International Standard

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Third edition
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Statistical methods in process management — Capability and performance —

Part 2: Process capability and performance of time-dependent process models

Méthodes statistiques dans la gestion de processus — Aptitude et performance —

Partie 2: Aptitude de processus et performance des modèles de processus dépendants du temps

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Foreword

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This document was prepared by Technical Committee ISO/TC 69, *Applications of statistical methods*, Subcommittee SC 4, *Applications of statistical methods in product and process management*.

This third edition cancels and replaces the second edition (ISO 22514-2:2017), which has been technically revised.

The main changes are as follows:

- three new process models have been added;
- more information about process in control has been added in Clause 4;
- Table 1 and Table 2 have been revised and the new process models added;
- $\hat{X}_{\text{mid}} = X_{50\ \%}$ was added in Table 3;
- recommendation was added in 6.3;
- information about finding the distribution was added in Clause 7;
- location calculation 5 was added in Table 5;
- editorial adjustments have been made.

A list of all parts in the ISO 22514 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Many standards have been created concerning the quality capability/performance of processes by international, regional and national standardization bodies and also by industry. All of them assume that the process is in a state of statistical control, with stationary, normally distributed processes. However, a comprehensive analysis of production processes shows that, over time, it is very rare for processes to remain in such a state.

In recognition of this fact, this document provides a framework for estimating the quality capability/performance of industrial processes for an array of standard circumstances. These circumstances are categorized based on the stability of the mean and variance, as to whether they are constant, changing systematically, or changing randomly. As such, the quality capability/performance can be assessed for very differently shaped distributions with respect to time.

In other parts of ISO 22514 more detailed information about calculations of indices can be found. It should be noted that where the capability indices given in this document are computed they only form point estimates of their true values. It is therefore recommended that wherever possible the indices' confidence intervals are computed and reported.