asked Questions - product slideshows - QC Reports - and much more.

Improvements to our customer support and version control include the internal implementation of our own *Quality Action Request (QAR)* system to track your requests for improvements and bug fixes. Use of this closed-loop corrective action system has led to systematic testing and better control of program releases. In the future, this approach will continue to drive us to better results in product development and customer support.

Product Review:

Completion of our new *ProActive Process Improvement (PPI) System* has been both exciting and challenging. Utilizing an outside marketing consultant to work with our team to launch this unique system, the official release of the PPI system was announced at the October IMS show in Philadelphia. Press conferences and exhibiting helped confirm the need and interest for the advanced technology presented in the PPI system. As the new year makes way for awareness and implementations of automated model-free, process optimization. We anticipate manufacturers will be driven to a new plateau in process improvement. In utilizing the PPI system, one case study done at Harbison Walker Refractories has already demonstrated potential annual savings of \$250,000.

The Windows™ version of the *Quality Management and Shop-Floor Data Collection System (QMDS)* has been continually developed and enhanced over the past four years. With successful installation in several plants throughout 1999, the latest version of the QMDS was released on Jan.

3, 2000. This version of QMDS is a completely integrated, easy-to-use factory floor database system which has added features such as RF Bar-coded Inventory and Warehouse Management. This new, complete system is a global leader for efficient factory floor data management.

Now utilizing SQL 7.0, a new release of our well-developed *SPC Direct* system resulted in improved strength and flexibility. Development of "custom" definable forms make SPC Direct a flexible solution for industry-specific data collection and charting screens providing easy configuration and quick implementation.

During the year, we also announced our desire to develop relationships with Systems Integrators for both the PPI and QMDS systems. We are currently working to select and form suitable partnerships. We welcome interested System Integrators to contact us for consideration, as our efforts will continue throughout 2000.

This year we have worked hard to continue with our mission of providing highly effective computerized solutions to improve the quality of manufacturing processes. We are excited and look forward to the future and hope that you will continue to let us serve you for many years to come.

Happy New Year!
The Stochos Staff

Upcoming Events Calendar

April 3, 2000

SPC Breakfast

Topic - Short Run SPC

April 10 - 11, 2000

Process Improvement Seminar

Achieving Model-Free Process Optimization through On-line Experimentation
Hampton Inn North Olmsted - Cleveland, OH
8:30 - 4:30
(440) 734-4477

June 26 - 30, 2000

Statistical Process Control Training

Course Director: Donald S. Holmes
Basic and Advanced Topics / 3 - 5 Day Course
June 26 - 28 Basic & June 28 - 30 Advanced
Registration: Basic \$800 Advanced \$1600
Location: *Stochos, Inc.*
14 N. College St.
Schenectady, NY 12305

July 17 - 19, 2000

Unique SPC Workshop

Statistical Analysis of Operations Data
Held at: The Center for Prof. Advancement
East Brunswick, NJ
To Register Contact: CFPA (732) 238-1600

August 21 - 24, 2000

IMS Expo 2000

New Orleans, Louisiana
Ernest N. Morial Convention Center
Booth #5316

For more information contact: **Konnie Steele**
Phone (518) 372-5426, or
Email: Kesteele@Stochos.com