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**Performance improvement of
management systems — Guidelines for
Daily Management**

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Foreword

This Japanese Industrial Standard has been established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by Japanese Society for Quality Control (JSQC)/Japanese Standards Association (JSA) with the draft prepared from the association standard (JSQC-Std 32-001:2013) being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

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Performance improvement of management systems — Guidelines for Daily Management

0 Introduction

0.1 General

Even if attractive new products/services are planned and designed with the understanding of needs of customers and society, it will be impossible to beat competitors if those products and services are not manufactured and provided as planned and designed. It is often said in the world of quality management, “Quality is achieved through the process.” This is the simple expression to show that establishing and following the process is a better way than inspecting and verifying the finished products in order to economically produce the planned products/services.

However in large organizations, it is often the case that an important part of the process is unclear, or even if the process is well-established, the work is not performed according to it. The process, therefore, will most likely not achieve the planned performance under such a situation. “Daily management” is the methodology devised to deal with this problem. Daily management is the foundation of organizational management, and its quality significantly affects the profitability of the organization. Daily management, therefore, should be thoroughly implemented and enhanced in all job units and hierarchies of the organization.

This Standard consists of the fundamentals of daily management, guidelines to implement daily management and guidelines to promote daily management throughout an organization.

No corresponding International Standard has been established at this point.

0.2 Consistency with other standards

This Standard is designed with the aim of daily management for the performance improvement of a management system and intended to be used independently; however, this Standard may be used with consistent group of such standards as **JIS Q 9023** for policy management, **JIS Q 9024** for improvement activity, and **JIS Q 9025** for quality assurance to complement each other.

Annex A shows the role of daily management, policy management, improvement activity and quality assurance. Also, this Standard is designed to be used as a supporting technique for the quality management specified in **JIS Q 9005**.

0.3 Relation between JIS Q 9001 and JIS Q 9004

This Standard is designed to be used as a supporting technique for an organization to effectively and efficiently operate the management system on the basis of **JIS Q 9001** and **JIS Q 9004**.

0.4 Compatibility with other management systems

This Standard has not been prepared as a specific supporting technique for such management systems as environmental management, occupational health and safety management, and financial management, but may be used as a supporting technique to improve the performance of these management systems.

1 Scope

This Standard specifies the fundamentals, and the guidelines on implementation method in a job unit and promotion method in an organization, concerning daily management that is one of the major activities of quality management. This Standard is applicable to any types of organizations. Also, this Standard is applicable not only to organizations that follow set routines (e.g., production) but also to organizations whose works differ depending on objects or situations (e.g., design and development, sales, after-sale service, administrative and staff functions).

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this Standard. The most recent edition of the standard (including amendments) indicated below shall be applied.

JIS Q 9000 *Quality management systems — Fundamentals and vocabulary*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS Q 9000**, and the following apply.

3.1

daily management

all activities to effectively achieve the objectives with regard to the job that every job unit of the organization is charged with

NOTE 1 Daily management is not the job itself, but the activities to make the job effective and efficient.

NOTE 2 Especially in this Standard, daily management means the maintenance-plus-enhancement activities, which set a current or extended level as a target and ensure that the job does not deviate from the target, and when it deviates from the target, the job can be quickly restored and enhanced to achieve higher performance.

3.2

standard

a) agreement for unification or simplification to equally benefit related organizations and people

NOTE 1 Subjects of standard include physical object, performance, capacity, layout, condition, movement, procedure, method, formality, responsi-

bility, duty, authority, point of view and concept.

NOTE 2 Standard written in a document is called “documented standard” or “company standard.”

NOTE 3 Generally, the agreement on the technical aspects directly or indirectly related to the products/services, process or system is called “specification.” The agreement on contents, procedures, formalities or methods mainly related to an organization or a job is called “procedure.”

b) Normative methods or physical objects used to provide universality to measurements

NOTE 4 Examples include prototype kilogram as the reference for measurement of mass, fixed point of temperature and the platinum resistance thermometer to realize International Temperature Scale, standard substances as the reference for measurement of density, standard hardness tester and standard indenter as the reference for measurement of the hardness and colour chart to be used in the colour sensory test.

3.3

control point

item selected as the rating scale to manage the achievement of objective

3.4

check point

item selected as the constantly monitored characteristics or conditions to prevent process abnormality or easily identify the causes when it occurs, from the cases that have significant impact on the results of process and are directly controllable

NOTE The check point is also called “control point of cause.”

3.5

control level

value or range that the process in the stable or planned condition shows

NOTE 1 The process can be evaluated whether it is in the stable or planned condition by comparing the actual value with the control level.

NOTE 2 The control level may be expressed according to the following formula :

$$\bar{x} \pm 3s$$

where, $\bar{x}$: mean value;

s : standard deviation.

3.6

process abnormality and abnormality

state where the process is not under the controlled condition

NOTE The controlled condition is defined as the stable condition at the econom-

ically and technically desirable level.

3.7

nonconformity

non-fulfilment of a requirement (refer to **JIS Q 9000**)

3.8

immediate remedy

activities taken to prevent further loss resulting from nonconformity, process abnormality or other undesirable events for which causes are unknown, or even if causes are clear, but it is impossible to take countermeasures directly due to some restrictions

3.9

recurrence prevention

actions taken to prevent the recurrence of a detected nonconformity, process abnormality or other undesirable events in the same product/service, process or system due to the same cause

NOTE The definition of the “same” differs depending on the organization and/or industry.

3.10

process

set of interrelated and interacting activities which transforms inputs into outputs (refer to **JIS Q 9000**)

NOTE Inputs and outputs include hardware, software, service, information and energy.

3.11

process flow

multiple processes designed to provide the planned value by configuring the relationship so that the outputs of the previous steps become the inputs of the subsequent steps

NOTE The output of one step may become the input of multiple subsequent steps, and vice versa.

3.12

system

collection of the components and/or processes that are interrelated and interacting to accomplish a specific objective

4 Implementation of daily management

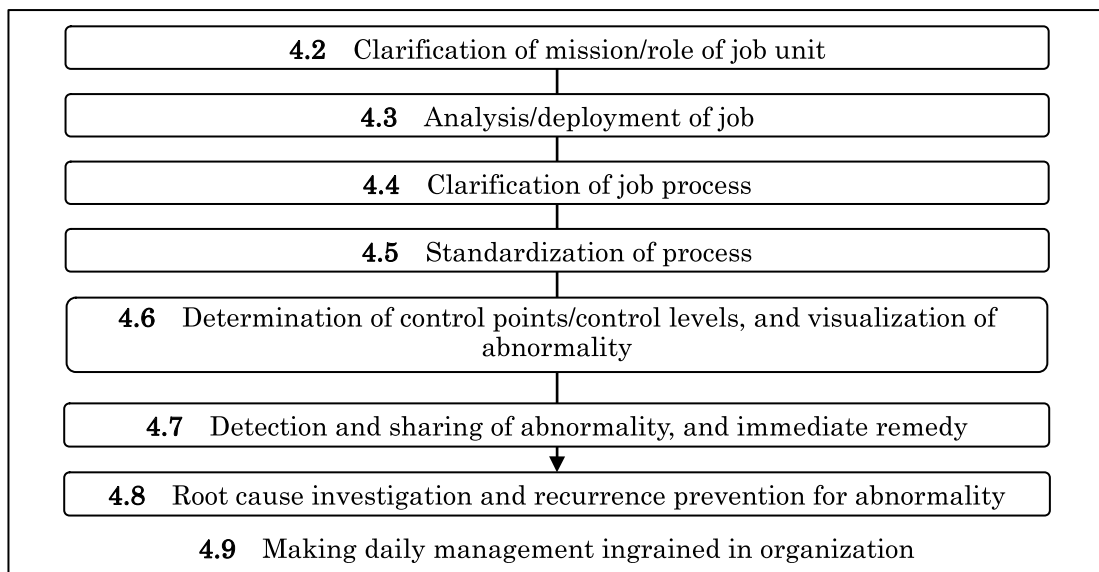
4.1 General

Daily management basically should be practiced in every minimum unit of an or-

ganization. Figure 1 shows the steps for implementation of daily management in a single job unit (the smallest managerial organization which performs a block of jobs and typically includes one manager and a few to tens of members).

To implement daily management, it is necessary to understand its fundamental principles in advance. Annex B shows the concept of daily management and Annex C the SDCA cycle, respectively.

Each step in Figure 1 is discussed precisely in the following. Daily management in a larger organization rather than in a single job unit is discussed in Clause 5.



NOTE When considering the relation of Figure 1 to the SDCA cycle described in Annex C, 4.2 to 4.6 correspond to S (Standardize). However, 4.5 and 4.6 are to be repeated in D (Do) and reinforced. 4.7 and 4.8 correspond to C (Check), and 4.8 corresponds to A (Act). 4.9 supports the whole implementation process.

Figure 1 Steps for implementation of daily management in single job unit

4.2 Clarification of mission/role of job unit

4.2.1 Clarification of mission/role

It is necessary to clarify the mission/role (required and allocated function at each job unit or its members to achieve business objectives) in a job unit to practice daily management effectively and efficiently.

It is advised that the mission/role in a job unit should be prescribed in a form as what is allocated to whom. For example, in a job unit in charge of parts processing, the mission/role should be as “supplying processed parts meeting the requirements (quality, cost, quantity/date of delivery, etc.) to assembly unit.”

4.2.2 Clarification method of mission/role

In general, the mission/role of each job unit are deployed from the management philosophy, vision and mid-to-long-term management plan and explicitly stated in the rules about the duties of the unit. The discussion referring to the rules about the duties of the unit with persons involved is important in order to clarify the mission/role.

The mission/role are to be defined based on the current job and the business objectives. The mission/role defined based on the current job should be decided from the viewpoint of purpose and outcome of the job, through reorganizing the current jobs and considering the purpose and outcome of the jobs. On the other hand, the mission/role defined based on the business objectives of the organization should be decided according to the functions that the unit can perform or needs to perform to achieve the mission/role of the superior units in coordination with superior level managers and other job units.

Managers in a job unit should convince members on the clarified mission/role as their own mission/role.

4.3 Analysis/deployment of job

4.3.1 What jobs are

The jobs of the unit (required activities and behaviours to achieve the mission/role) should be broken down to the actionable level.

A job can be described as a set of “object (noun) + action (verb)”. This type of expression is called a functional expression. As an example of the parts processing job unit, “receiving raw materials from the procurement unit, processing, and transferring them to the assembly unit” is a job.

4.3.2 Method for analysis/deployment of job

A job can be well described through analysis/deployment of its functions (function deployment) as first level function, second level function, third level function and so forth. Table 1 shows an example. The nouns or verbs may indicate higher and lower abstraction level, when jobs are described in a form of functional expression. For example, in Table 1, a noun: “raw materials” is described specifically as steel sheet, round bar, wire rod, cast metal, resin pellet, etc., where the steel sheet can be further described specifically as thick plate, thin plate, etc. On the other hand, a verb: “process” is described specifically as cutting, fusing, grinding, bonding, melting, moulding, pressing, etc., where bonding is further described specifically as depositing, crimping, etc. In such a way, a job can be described hierarchically through summarizing functional expression from high abstract level to low level in a system diagram. This is the analysis/deployment of job.

NOTE Methods to analyse/deploy job include the following.

- a) Motion study
- b) Work Breakdown Structure (WBS)
- c) Job function deployment by Quality Function Deployment (QFD)
- d) Function deployment by Value Analysis and Value Engineering (VA)

- and VE)
- e) Office-work analysis

The guidelines for quality function deployment is described in **JIS Q 9025**.

Table 1 Example of job function deployment (production job unit)

First level function	Second level function	Third level function
Process raw materials.	Prepare raw materials.	Confirm production plan.
		Transport raw materials.
	Mould raw materials.	Confirm raw materials using a mill sheet.
		Inject raw materials to a hopper.
		Input operating conditions in a machine.
		Mould.
		Inspect moulded products.

4.3.3 Level of analysis/deployment

A job can be analysed/deployed to further levels as required; however, a job is just “What (function)”, so it should not be expressed as deployment “How (procedure)”, and follow 4.4.1. For example, in Table 1, deployment should be finished to realize the second level function, because the third level function is the procedure to realize the second level function (one level prior to that considered to be the procedure).

4.4 Clarification of one job process

4.4.1 Clarification of process flow

The procedure for each job obtained through job analysis/deployment needs to be clarified as a process flow.

A process flow should be described with using process chart symbols and arrows. For example, Figure 2 shows a process flow, “Mould raw materials” at the second level function in Table 1.

NOTE Methods to analyse process flow include the following.

- Process analysis
- Arrow diagram method
- Program Evaluation and Review Technique (PERT)
- Process Decision Program Chart (PDPC)
- Office-work flow

The arrow diagram method and PDPC are described in **JIS Q 9024**.

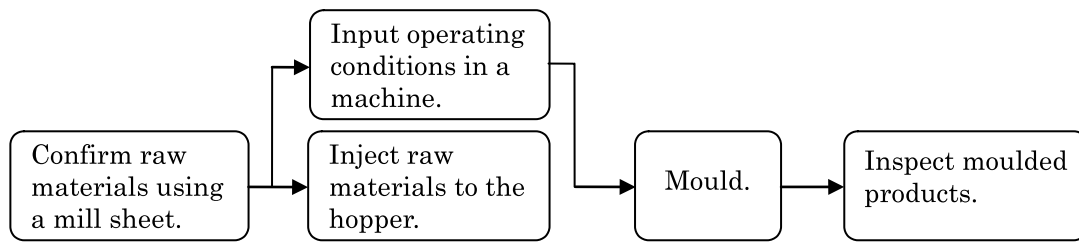


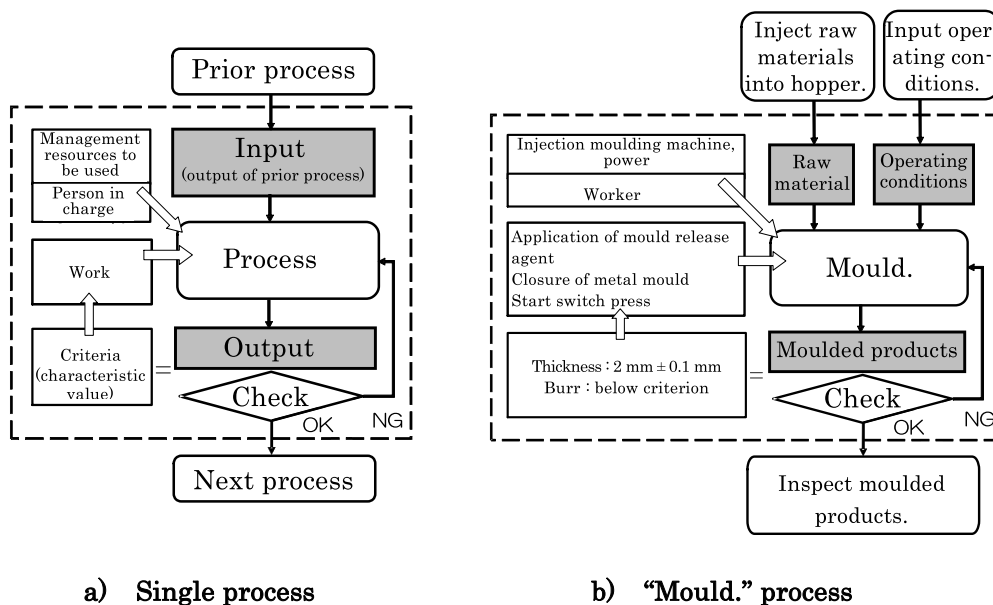
Figure 2 Process flow of “Mould raw materials” job

4.4.2 Clarification of input and output of individual process

The following should be clarified for each process (each box in Figure 2) included in the process flow.

- Input
- Output
- Work (activities and behaviours to produce output)
- Person in charge
- Management resources to be used
- Requirements for output (criteria)

Figure 3 a) shows the concept of clarification of input and output in individual process. For example, the contents of **a)** to **f)** in “Mould.” process in Figure 2 are specifically expressed as Figure 3 b) in the format of Figure 3 a).



a) Single process

b) “Mould.” process

Figure 3 Concept of clarification of input and output in individual process

4.5 Standardization of process

4.5.1 General

Each process should be standardized. This is aimed at maintaining operating conditions of process factors within a specific range so that output stably meets requirements. Annex D shows the benefits and basic steps for implementation of standardization. Process factors include inputs to the process, work in the process, person in charge and management resources to be used.

Standardization of process is especially needed in the following cases :

- a) when new jobs or works are required;
- b) when new knowledge is acquired and utilization of the knowledge is expected;
- c) when results are unstable and many problems come out;
- d) when standards are lacking to ensure the output;
- e) when processes are transferred (external transfer of the internal process, transfer from mother factory to overseas factory, etc.).

4.5.2 Identification of important factors and determination of conditions

To standardize the process, important factors which impact output (input, work, person in charge and management resources) should be identified based on the requirements for the output of the process clarified in 4.4. Necessary conditions to meet the requirement should be determined for these factors.

For example, central value and tolerable range of the operating condition of a factor should be determined to meet the product requirement at manufacturing site.

4.5.3 Development of standard

The way to realize the conditions of the important factors obtained in 4.5.2 should be studied and summarized to be understood easily as a standard. A standard should be developed along with the persons who discovered the knowledge or experts in the fields and well versed persons such as the person in charge.

A standard written in a document (documented standard) is effective, when frequent turnover of person, deploying from other job units and sharing know-how in various workplaces are expected. The following items should be included in its contents.

- a) Purpose of the standard, date of the publishing, author, and person authorizing (or approving).
- b) Work procedures and methods. Key points should be described.
- c) Reasons why these procedures and methods are chosen from the view point of quality, safety and productivity. Background theory and experimental results should also be described as quantitatively as possible.
- d) Evaluation methods and criteria to identify the necessity of immediate remedy and process improvement.

- e) Handling procedure in case of nonconformity and abnormality.

The following matters should be considered on the preparation of standard.

- a) Confirmation that the output meeting requirements can technically be produced when work is done according to the documented standard.
- b) Confirmation whether “a standard can be followed” and whether any point is hard to follow.
- c) Clarification of undesirable events, using Failure Mode and Effects Analysis (FMEA) or other methods, which may occur during the work conducted according to the standard, and implementation of countermeasures for events which hold significant risks beforehand.
- d) Registration of developed standard in the organization after authorization by the manager in charge and related division such as quality management division.
- e) Creation of list of the standards to make it easy to search standards, especially for design standards in the engineering division.
- f) Systematization of standards to avoid duplication.

4.5.4 Education and training

The following matters should be considered on education and training.

- a) Before starting the job operation, the standard should be understood by all the persons who are involved in the job operation. It is necessary to identify what should be educated, to plan when to be educated, what to be educated and how to be educated, and to establish a system for providing necessary education to the persons without omission.
- b) Some works are difficult to follow, and require skills such as intuition, sense and knack (techniques), which need time to acquire. For such works, the required skill, quantitative evaluation methods of the skill and criteria for the person to be involved in the work should be identified.
- c) In addition, the job training should be completed beforehand and only those persons whose skill levels satisfy the criteria should be assigned to the work.

4.5.5 Compliance and error prevention

In order to make sure that a standard is followed, it is important to understand why it should be followed and the impact it will have in case it is not followed. Education using the examples of problems that occurred because the standard was not followed would be effective. It will be advised that indication and instructions should be given whenever standard is not followed while doing patrol and so on. Furthermore, it should be important to make members acquire ability to develop standards and to engage in development and revision of the standards. It is also important to collect and study voices from the persons in charge.

To avoid unintentional error, error proofing (e.g. making it difficult to make errors or making it unable to do the next job once error occurs by the improvement of facility, material, instruction document, procedure, etc.) is a solution. It is advised to identify potential errors and to take preventive measures. Also, it is important to share and utilize past effective measures.

4.5.6 Revision of standard

Developed standards need to be revised based on periodical reviews or the analysis of the problems happened. For example, a work is continuously reviewed for improving productivity and ensuring work safety, and then related standards are revised based on the result of these reviews.

When revising a standard, the effect of the revision on other processes should be carefully examined. Revised standards should be authorized by the manager in charge and related divisions such as quality management division, and registered with contents and reasons of the revision as is the case with the publishing of the first edition. The first output after the revision of standard should be checked for quality by the first-inspection (inspection to check whether or not the first manufactured/provided one or plural products/services conform to the requirements).

4.5.7 Management of changes

It is important to prevent abnormalities by clarifying and paying close attention to change points of human, parts/materials and facilities in the process. Abnormality often happens because of the absence of person in charge, or switching of parts/materials, facility maintenance and so on. This management is sometimes called as change point management or change management.

4.6 Determination of control points/control levels, and visualization of abnormality

4.6.1 Control point

While there is no need to determine control points to cover the whole process, control points which are important for the next processes and customers, and those which best reflect the state of the process under consideration should be chosen. For example, in “Mould.” process of Figure 3 b), “thickness”, “burr”, etc. will be the candidates for control points. The main causes for abnormality are generally 4Ms (man, machine, method and material). The organization should summarize these using the cause and effect diagram, and choose those control points which effectively detect abnormalities due to each cause.

Also, detecting abnormality in upper stream processes is beneficial because it is economical and makes the cause investigation easier. To do that, the organization should determine control points corresponding to the respective output in each of the processes clarified in 4.4, so that abnormality can be found at the end of each process.

4.6.2 Control level

In order to detect abnormality by control points, process data should be compared with the determined control level (central value and control limits) of the control point.

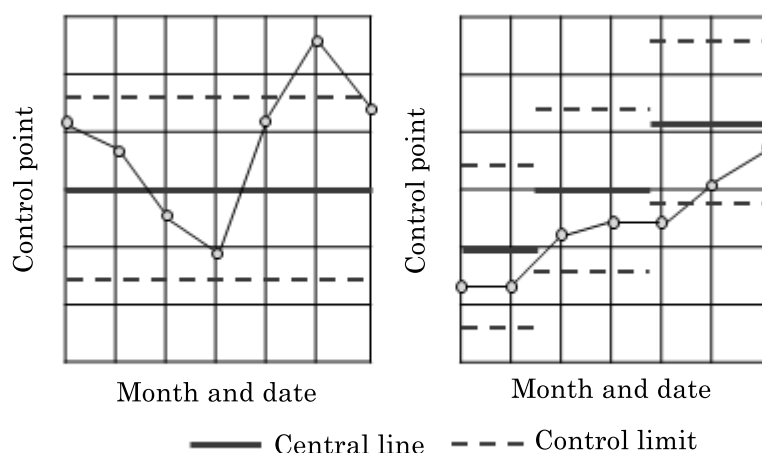
Annex E shows the difference between abnormality and nonconformity, which is important to set the control points/control levels, and the basic method of determination of control levels.

Control level should be determined based on the normally achieved level, differentiating from the specification value which is based on the desirable level. Control level should be given not only for the undesirable side but also for the desirable side. For example, control limit for a defective rate should be set to the lower side in addition to the higher side, and the causes should be investigated for the case where a defective rate is largely reduced.

For determining the control level reasonably, it is recommended that statistical methods such as statistical control chart is used, with collecting data from the current process and after eliminating apparent abnormalities.

If it is difficult to determine the control level statistically, it should be determined based on the effects caused by overlooking the abnormality or the man-hours required for cause investigation and immediate remedy against the abnormality.

Control level should be determined considering the process change such as changeover of product type and environmental change. Figure 4 a) shows the case wherein a certain level is expected to be maintained, and b) shows the case wherein the level is expected to be changed with time.



a) Certain level is expected to be maintained b) Level is expected to be changed with time

Figure 4 Example of graph for managing process

4.6.3 Interval/frequency of management

Interval/frequency of check of control point should be decided based on the frequency of occurrence of the abnormality and man-hours necessary for the data collection.

By the shorter interval of data collection and check, the possibility of the detection of the abnormality becomes earlier. Figure 5 shows the relationship between inter-

val/frequency of management and detection of abnormality. The left graph uses once a month interval and detects the deviation from the control level in May. Abnormality can be detected in mid-April if data is collected daily and checked as shown in the right graph.

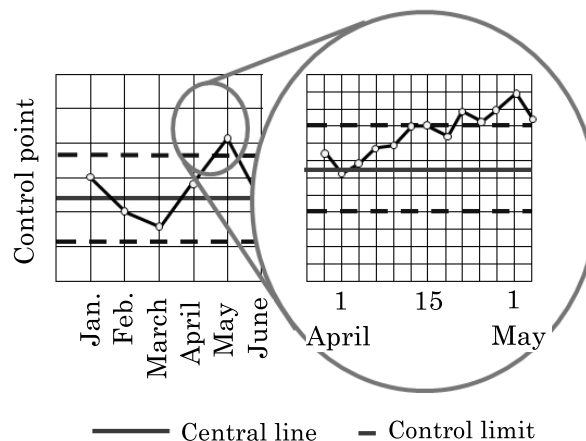


Figure 5 Interval/frequency of management

4.6.4 Visualization of abnormality

For the selected control point, it is advised to judge whether the process is under the stable state by preparing a statistical control chart or a graph for managing process which shows the transition of the control points.

It is advised to let everybody in the job unit recognize the occurrence of the abnormality, display the statistical control chart and the graph for managing process at noticeable places in the job unit. In addition, it is recommended to implement devices (graphical representation, colour, etc.) so that the abnormality can be judged at a first glance.

In addition to the graph for managing process, using abnormality alarm equipment (ANDON : an electrical alarm equipment for abnormality) is also effective in the sense that the occurrence can be immediately detected.

4.6.5 Registration of control point

It is advised that selected control points should be shared in an organization summarizing as “list of control points” or “QC process chart” together with interval/frequency of data collection and check. The person responsible for (in charge of) the judgment of abnormality and the person responsible for (in charge of) the treatment of the abnormality should be clarified. Table 2 shows an example of list of control points.

In a manufacturing process, etc., QC process chart is often used. QC process chart shows a series of production and supply processes of products/services using process diagram and summarizes who should manage and what, how, when and where should it be managed in each process. Table 3 shows an example of QC process chart.

Table 2 Example of control point of parts processing unit

Control point	Control level	Control interval	Person in charge of judgment of abnormality	Person in charge of treatment of abnormality	Daily or policy	Management aspect
Defective rate in process	300 ppm $\pm$ 20 ppm	Daily	Worker A	Department managers	Daily management	Quality
Production quantity	Apr.–Jun. 35 000 $\pm$ 200 Jul.–Sep. 40 000 $\pm$ 200 Oct.–Dec. 45 000 $\pm$ 200 Jan.–Mar. 50 000 $\pm$ 200	Monthly	Department managers	Department managers	Policy management	Quantity/date of delivery
Operation rate	80 % $\pm$ 5 %	Weekly	Worker B	Department managers	Daily management	Cost

NOTE This table includes control points coming from policy management as well as control points coming from daily management. The control points coming from policy management are required to determine whether measures taken to achieve year end plan are giving expected outcomes, and the features are different from control points coming from daily management, which are aimed at to find abnormalities. However, in practice, control points coming from policy management are often transferred to control points for daily management after the completion of the management as control points for policy management. On the other hand, if control points of daily management are necessary to be drastically improved, it will be taken care under policy management. Thus, in some cases, control points for daily management and policy management are put together in one table and marked either control point for daily management or policy management.

Table 3 Example of QC process chart

Process flow chart	Name of process	Control point (Check point)	Control level	Control method					Related document
				Person in charge	Timing	Measuring method	Measuring place	Record	
	Inputting raw materials	(Mill sheet)		Worker	When carrying out	Visual	Raw material	Delivery record	Inspection standard
	Moulding	(Back pressure)	○ ○ N/cm ²	Worker	At the start		Workplace	Check sheet	
		(Hold time)	2 min $\pm$ 30 sec	Worker	At the start		Workplace	Check sheet	
	Removing burrs	Thickness	2 mm $\pm$ 0.05 mm	Inspector	1/50	Micrometre	Inspection room	Control chart	
		Flatness	6 μ m	Inspector	Twice a day	Projector	Inspection room	Check sheet	

4.6.6 Check point

Check point has close relationship with results of process. They should be chosen from the causes of directly controllable process. For example, the process “Mould.” in Figure 3 b), “hold time in the die” or “injection speed” will be the check points.

Clarifying check point will help check easily whether the conditions defined by the standard are followed in cases where the control point deviates from the control level.

It is advised that check points are shown graphically or summarized as check lists, and can be seen together with graph of the control point. Check points should be described with control points in the list of control points or in the QC process chart to clarify check points or their confirmation method.

4.7 Detection and sharing of abnormality, and immediate remedy

4.7.1 Detection of abnormality

There are two methods to detect abnormality: control point based method and the other method.

Daily data have to be plotted on the statistical control chart or the graphs for managing process in order to effectively detect the occurrence of abnormality in the process. The following should be considered.

- a) Plotting on the statistical control chart or the graphs for managing process at each time after data collection.
- b) Judgment as to whether abnormality exists or not should be made by comparing the plots with the control level. It is necessary to detect not only out of control but also the trends such as length of run (number of successive points having same characteristic), ascending and descending, and cyclical.

In addition to the abnormality detected by the control point, there may be other abnormalities, that is, something different from the usual even they are not covered by control points. The following should be noted to detect abnormality by the sense of something from the usual.

- a) Clarifying the criteria to judge as to whether “abnormal state” or “normal state”
- b) Abnormality can be detected by human feeling and five senses (eyesight, hearing, smell, taste and touch). It is difficult to express the above in writing. It is important that everyone should be conscious on quality.

4.7.2 Sharing of abnormality

It is necessary to share the fact among the concerned people that abnormality has occurred and clarify the treatment immediately. Delay might lead to a big accident or loss. Because information on the process is getting lost as time goes by, the organization should investigate the cause of accident immediately after the happening.

Abnormalities are most often found by the front line employees. In order to make the