

AN INTRODUCTION TO QUALITY CONTROL

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Index

1. Quality Assurance and Quality Control

- 1-1 What Quality Means to Customers
- 1-2 What Is Manufacturer's Quality?
- 1-3 Quality Assurance
- 1-4 Quality Control
- 1-5 The Basic Concept of Quality Control
- 1-6 Vision of Quality Assurance
- 1-7 Quality Control Activities by Supervisors
- 1-8 100% QA (Five Rules)
- 1-9 100% QA (Thorough Implementation of Standard Operations)
- 1-10 100% QA (Management of Changes)
- 1-11 100% QA (Management by Visualization)
- 1-12 100% QA (Preventing the Release of Defectives)
- 1-13 100% QA (Eliminating the Cause of the Defect)
- 1-14 100% QA (Prevention Activities)

2. Procedures for Quality Control

- 2-1 Procedures for Quality Control

3. Quality of Work

- 3-1 Attitude toward Quality (of Work) Improvement
- 3-2 Ho-Ren-So
- 3-3 PDCA
- 3-4 Standardization, Thorough Implementation, Improvement
- 3-5 Job Training Methods
- 3-6 An Important Mind at Work (Quality Policy)
- 3-7 Expectation for Quality (of Work) improvement
- 3-8 Important Key Words
- 3-9 Another

1. QUALITY ASSURANCE AND QUALITY CONTROL

1-1 What Quality Means to Customers (1)

✓ What Is Quality?

- Quality could be defined as “the characteristics a given items needs to have that allow it to be used the purpose for which it is intended”. It is the essence of the item, the functionality it has that makes its user happy.

And it must be remembered that it is the customer (the next process) and not we ourselves who is the final judge of quality.

✓ What Is Good Quality?

- Good quality is not the “highest” or the “best” in the absolute sense, but the quality that satisfies the needs of the prospective purchaser as assumed in the product planning stage. Put it in another way, a product’s functionality should be consistent with users’ expectations.

✓ Trust takes years, trust loses with one incident

- It takes years to gain customer trust in quality. One incident is enough to lose trust.

1-1 What Quality Means to Customers (2)

✓ Proper Quality and Customer Satisfaction

- To have our customers satisfied with our products, the quality must be good enough to meet their expectations. In other words, **quality and price must be consistent with the grade and agreeable to customers' expectations.** This is the meanings of **proper quality**, and proper quality is something that is very important for products to have.

$$\text{Customer satisfaction} = \frac{\text{Product quality} + \text{On-time delivery} + \text{After-sales service}}{\text{Price}}$$

✓ Predominant Quality Indispensable for Competitiveness

Brand royalty ↔ Customer satisfaction
Correlation



1-1 What Quality Means to Customers (3)

✓ Customer's Behavior against Dissatisfaction or Complaints

1. Customers who are dissatisfied with their products or services, only 4% actually complain.
2. Customers who have been betrayed their expectations, talk about the content of dissatisfaction to 8-16 people.
3. Customers who have been betrayed expectations, 91% of them never buy again.
4. If the company makes an effort to solve complaints in good faith, 82-95% of customers who complained of will continue the relationship so far.
5. Customers who have turned satisfaction by resolving dissatisfaction or complaints, talk about their satisfaction to five people.
6. The cost of developing one new customer is five times higher than the cost of maintaining a conventional customer.

1-2 What Is Manufacturer's Quality?

✓ Customer Satisfaction

▪ In a word, what must be done is to **achieve without fail the required quality** spelled out in design drawings and specifications.

① Quality of Planning and Design (Target Quality)

The quality aimed for in the drawings.

② Quality of Manufacturing (Workmanship Quality)

The quality actually achieved at the manufacturing site.

③ Quality of Marketing (Quality of Service)

This refers to how well the customers are dealt with in sales and how good the after-sales service is after the products have been sold to the customers.

1-3 Quality Assurance (1)

✓ Quality Assurance (QA)

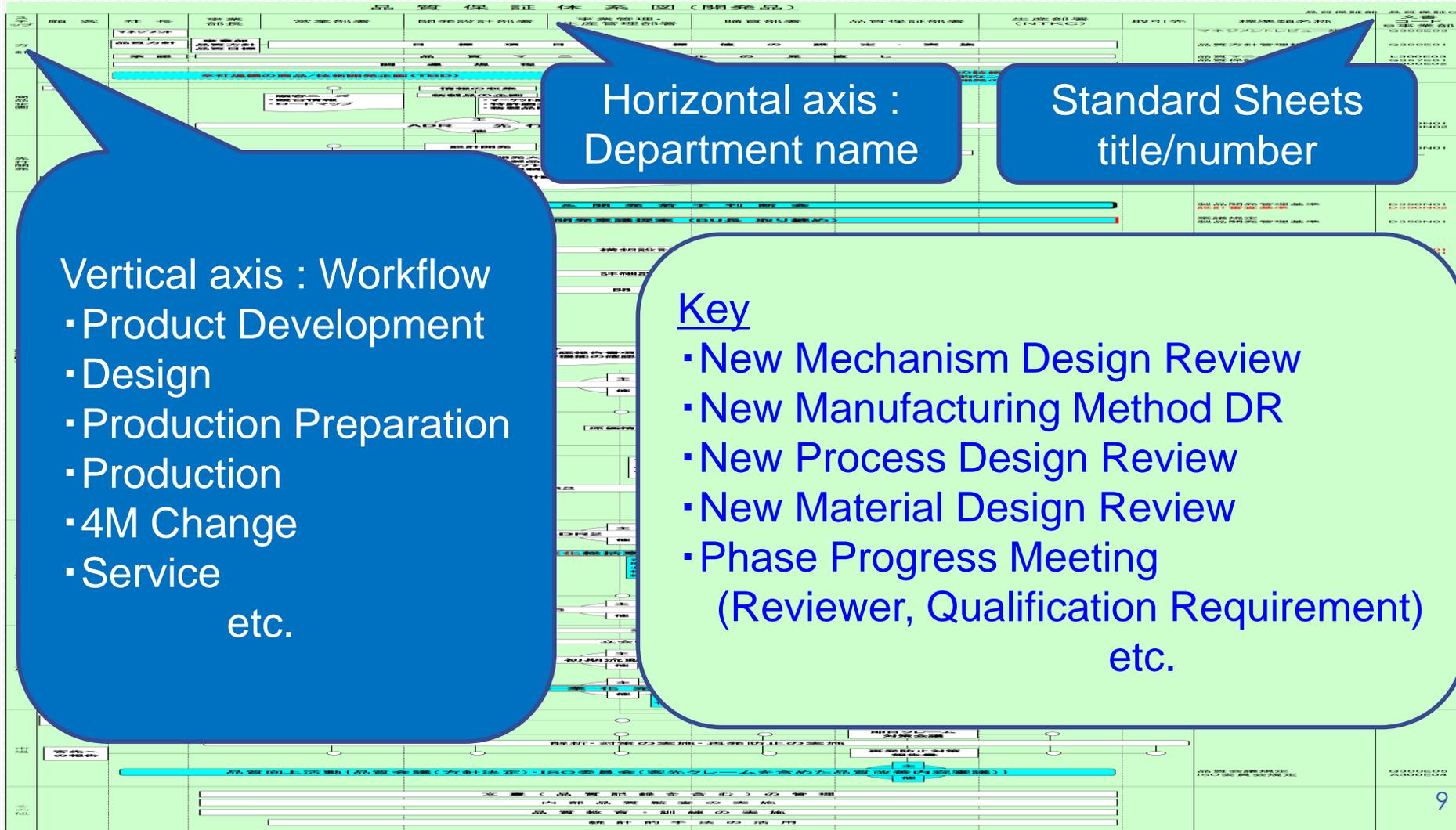
- A manufacture **pledges to provide our customers** with quality that allows them to buy our products with confidence and assurance, gives them a feeling of complete satisfaction when operating their products, and enables them to get long-term use out of it.

✓ QA System

- The embodiment of “**customer satisfaction**” as a concrete business flow is the QA system. This means that our work must be carried out on the basis of quality and that **the quality must be assured at the outset before accomplishing other targets such as delivery time and cost.**

1-3 Quality Assurance (2)

✓ QA System



1-4 Quality Control (QC)

In the JIS, QC is defined as “A system of techniques to economically produce quality products or services that will sufficiently meet the needs of purchasers.”

QC is very important for corporate management, in view of the following two aspects.

✓ Actively responding to Customer Needs

- For a company to grow and prosper, it is not good enough merely to produce products that meet required standards.
- It is also necessary to actively search out what customers are looking for and to use the results to develop ever-more attractive products and services.

✓ Improving Management Efficiency

- By making quality improvement the job of everyone in the company many new and original ideas and plans will be conceived, the skills of the company's entire work force will be developed, and productivity will be improved.
- Not only higher product quality but also favorable effect on elements other than quality will be expected, resulting in improvement in corporate management as a whole.

1-5 The Basic Concept of Quality Control (1)

✓ Quality First

- It is important for us to strictly follow all established matters such as our own roles, company's regulations, rules, various norms and standards, standard operations, and rules in workshops, and thus, to take responsibility for quality.

✓ From the Viewpoints of “The Next Process Is the Customer”, and “Customer-Orientation”

(Market-in; ○, Product out; ×)

- We should remember that when we work, our “customers” are not just the end users of our products and services; they include anyone who will be affected by the results of the work we do.
- We should get a lot of data and feedback from subsequent processes, and always think about how we can do work that will satisfy the subsequent processes.

✓ Based on Facts (Data) : (Statistical Approach)

- The first step of QC is to “**make judgments and behave based on facts**”.
- ① Acquire data pertinent to the objective.
- ② **Make judgments and statements based on the data.**
- ③ Use statistical considerations and techniques to **read what the data is telling** and then take action.

1-5 The Basic Concept of Quality Control (2)

✓ Control Dispersion

- There is always certain dispersion in any data. We focus on **not only the average view** but also dispersion, and control dispersion. We find **the cause of data dispersion** and remove it.
⇒ **Stratification ; Understanding by stratification**

✓ Stressing the Process

- The concept of placing importance on processes is to prevent recurrence of defects and thus to ensure quality by **improving the process and eliminating the cause of the defects**.

✓ Priority

- It is important to address the problems under the principle of prioritization by carefully considering their degree of importance or urgency.

✓ Source Control

- Improvements must be made by going back to and taking measures against the source of the problem (**measures against the source of occurrence**), and where necessary by going all the way back to the design stage and taking measure in collaboration with the staff (measures against the source).

1-5 The Basic Concept of Quality Control (3)

✓ The “5 Gen” Principles

- At the *genba* (manufacturing site) ··· go to the place where the phenomenon occurred,
- Observe the *genbutsu* (actual item) ··· ascertain and confirm the condition by observing,
- Take *genjitsuteki-na* (practical) measures ··· take the measures that are currently deemed most practical.

- *Genri* (principles) ··· why will it be so? Understand its mechanism.
- *Gensoku* (rules) ··· how should it be? Think in the customer / the next process.

Following *genri and gensoku* ··· without relying only on rules of thumb.

✓ Quality (Q) First

- If the quality (Q) is improved, cost (C) and delivery time (D) will be improved.
- The objective is comprehensive control that aims at bringing out products of proper quality at the lowest possible cost and with on-time delivery. ¹³

1-6 Vision of Quality Assurance (1)

✓ Based on Quality

- The principle of “based on quality” means that **quality is the fundamental basis of all our ways of thinking.**
- It means that our basic attitude in our work must be nothing other than to **secure good quality at first, and then to accomplish our cost and delivery targets.**

✓ Total Elimination of Waste

① Eliminating the Waste of Lost Opportunities

The way to eliminate the waste of lost opportunities is **to strictly carry out QC, and thus, to produce products that confirm to standards without dispersion.**

② Eliminating the Wasted Resources

Independent inspection processes and inspection operations are originally a form of waste themselves.

③ Eliminating the Wastes in Working Procedures

It is necessary to always do all the work based on the code of conduct, namely **“Complete at one time, Take measures against the source, Thoroughly implement”.**

1-6 Vision of Quality Assurance (2)

✓ 100% Quality Assurance

- The quality required by the customer (at the next processes) must be secured 100%.
- The 100% QA principle means that “appropriate measures must be taken so that the QA items specified for all products satisfy the specified quality standards”.

✓ To Build Quality into Products at Processes . . . **Do not make defectives**

- It is necessary to maintain the process in stabilized state through strict control and management of 4M (man, material, machine, method).

✓ Check of Workmanship . . . **Do not let defectives release**

- Only after the workmanship of all products I manufactured (in the process I control) is responsibly ascertained by myself.
- Confirm the accuracy of the measurement result and be responsible for the result.

✓ Report of the details of the defects . . . **Do not accept defectives**

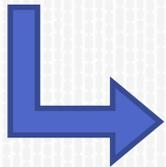
- The next process must assume the responsibility to feed back necessary information to the previous process.

1-7 Quality Control Activities by Supervisors

✓ QA Activities by Supervisors

- “Do not make defectives”
- “Do not let Defectives release”
- “Do not accept defectives”

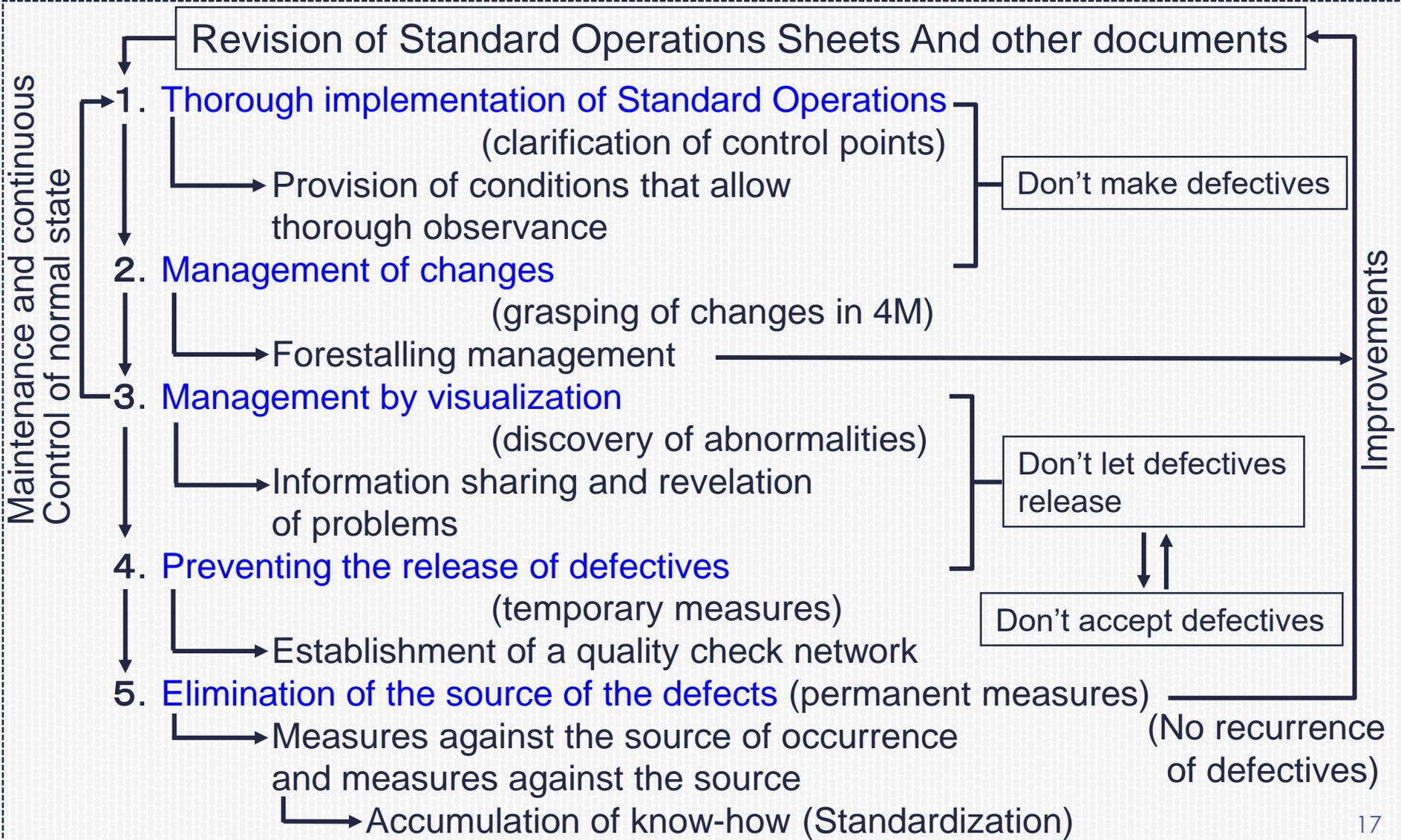
in our own processes, training personnel who can realize these issues, and carrying out daily control precisely.



Rules of 100% Quality Assurance

- ① Thorough implementation of Standard Operations
- ② Management of changes
- ③ Management by visualization
- ④ Preventing the release of defectives
- ⑤ Elimination of the source of the defects
(permanent measures)

1-8 100% QA (Five Rules)



1-9 100% QA (Thorough Implementation of Standard Operations) (1)

✓ Creation of Standard Operation Sheets

- A “Standard Operation” is an “optimum method of operation which allows us to accomplish quality, delivery, and cost in accordance with targets as well as safety”.
- The operation should be capable of satisfying product standards.

✓ Education and Training of Standard Practices

- Even if the Standard Operations have been taught once, there is no guarantee that they will be followed strictly. After the education process is complete, it is important for the supervisors to observe the operations, and give further instruction in areas that are insufficient.
- A fundamental element of Quality Assurance for an operator is to confirm for himself the results of his own work.

1-9 100% QA (Thorough Implementation of Standard Operations) (2)

✓ How to Carry Out Quality Control Based on the Standard Operation Sheets

- The Standard Operation Sheets have been so designed that if operations are carried out in accordance with this standard, no defective products will be produced. It stands to reason, then, that having workers comply with this standard will reduce the incidence of human error, and result in “built-in quality”.
- Standard Operations are not unchangeable; once they have been established, this does not improve, and should always be developed and cultivated so that they become even better methods than they were previously.

1-10 100% QA (Management of Changes) (1)

Quality is subject to changes, for one reason or another. These could be **sporadic changes or planned changes**. In order to control these changes and assure quality, it is necessary to **conduct quality checks and change management based on forestalling management approach**.

✓ Measures against Sporadic Changes

- It means **organizing operating conditions as a part of everyday data management, taking control of the causes of problems in advance, and creating work methods and mechanisms that will prevent the occurrence of defectives**.

✓ Response to Planned Changes

- When planned changes in 4M are intended, the planning department should discuss the content of the changes with QA department. If the changes are likely to affect quality, it is necessary to **implement a procedure for informing others of the changes in the content of the 4M**. It is essential that related departments be thoroughly informed of any changes, in order to prevent defects before they occur.

1-10 100% QA (Management of Changes) (2)

✓ Quality Checks for Changes Items

- When operators are changed, the supervisor should confirm whether or not the new operator's work is being conducted in accordance with the Standard Operation, and should check the first production of the operator.
- Initial products should be attached with indications so that they are recognizable not only in own process but also in the subsequent processes.
- The supervisor should confirm the actual product based on the instruction sheet, and at the same time, he should confirm that the check has been properly carried out and recorded. After doing so, he should put his signature to the checksheet.
- When any facility is changed or newly installed, facility quality acceptance inspection should be carried out.
- When any tool (tools, jigs, cutting tools) are replaced, check the quality before and after the changes.
- When materials are changed, check for wrong materials.

1-11 100% QA (Management by Visualization)

✓ Aim

- The first is to recognize, through visualization only, whether a given item is normal or abnormal, and to quickly implement temporary and permanent measures in case of an abnormality.
- The second is to provide required information, including status of the workshop and targets/results of work, to all related persons in a timely manner and in a visible format; and at the same time to create a system in which everyone can participate, with a common awareness, in planning for the achievement of workplace goals.

1-12 100% QA (Preventing the Release of Defectives (1))

✓ Checks Aiming at 100% Quality Assurance

- In order to prevent defectives from being released to the subsequent processes, the operator must first confirm the workmanship of the products, and take responsibility for assuring their quality.
- The basic concept for the operator himself to implement 100% QA (self-check) and to ensure that “quality is built into products in the process”.

✓ Measures to Be Taken When Defects Occur

It is important to clearly grasp the situation as quickly as possible, immediately contact and send a report to your superior or the related section, and take appropriate action without delay.

① Understanding the circumstances of defect occurrence

The first action to be taken by the supervisors is to confirm the situation with his own eyes, based on the “5 Gen” principles, and to clearly and correctly understand the facts.

1-12 100% QA (Preventing the Release of Defectives (2))

✓ Measures to Be Taken When Defects Occur

② Specifying and clarifying the range that defines “defective part”

The supervisor must quickly identify the range affected by the situation in which the defective part appeared, based on an understanding of the cause. He must then clarify and identify the relevant part numbers, part names, lot numbers, and quantity, to prevent their release (isolate and prevent the dispersion of defective parts). It is also important to record the detail of such incident.

③ Judgement of urgency and temporary measures to prevent release

When a defect is discovered in a subsequent process. It is necessary to be aware of the quality of the products currently being manufactured in your own process, and whether those products are defective or not.

- If defectives are generated on a continuing basis, **take emergency steps, such as screening the defectives or even stopping the line.**
- In the case of a defect that occurred suddenly and ceased just as quickly, **pursue the causes of the defect, but allow work to continue uninterrupted in accordance with the standard operations.**

1-12 100% QA (Preventing the Release of Defectives (3)

✓ Measures to Be Taken When Defects Occur

④ Reporting to superiors (managers, supervisors)

Once you have a clear understanding of the conditions in your own process, **the worse the data are, the quicker and more accurately you have to report the data to your superiors**, and receive instructions. **Arrange and clearly grasp** the details of instructions from superiors in term of “5W2H”, so that there is no question of “what must be done”.

5W2H: When, Where, Who, What, Why, How, How much

⑤ Consultations regarding disposal of defectives, and thorough rework by the responsible section

It is important for the section responsible for the production of a defectives to also take responsibility for the measures to be taken to deal with the defectives (screening, rework, scrapping, etc.).

This is done to firmly establish management based on **“Taking responsibility for assuring the quality of the parts you have produced”** and **“Don’t make defectives, Don’t let defectives release”**.

1-12 100% QA (Preventing the Release of Defectives (4)

✓ Measures to Be Taken When Defects Occur

⑥ Implementing disposal of defectives (screening, rework, scrapping, etc.)

“Eliminating the cause of defects” means taking measures to deal with the “origin” or the “source” of the problem.

Measures can only be called “completed” when you have checked, and confirmed without question, whether or not the methods used to eliminate the source of the defect have truly been effective.

1-13 100% QA (Eliminating the Cause of the Defect) (1)

✓ Eliminating the Root Cause (Measures at the Source)

- The first and foremost role assigned to those at the manufacturing site is to **immediately investigate the locations on the line and in the plant where the defect occurred (the source), and to take measures to deal with their causes.** In other words, “**eliminating the cause (the source) of the defect at the manufacturing site.**”
- Even if you believe that you have eliminated the cause of a defect, the defect may recur repeatedly, or it may be difficult to eliminate the cause of problem as long as the current process is used.
↓
- It comes necessary to **eliminate the root cause (the source)** by tracing even further upstream in the system of causes. Because this entails making changes from **the original production design, process design, or the process** action should only be in cooperation with engineering staff and related sections.

1-13 100% QA (Eliminating the Cause of the Defect) (2)

✓ Preventing Recurrence and Thorough Implementation of Daily Management (Strictly Adhering to What Are Determined)

- It is important to maintain continued adherence to the details of the measures that have been implemented in order to prevent quality defects from recurring.
- we should endeavor to securely accumulate all the know-how that will be useful in preventing recurrence. This is not only for the benefit of your own process; we must also ensure horizontal deployment to other processes and sections, as well as other plants – wherever this know-how is required.
- “Sustained, continuous management” on a daily basis is one of the most important manufacturing site activities in terms of carrying out strict quality control and improving Quality Assurance. It is important to suppress in 4M elements by means of routine trend management and factorial management, and also to consistently maintain Zero Defect conditions (quality maintenance), in order to respond to problems even before they occur.

1-14 100% QA (Prevention Activities)

Design

Design the correct drawing

Drawings that can guarantee required functions if manufactured according to the drawing

Engineering

Set conditions for manufacturing good products

Produce according to the drawing
Quality Assurance based on drawings

Collaboration and self-completion

Manufacturing

Thorough Implementation of Standard Operation Sheets and improvement

Create Standard Operation Sheets workbook based on "correct drawing" and "good manufacturing conditions"

Observe Standard Operation Sheets

→ Good products can be manufactured

2. PROCEDURES FOR QUALITY CONTROL

2-1 Procedures for Quality Control (1)

✓ What is “Quality Improvement” ?

Improvement means taking some bad element and making it better.

That means **in order to improve something, we must first clarify what is “bad” – that is where the problem is.**

• We could classify problems into two main types.

① The first is **a defect that occurs unexpectedly on a day-to-day basis;** because it was not expected, in most cases we do not have satisfactory data regarding the problem.

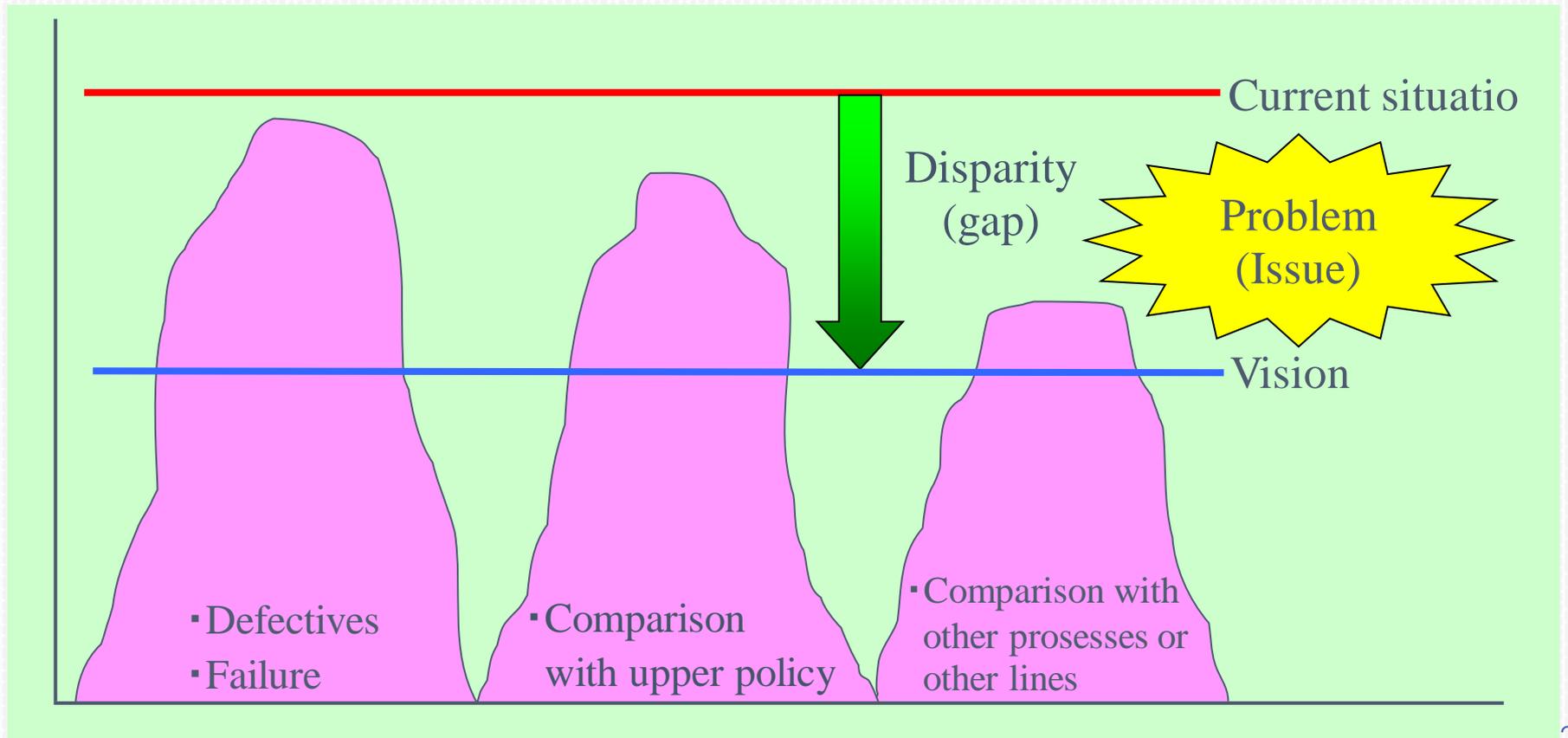
⇒ Improvements in these cases can be achieved more quickly through investigations focusing on the areas that are **different from what went before (i.e., changes).**

② The second type of problem comprises **chronically occurring defects,** or problems where goals, such as those listed in the business plan, cannot be achieved.

⇒ The fastest way to resolve this type of problem is to proceed to **the QC story.**

2-1 Procedures for Quality Control (2)

We defined a “problem” as a disparity (a gap) between “vision” and “the current situation”. It is therefore important to express “vision” and “the current situation” in quantitative terms.



2-1 Procedures for Quality Control (3)

✓ Attitude in Approaches to Quality Improvement

① Sense of responsibility with regard to Quality Assurance

It is an embarrassment to the workplace to send a defective part to a subsequent process.

② Stick to it

Chronic defects in particular are areas in which improvements are not easily realized. We must maintain a strong will and stick to it.

③ Originality

We need **original ideas** to approach the problem from a new point view.

④ Marshaling the wisdom of the group

There is not doubt that **the total knowledge of the group will bring greater results than the knowledge of a single individual**. Part of the supervisor's role is to bring out the strengths of his group.

⑤ Ties with related divisions

By going to subsequent processes or prior processes to investigate defective phenomena, we can obtain many useful hints with regard to improvements. 33

2-1 Procedures for Quality Control (4)

✓ How to Obtain

(1) Categorizing data

① Continuous data

- This is data derived from any type of measurement (length, weight, time, temperature, etc.).

② Enumerated data

- This is data derived from any counting of elements (defect count, number of foreign materials, etc.).

③ Descriptive data

- This is information that can be expressed in words.

(2) Clarifying the goal, and obtaining data suitable to that goal

- The most important thing in obtaining data is to clearly indicate the reason for obtaining the data and how the data will be used.

(3) Cautions when obtaining data

① By clearly indicating the conditions under which the data was obtained, we can make comparisons to other data later on.

② When taking measurements of a number of samples derived from a large number of parts, arrange the samples to be taken from among all available parts so as to avoid bias (i.e., random sampling).

③ In case of data regarding defects, when the causes and the phenomena can be divided into various layers or “strata”, make an effort to obtain data in a stratified format as well.

2-1 Procedures for Quality Control (5)

✓ How to Summarize Data

- Applying QC methods

Applying QC methods is an effective way of doing this.

7 QC tools (sometimes called “Q7”), 7 New QC tools (sometimes called “N7”), etc.

① Pay close attention to variations in individual data and to time-related trends

② Stratify and compare data

“Understanding by stratification ”

③ Using simple methods freely and effectively 90% of problems at the work site can be solved using simple methods.

- Grasping the facts from the data

If the processes of gathering and analyzing the data are correct, then the facts derived from the data will be also be correct.

- Summarizing the data

① How to locate the center point of the data : mean (\bar{x}), median (\tilde{x})

② Determining the degree of dispersion : standard deviation (σ), Range (R)

3. QUALITY OF WORK

3-1 Attitude toward Quality (of Work) Improvement (1)

✓ Efforts to Improve CS (Customer Satisfaction)

- Who are your customers?
- What are the products or services you offer?
- What is the quality standard of the product or service?

3-1 Attitude toward Quality (of Work) Improvement (2)

✓ A Mind of Daily Work

- ① Thorough implementation of *Ho-Ren-So* (Report, Information, Consultation)
 - Scientifically summarize the data (QC Methods, FTA, etc.)
 - Pursuing “Why? Why?” questions (to go after the true causes of problems)
 - The “5 Gen” Principles (*Genba, Genbutsu, Genjitsu, Genri, Gensoku*)
 - Clearly say that good things are good, bad things are bad.
- ② Actualization of the problems
- ③ Response to Planned changes (promoting PDCA cycle)
- ④ Standardization, Thorough Implementation Improvement
- ⑤ Three principles of job training methods

3-2 Ho-Ren-So

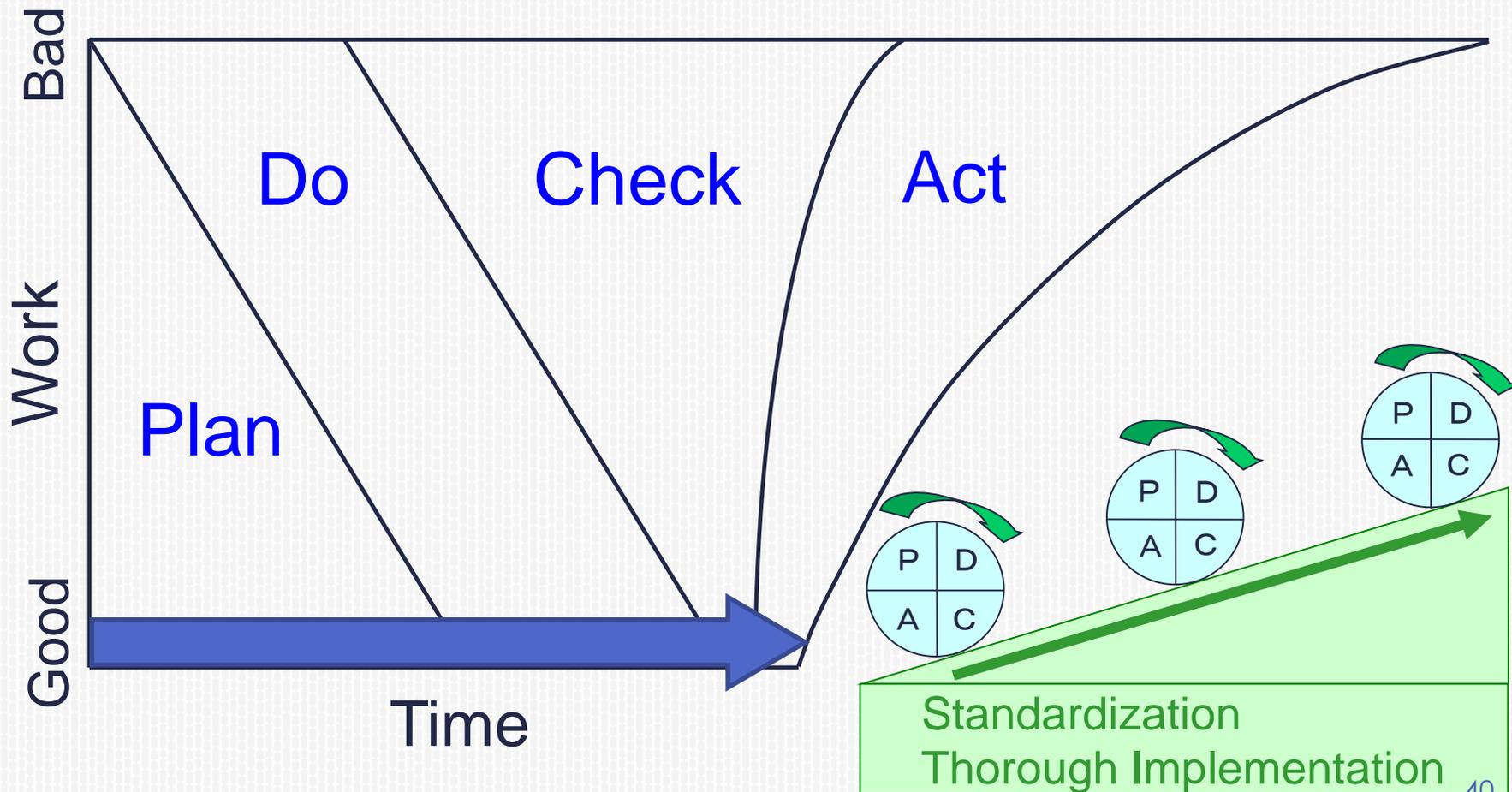
✓ “Hokoku (to report)”, “Renraku (to inform)”, “Sodan (to consult)”

“Ho-Ren-So” Level Table

Level	“Hokoku” : to report on a process or result of job	“Renraku” : to inform / share facts	“Sodan” : to consult or discuss
1	<ul style="list-style-type: none"> ① I understand the basic principle that the report is honest. ② As soon as job is finished, I report directly to the person who ordered. ③ When there is "an instruction of another department", I report it immediately to the direct supervisor. ④ I report results first, then report progress the way well. ⑤ I am expressing in an easy- to- understand way with 5W2H. 	<ul style="list-style-type: none"> ① I inform timely the necessary new information each time. ② I am expressing in an easy- to- understand way with 5W2H. ③ I know the principle that “bad situations (negative information) should be communicated soon”, but sometimes hesitates. 	<ul style="list-style-type: none"> ① I have consulted with my boss "I wonder what to do". ② I am expressing in an easy- to- understand way with 5W2H. ③ I frequently consult with my boss, but sometimes I am suffering by myself "what to do".
2	<ul style="list-style-type: none"> ① I report (inform / consult) with cost consciousness. ② I am seeking the next instructions at the time of reporting and I also have an opportunity to know my boss's idea. ③ I obediently apologize for the report (information) mistake. Corrective actions of mistakes are appropriate, after that I am careful. ④ I report also including the situation of the other party. 	<ul style="list-style-type: none"> ① I inform contents that are easy to make mistakes or require accuracy by using documents (memos). ② I confirm whether important information is surely transmitted to the other party, (send not ≠ inform). ③ I clearly express information using information tools. 	<ul style="list-style-type: none"> ① I'm consulting with my own opinion that "I want to do this". ② I also talk about "requests" and "advice on problem solving" at the time of consultation. ③ I consult with sincerity and enthusiasm and also explain the situation so that the other party can judge easily. ④ I surely report the result to the person I consulted.
3	<ul style="list-style-type: none"> ① When the situation changes, when it takes a long time to work, or when the end of the work is a prospect, I am reporting the progress until then. ② I report (inform and consult) with a clear purpose. ③ I realize that both the content and method of report / information / consultation are important. ④ I am attaching necessary documents and preparing reference documents. 	<ul style="list-style-type: none"> ① I understand that communication means "sharing information". Also, I am deepening the sharing of information. ② I am assisting my boss with positive information provision. ③ I am sending an email of appreciation without delay. I am also calling for gratitude. (I understand the case of expressing gratitude.) 	<ul style="list-style-type: none"> ① When consulting, I also confirm "opinion recommendation", "information provision", or "boss's policy and meaning". ② When consulting, I am also asking for necessary support in advance. ③ I am deepening the sharing of information with "aggressive listening". ④ I have a person who can seriously consult anything.
4	<ul style="list-style-type: none"> ① In addition to reporting the results and situations, I also stated "opinions" and "suggestions". ② In addition to the first report, I am also reporting "understanding the current situation", "analysis of the cause" and "improvement plan". ③ I report it not only to my boss but also to my department and relevant departments. 	<ul style="list-style-type: none"> ① I am judging the importance, urgency and the scope of the contacts (relevant departments, suppliers) by my boss level. (also at the level of subordinates, my department and the other departments). ② I also consider the influence of the information details / communication method on other departments and the extent of influence. ③ In addition to timely new information, I can also communicate information that summarizes it. 	<ul style="list-style-type: none"> ① While respecting ourselves and others, I can express my intent honestly, obediently, and I can compromise with flexible correspondence. ② I also consult with external experts as necessary. ③ I am deepening the sharing of information with effective questions. ④ I consult not only for the immediate problem but also for the near future issues. ⑤ When consulting, I also consult about developing subordinates and teamwork.
High 5	<ul style="list-style-type: none"> ① I report the facts honestly. ② The other person's "Ho-Ren-So" is bad, I know that I have a cause. ③ I am reporting to the satisfaction of both partner and my own. (I am conscious of the purpose of both partner and my own.) ④ I am carrying out the reporting method preferred by the other person. 	<ul style="list-style-type: none"> ① I am enjoying the utilization of "Ho-Ren-So". ② I am practicing "information management". ③ I am communicating bad information as soon as possible. ④ I know that it is myself that make information meaningful. ⑤ I am making personal connections through information exchange / information gathering. 	<ul style="list-style-type: none"> ① I am tolerant to people who are not good at consultation (report / information) and are helping. (←consultation for support ↓) ② I will not spare my help without asking for a return if I have consultation. ③ I am consulted by customers and my boss. ④ I involve people around me by consultation and I am working on a big job that I can not do by myself. (mutual consultation)

3-3 PDCA

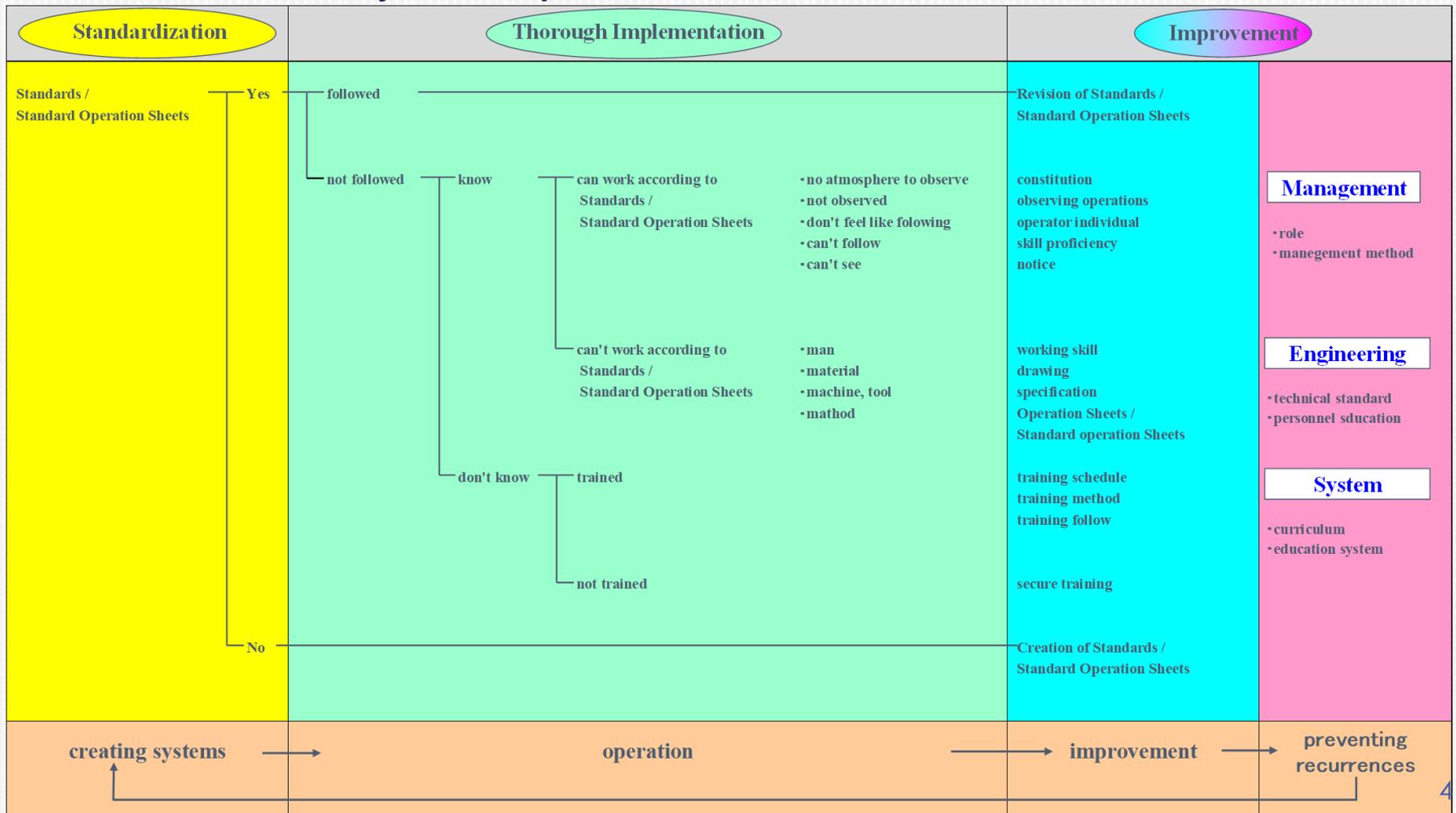
✓ Plan, Do, Check, Act



3-4 Standardization, Thorough Implementation, Improvement

✓ Standardization, Thorough Implementation, Improvement

~Factor analysis of problems~



3-5 Job Training Methods

✓ STEP 1: Explain the work content

- Explain what kind of work to do
- Confirm the extent they know about that work
- Explain the importance of the work
- Explain the correct position to do work
- Explain parts and tools

Who is your mentor?

✓ STEP 2 : Demonstrate, have them try alone

- While explaining the main work steps, their key points and reasons, and demonstrating the work.
- While letting them explain the main work steps, their key points and reasons, let them do the work, and correcting mistakes in their work.
 - * Repeat training until they can do the work.

✓ STEP 3 : After training, observe the work

- Let's decide who to ask when they are not sure.
- Frequently observe
- Lead them to ask questions

Strictly and warmly : ○

Gently and coldly : ×

Pretend not to see : ×

3-6 An Important Mind at Work (Quality Policy)

✓ Safety, Quality First

- Observance of Standard Operation Sheets and Rules
- Do not judge on your own

✓ When an Abnormality Occurs

“Stop the machine / work, Call your boss, Wait for instructions.”

- Generally, disasters and incidents occur frequently at times of abnormality and change.

✓ It is Important to Notice a Slight Slight Difference in Everyday Work.

3-7 Expectation for Quality (of Work) improvement (1)

✓ Real Work and Achievement

- **Real Work** = Work + **Other people can do the same**
 - * Standardization
 - * Proficiency
- **Real Achievement** = Result + **Other people can achieve the same result**
 - * Standardization
 - * Proficiency
- Work, Achievement \Rightarrow For whom? For what? What purpose?
(**Who are the customer?**)
- **Review** \Rightarrow All starting points
(**Good points, bad points, problems for the future**)
- Continue, Complete at one time, Thoroughly implement
 \Rightarrow Conditions for success

3-7 Expectation for Quality (of Work) improvement (2)

✓ Behavioral guidelines

- Even though the words and shapes are the same, it is normal that the "quality" and the "degree of thoroughness" of the contents are different, **Actually this will change the result.**

It is important to improve "quality" and "degree of thoroughness".

- ① **Strictly Executing the determined rules (Standards).**
- ② **Thoroughly promoting management cycle (improvement / progress).**

3-8 Important Key Words (1)

✓ Basics of the manufacturing site:

① 6S; *SEIRI, SEITON, SEISOH, SEIKETSU, SHITSUKE, SAHOH*

- **Well organized (*SEIRI*)** ;
Separate what you need and what you do not need, and do not put anything other than what you need at the workplace
- **Putting in order (*SEITON*)** ;
Put the necessary things properly in a predetermined place that is safe, maintaining quality, efficiently
- **Cleaning (*SEISOH*)** ;
Clean up things around you and the workplace and create a clean work environment
- **Neatness (*SEIKETSU*)** ;
Keep healthy so as not to give discomfort to others. Take dirt on your side, arrange your appearance and clothes
- **Discipline (*SHITSUKE*)** ;
Compliance with rules, disciplines and standards in the workplace
- **Manners (*SAHOH*)** ;
Always be able to act correctly

3-8 Important Key Words (2)

✓ Basics of the manufacturing site:

① 6S; *SEIRI, SEITON, SEISOH, SEIKETSU, SHITSUKE, SAHOH*

② How to put products and parts;

- fixed-position, fixed-quantity, fixed-item (display of item name)
- straight line, right angle, parallel, height limit (140cm)

✓ Three Qualities

- Quality Workers, • Quality Company, • Quality Products

✓ Behavioral guidelines

- Do it right away!
- Do it by all means!
- Do it until completed!

✓ Continuity is the father of success

3-9 Another

Sow a thought,

William James Psychologist USA

✓ Sow a thought, reap an action.

✓ Sow an action, reap a habit.

✓ Sow a habit, reap a character.

✓ Sow a character, reap a destiny.

THANK YOU
