



Quality Engineering >

Volume 16, 2003 - [Issue 2](#)

206 | 14 | 0
Views | CrossRef citations to date | Altmetric

Original Articles

Performance Evaluation of Dynamic Monitoring Systems: The Waterfall Chart

George Box, Søren Bisgaard , Spencer Graves, Murat Kulahci, Ken Marko, John James, ...
[... show all](#)

Pages 183-191 | Published online: 23 Aug 2006

Cite this article <https://doi.org/10.1081/QEN-120024006>

Sample our
Economics, Finance,
Business & Industry Journals
>> [Sign in here](#) to start your access
to the latest two volumes for 14 days

Full Article Figures & data References Citations Metrics

Reprints & Permissions

Read this article

Share

Abstract

Computers are increasingly employed to monitor the performance of complex systems. An important issue is how to evaluate the performance of such monitors. In this article we introduce a three-dimensional representation that we call a “waterfall chart” of the probability of an alarm as a function of time and the condition of the system. It combines and shows the conceptual relationship between the cumulative distribution function of the run length and the power function. The value of this tool is illustrated with an application to Page's one-sided Cusum algorithm. However, it can be applied in general for any monitoring system.

Keywords:

Run length distribution of a monitor

Power

Cumulative sum chart

Cusum

Acknowledgments

This article is based on research supported by the Low Emissions Technologies Research and Development Partnership (LEP) of Daimler-Chrysler, Ford, and General Motors. Professor Box's research received additional funding from National Science Foundation Grant DMI-981239.

Related research

People also read

Recommended articles

Cited by
14

Information for

[Authors](#)

[R&D professionals](#)

[Editors](#)

[Librarians](#)

[Societies](#)

Opportunities

[Reprints and e-prints](#)

[Advertising solutions](#)

[Accelerated publication](#)

[Corporate access solutions](#)

Open access

[Overview](#)

[Open journals](#)

[Open Select](#)

[Dove Medical Press](#)

[F1000Research](#)

Help and information

[Help and contact](#)

[Newsroom](#)

[All journals](#)

[Books](#)

Keep up to date

Register to receive personalised research and resources by email



Sign me up



Copyright © 2026 Informa UK Limited [Privacy policy](#) [Cookies](#) [Terms & conditions](#)

[Accessibility](#)

 Taylor and Francis Group

Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG