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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 17989.2-2020

Replacing GB/T 4091-2001

Control charts - Part 2: Shewhart control charts

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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 second 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 4091-2001 `` conventional control chart ". Compared with GB/T 4091-2001, the main technical changes are as follows.

--- Added 4 types of inspection modes for which the fluctuation can be identified (see Chapter 8);

--- Increased the construction method of the measurement control chart (see Figure 6).

--- Modified the symbols and colors in the legend of the conventional control chart (see Figure 7, Figure 8, all the icons in Appendix B).

This part uses the redrafting method to modify and adopt ISO 7870-2..2013 "Control Chart Part 2. General Control Chart".

Compared with ISO 7870-2..2013, this section has structural changes.

--- Adjust the order of Appendix A and Appendix B.

The technical differences between this part and ISO 7870-2..2013 and the reasons 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 17989.1 (see 3.1);

* ISO 5479 and ISO 16269-4..2010 have been removed.

--- Added the term "subgroup" (see 3.1.1).

The following editorial changes have been made in this section.

--- Adjusted the order of references.

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

This section was drafted. Tsinghua University, Eliya (Xiamen) Ecological Development Co., Ltd., Qingdao University, China National Institute of Standardization.

Introduction

The traditional manufacturing process is aimed at the production process of manufactured products, and performs quality control by detecting the final product and screening out non-conforming products.

system. This detection strategy is usually wasteful and uneconomical, because it uses post-mortem detection, at which point the waste has been produced. Instead, once

Taking preventive measures from the beginning to effectively prevent waste caused by waste products will be more efficient. This can be done by collecting and analyzing process information

Take measures in time to achieve this.

In 1924 Walt Amand Shewhart proposed the control chart method, which is a kind of

process control based on the principle of statistical significance.

Graphic tools. Control chart theory is used to distinguish between two variants. The first is by "accidental causes" (also known as "common causes", "natural causes", "random

Cause "," inherent cause "or" uncontrollable cause "). This is because there are many causes that are always present and difficult to distinguish.

Brings mutation; each of them is only a small part relative to the entire mutation, and does not have a significant impact. However, all

The sum of contributions with these indeterminate random causes is measurable and is assumed to be inherent to the process. Eliminate or correct common causes, possibly

Resource allocation decisions are needed to fundamentally change processes and systems.

The second variant represents a real change in the process. This change can be attributed to a number of identifiable causes that were not produced

Process is inherent, and can be eliminated, at least in theory. These identifiable causes are called "identifiable causes" (also known as special

Special, unnatural, systemic, or controllable causes). They can be attributed to a lack of material consistency, broken tools, processes or processes

The sequence is incomplete, the performance of the equipment is abnormal, or the environment changes.

If process variation only originates from random reasons, the process is said to be in a state of statistical control, or "controlled" for short. Once this level of variation is confirmed

Any deviation from this level can be considered as the result of a identifiable cause to be identified and eliminated.

Statistical process control is a method of establishing and maintaining a process at an acceptable, stable level with the goal of ensuring that the product and

The service meets the required requirements. Its main statistical tool is the control chart, which is a system that represents the current state of the process according to the comparison with the control limit.

A graphical method of column observation, information representation and comparison, and the control limit is built taking into account the inherent process variation called process capability

Stand up. First of all, the control chart method helps to assess whether the process has reached or continues to be in a state of statistical control. When the process is considered to be

When stable and predictable, the ability of the process to meet customer requirements can be further analyzed. Control charts can also be used when process activities continue

To provide a continuous record of process output quality characteristics. Control charts can help detect unnatural patterns of data changes caused by repetitive processes

And provide a lack of statistically controlled judgment criteria. The use and careful analysis of control charts provides a better understanding of the process and is often identified

Come up with valuable improvements.

Control Charts

Part 2. General Control Chart

1 Scope

This section of GB/T 17989 gives guidelines for understanding and applying conventional control charts for statistical process control.

This section applies only to the case of using conventional control charts for statistical process control.All the supplementary content is related to conventional control charts.

Relevant, such as. use of cordon, trend patterns, and process capability analysis. Other types of control chart methods can be found in GB/T 17989.1

Find the description in.

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 17989.1 Control Chart Part 1. General Guidelines (GB/T 17989.1-2020, ISO 7870-1..2014, MOD)

ISO 22514 (all parts) Statistical method capabilities and performance in process management (Statistical methods in process

management-Capabilityandperformance)