## Update to the AIAG- SPC Reference Manual

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#### ABSTRACT

The SPC reference manual was one of the first manuals released by Ford, GM, and DaimlerChrysler (formally Chrysler) to communize the methods and application of Statistical Process Control. It has been useful, but it was released in the early 80's and required updating in relation to style, changes in philosophy, and the introduction of new methods.

#### INTRODUCTION

SPC- Statistical Process Control has been around for many years, first created by Walter Shewhart in the 1920. It came to the forefront by Dr. W. Edwards Deming's teaching and application in Japan in he mid 40's after World War Two and into the early 80's when it became recognized in the US, it eventually became a requirement of all US automotive suppliers to have proof of the application of SPC and that the parts being delivered were from a stable process.

#### MAIN SECTION

The main purpose of this paper is to review the philosophy used in the development of the new SPC reference manual, the changes and additional methods reviewed and supported.

#### PHILOSOPHY OF THE SUBCOMMITTEE

Prior to starting the rewrite the committee established specific norms to follow while developing the manual. They were as follows:

- Update the format to match current manuals
- Evaluate order, improve logic
- Customer focused: Easier to use and understand
- Reduce focus on indices
- Up-front reinforce the need for a system of application and analysis
- Add additional methods that have been introduced since the manual was published
- Improve the glossary and index
- Review and update reference list

#### Introduction

The manual contains information from the basics of SPC, management support process, the common statistical methods, and additional methods that can be used in special situations. The introduction sets the stage by showing the importance of using SPC to define variation.

- Establish were the process is centered
- Whether the process is stable or unstable
- The about of variation that exists.

#### Data, Results, and Measurement

Decisions and estimates are based on a perception of what the population is doing. The quality of this perception is based on a number of issues.

- Homogeneous population
- Distribution of the population
- Sampling plan
- Whether the process and population are stable
- Measurement variation
- Interdependent variables

The stability and uniformity of the population is critical to understand prior to collecting and analyzing data. The uniformity and stability of the population impact the way that collect the data and the way the data is analyzed. This is not just a "point of view", it always exist whether it taken into account or ignored. In most cases a normal distribution (bell curve) in relation to a continuous process.

Sampling can also impact the results of data collection and analysis. In some cases a randomized sample is required. This means by where, when and how the sample is taken from the population. Randomization helps to limit bias and also gives a better picture of what the variation in the population looks like. In other cases, the sample isn't random; parts are either specifically selected or made to specific requirements. This often occurs in engineering development or when problem solving issues. (Note: Distribution, Uniformity, and stability of the population are assumed/ Measurement variation is small)

# **Aiag Spc Referance Manual**

**David Kirk** 



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## **Table of Contents Aiag Spc Referance Manual**

- 1. Understanding the eBook Aiag Spc Referance Manual
  - The Rise of Digital Reading Aiag Spc Reference Manual
  - Advantages of eBooks Over Traditional Books
- 2. Identifying Aiag Spc Reference Manual
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
- 3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Aiag Spc Reference Manual
  - User-Friendly Interface
- 4. Exploring eBook Recommendations from Aiag Spc Referance Manual
  - Personalized Recommendations
  - Aiag Spc Referance Manual User Reviews and Ratings
  - Aiag Spc Referance Manual and Bestseller Lists
- 5. Accessing Aiag Spc Reference Manual Free and Paid eBooks

- Aiag Spc Referance Manual Public Domain eBooks
- Aiag Spc Referance Manual eBook Subscription Services
- Aiag Spc Reference Manual Budget-Friendly Options
- 6. Navigating Aiag Spc Referance Manual eBook Formats
  - ∘ ePub, PDF, MOBI, and More
  - Aiag Spc Referance Manual Compatibility with Devices
  - Aiag Spc Referance Manual Enhanced eBook Features
- 7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Aiag Spc Reference Manual
  - Highlighting and Note-Taking Aiag Spc Reference Manual
  - Interactive Elements Aiag Spc Referance Manual
- 8. Staying Engaged with Aiag Spc Referance Manual
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Aiag Spc Reference Manual
- 9. Balancing eBooks and Physical Books Aiag Spc Reference Manual
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Aiag Spc Referance Manual
- 10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
- 11. Cultivating a Reading Routine Aiag Spc Reference Manual
  - Setting Reading Goals Aiag Spc Reference Manual
  - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Aiag Spc Reference Manual
  - $\circ\,$  Fact-Checking eBook Content of Aiag Spc Referance Manual
  - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
  - Utilizing eBooks for Skill Development

- Exploring Educational eBooks
- 14. Embracing eBook Trends
  - Integration of Multimedia Elements
  - Interactive and Gamified eBooks

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