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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 17989.1-2020

Control charts - Part 1: General guidelines

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Foreword

The plan of GB/T 17989 "Control Chart" is divided into the following 9 parts.

--- Part 1. General guidelines;

--- Part 2. Conventional control chart;

--- Part 3. Acceptance control chart;

--- Part 4. Cumulative and control charts;

--- Part 5. Special control charts;

--- Part 6. Exponentially weighted moving average control chart;

--- Part 7. Multiple control charts;

--- Part 8. Short cycle and small batch control methods;

--- Part 9. Autocorrelation process control chart.

This part is the first part of GB/T 17989.

This section is drafted in accordance with the rules given in GB/T 1.1-2009.

This section replaces GB/T 17989-2000 General Principles and Guidance for Control Charts. Compared with GB/T 17989-2000, the main technical changes

The transformation is as follows.

--- Added "terms and definitions" (see Chapter 3);

--- Added "Symbols" (see Chapter 4);

--- Added "concepts" (see Chapter 5);

--- Deleted "economic considerations" (see Chapter 13 of the.2000 edition).

This section uses the redrafting method to modify and adopt ISO 7870-1..2014 Control

Chart Part 1. General Guidelines, and ISO 7870-1.

The technical differences in.2014 and their causes are as follows.

--- Regarding the normative references, this section has made adjustments with technical differences to adapt to China's technical conditions and the situation of adjustment.

The situation is reflected in Chapter 2 "Regulatory Reference Documents", and the specific adjustments are as follows.

* Replace ISO 3534-2 with GB/T 3358.2 equivalent to the international standard (see Chapter 3);

* Added reference to GB/T 17989.2 (see 5.1);

* Added reference to GB/T 17989.3 (see 5.3);

* Added reference to GB/T 17989.4 (see 7.2.3.2).

The following editorial changes have been made in this section.

--- Adjusted the order of references, added references ISO 7870-5, ISO 7870-6, ISO 22514-1, ISO 22514-7.

This part was proposed and managed by the National Technical Committee for Standardization of Statistical Methods (SAC/TC21).

This section was drafted. Huzhou Mingfeng Enterprise Management Consulting Co., Ltd., Xiamen Minghongtang Crafts Co., Ltd., China Standardization Research

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Introduction

Each production, service or management process has certain variations under the influence of various factors. Therefore, the results observed in the process

The results are not the same. The variability of the research process will help to understand its characteristics and provide a basis for taking corresponding measures.

Control charts are the basic tool for statistical process control (SPC). They provide a simple graphical method that can be used for.

a) Determine whether the process is stable, that is, whether the process is running in a system with only random causes, and the process is mutated at this time

Called inherent variation, also known as the process is in a "statistically controlled state";

b) estimate the degree of inherent variation in the process;

c) Compare sample information representing the current state of the process with control limits that reflect this variation to determine if the process variation is consistent

Remain stable or change;

d) identify, investigate and possibly reduce/eliminate the effects of specific mutations that may lead to unacceptable processes

Level;

e) assist in the adjustment process by identifying various variation patterns such as trends, processes, cycles, etc .;

f) determine whether the process is predictable and stable in order to assess whether the process meets specifications;

g) determine whether the measured characteristics in the process meet the expected process capability required to meet product or service requirements;

h) When using statistical models for prediction, provide a basis for process adjustment;

i) Help evaluate the performance of the measurement system.

The main advantage of control charts is that they are easy to draw and use. It is for production or service operators, engineers, managers and operators

The staff provided online indicators on process behavior. However, in order to make the control chart a reliable and efficient

Paragraph, pay attention to the process to be studied, choose the appropriate control chart type, and determine the correct sampling plan.

This section of GB/T 17989 gives the general concepts for the successful design of a control chart.

Control Charts

Part 1. General guidelines

1 Scope

This part of GB/T 17989 gives the key elements and basic principles of the control chart method, and defines various types of control charts (including general

Control chart related control charts, control charts that emphasize process acceptance or online process adjustment, and special control charts).

This section only gives basic principles and concepts, and illustrates the relationship between various control chart methods to help in specific situations

Choose the most suitable control chart method. This section does not give the statistical

control method used in the control chart, which is described in GB/T 17989

Detailed in the other sections of.

2 Normative references

The following documents are essential for the application of this document. For dated references, only the dated version applies to this article

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 3358.2 Statistics Vocabulary and Symbols Part 2. Applied Statistics (GB/T 3358.2-2009, ISO 3534-2..2006,

IDT)

GB/T 17989.2 Control Chart Part 2. General Control Chart (GB/T 17989.2-2020, ISO 7870-2..2013, MOD)

GB/T 17989.3 Control Chart Part 3. Acceptance Control Chart (GB/T 17989.3-2020, ISO 7870-3..2012, MOD)

GB/T 17989.4 Control Chart Part 4. Cumulative and Control Chart (GB/T 17989.4-2020, ISO 7870-4..2011,

MOD)

3 terms and definitions

The terms and definitions defined in GB/T 3358.2 and the following apply to this document. For ease of use, the following is repeated

Some terms and definitions in GB/T 3358.2.

3.1

Controlchart

In order to monitor the process, control and reduce process variability, a series of sample statistic value sequences are plotted in a specific order.

Note 1. The specific order usually refers to the order of time or sample acquisition.

Note 2. Control charts are most effective when used to monitor the characteristics of the final product or service.

[GB/T 3358.2-2009, definition 2.3.1]

3.2