

Causal Analysis

①

Management style that overemphasized profitability and inadequate corporate governance

②

Imbalanced operation of plants that resulted in the reduced awareness of quality compliance among employees

③

Insufficient quality control procedures that allowed the Misconduct to take place

I . Governance – Building a Quality Governance System

1. Penetration of the Corporate Philosophy

2. Desirable State of the Board of Directors

3. Restructuring of the Risk Management System

4. Reformation of the Organization

5. Restructuring of the Group Companies

6. Rotation of Personnel Among Divisions

7. Understanding of Issues Occurring at Worksites

8. Establishment of the Quality Charter

9. Restructuring of the Quality Assurance System

10. Restructuring of Our Management Indicators

II . Management – Ensuring Quality Control

1. Measures for Quality Management

2. Rotation and Development of Quality Assurance Personnel

3. Employee Education Programs on Quality

4. Quality Audits by the Head Office

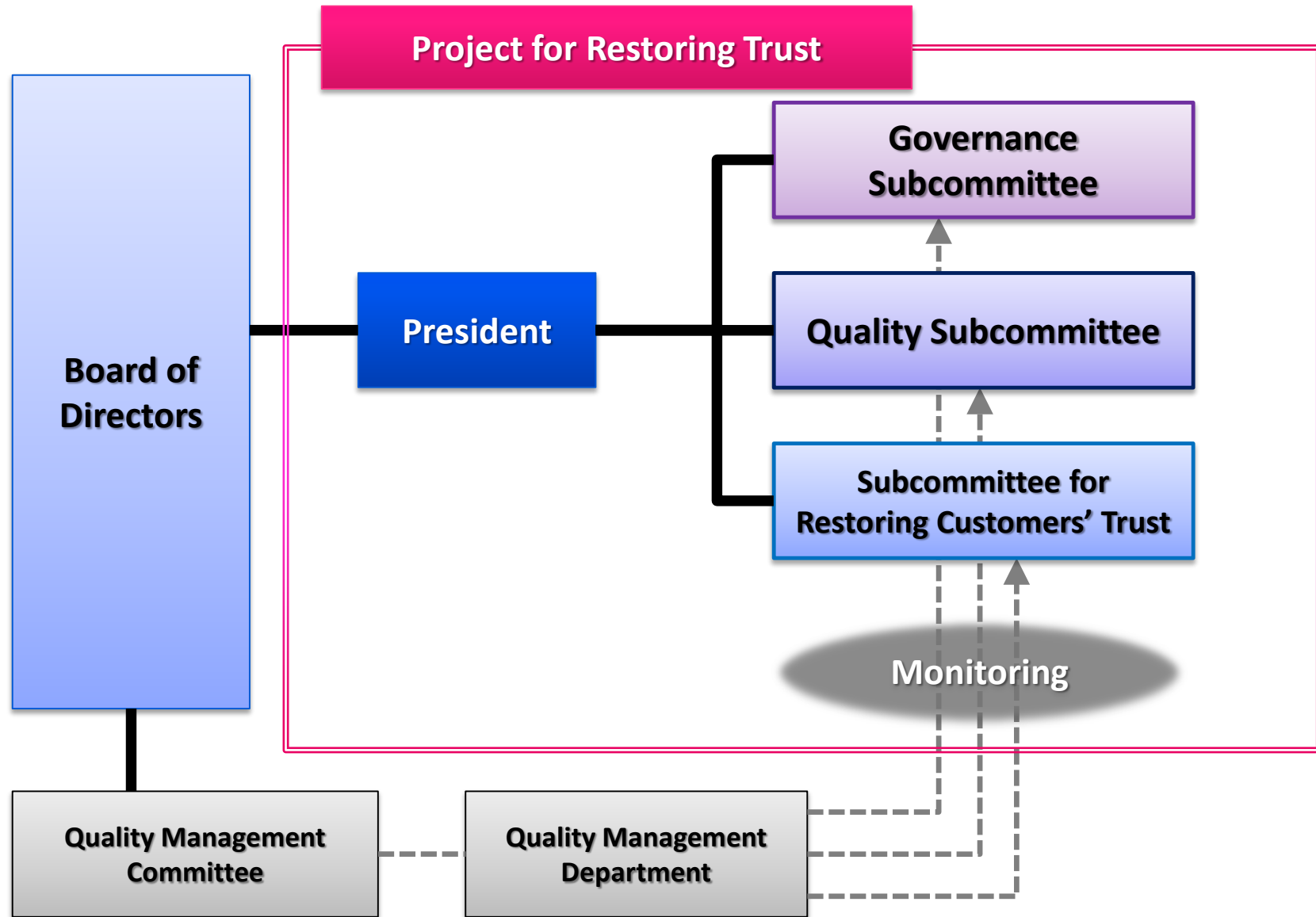
III . Process – Strengthening of Quality Control Processes

1. Elimination of Opportunities for the Improper Handling of Test and Inspection Data and Unification of Shipping Standards

2. Understanding of Process Capabilities and Utilization (with respect to the materials businesses)

3. Review of the Approval Process (a) for Accepting New Purchase Orders, and (b) when Changing the Manufacturing Process

4. Promotion of Quality Risk Assessment in Capital Investments



Preventive Measures – Status Overview

Measures to Prevent Reoccurrence of the Misconduct

Status

I Governance – Building a Quality Governance System

1	Penetration of the Corporate Philosophy	In Progress
2	Desirable State of the Board of Directors	Completed
3	Restructuring of the Risk Management System	In Progress
4	Reformation of the Organization	Completed
5	Restructuring of the Group Companies	Partly in Progress
6	Rotation of Personnel Among Divisions	In Progress
7	Understanding of Issues Occurring at Worksites	In Progress
8	Establishment of the Quality Charter	Completed
9	Restructuring of the Quality Assurance System	Completed
10	Restructuring of Our Management Indicators	In Progress

II Management – Ensuring Quality Control

1	Measures for Quality Management	In Progress
2	Rotation and Development of Quality Assurance Personnel	In Progress
3	Employee Education Programs on Quality	In Progress
4	Quality Audits by the Head Office	In Progress

III Process – Strengthening of Quality Control Processes

1	Elimination of Opportunities for the Improper Handling of Test and Inspection Data and Unification of Shipping Standards	KOBELCO Quality Guidelines already enacted	Correction and improvements under review by quality audit
2	Understanding of Process Capabilities and Their Utilization (with respect to the materials businesses)		
3	Review of the Approval Process (a) for Accepting New Purchase Orders, and (b) when Changing the Manufacturing Process		
4	Promotion of Quality Risk Assessment in Capital Investments		

I . Governance – Building a Quality Governance System

- 1. Penetration of the Corporate Philosophy**
2. Desirable State of the Board of Directors
- 3. Restructuring of the Risk Management System**
- 4. Reformation of the Organization**
5. Restructuring of the Group Companies
6. Rotation of Personnel Among Divisions
- 7. Understanding of Issues Occurring at Worksites**
8. Establishment of the Quality Charter
9. Restructuring of the Quality Assurance System
10. Restructuring of Our Management Indicators

This report is centered on four items where progress and changes have been made since the previous announcement on November 6, 2019.

I-1. Penetration of the Corporate Philosophy

➤ Further Promotion of the Next 100 Project

➤ **Dialogue sessions by the President with employees [Since April 2018]:** Dialogue sessions continue to be held with **Group** employees at our domestic and overseas business locations and sites. **To date, dialogues have been held 105 times at 70 locations (as of the end of April 2020).**



Dialogue at the Tokyo office of Kobelco Machinery, (October 2019)

➤ **Establishment of a New Group Corporate Philosophy :** The Mission Statement Project was implemented to develop internally and externally a spirit of compassion in the Kobe Steel Group and further promote the penetration of the Core Values of KOBELCO Next 100 Project. A draft was prepared by 12 young and mid-level employees and refined based on the opinions collected from the Dialogue Platforms. In May 2020, a new corporate philosophy of the Kobe Steel Group was established by incorporating the newly designated KOBELCO's View of the Future and KOBELCO's Mission into the present principles of the Core Values of KOBELCO and Six Pledges of KOBELCO Men and Women.

New Corporate Philosophy of the Kobe Steel Group

Newly designated

① KOBELCO's View of the Future	We envision a world in which people, now and in the future, can fulfill their hopes and dreams while enjoying safe, secure, and prosperous lives.
② KOBELCO's Mission	Our mission is to provide solutions to the needs of society, by making the best use of the talents of our employees and our technologies.
③ Core Values of KOBELCO	<ol style="list-style-type: none"> 1. We provide technologies, products and services that win the trust and confidence of our customers we serve and the society in which we live. 2. We value each employee and support his and her growth on an individual basis, while creating a cooperative and harmonious environment. 3. Through continuous and innovative changes, we create new values for the society of which we are a member
④ Six Pledges of KOBELCO Men and Women	<ol style="list-style-type: none"> 1. Heightened Sense of Ethics and Professionalism 2. Contribution to the Society by Providing Superior Products and Services 3. Establishing a Comfortable but Challenging Work Environment 4. Living in Harmony with Local Community 5. Contribution to a Sustainable Environment 6. Respect for Each Stakeholder <p style="text-align: right;">Quality Charter</p>

➤ We established the KOBELCO Core Values Place at our training center in Kobe, Hyogo Prefecture in June 2019 to raise awareness of the need for quality and the initiatives being undertaken to prevent recurrence. **About 2,000 people (including the management and employees of the Group) have visited (as of the end of April 2020).**

Kobe Steel executives' visit to the KOBELCO Core Values Place (June 2019)



➤ We have newly established the KOBELCO Core Values Awards. We asked employees to submit activities that reflect the corporate philosophy and activities to permeate the corporate philosophy throughout the Group. We received about 250 entries. The awards ceremony was held in late October and broadcast live to our business locations in Japan and overseas



KOBELCO Core Values Awards ceremony (October 2019)

I-3. Restructuring of the Risk Management System

Conduct a Compliance Awareness Survey on a Regular Basis

- A Compliance Awareness Survey, intended for all employees, has been conducted concurrently with an Employee Awareness Survey every July since 2018. **The same surveys have been conducted at some of the Group companies since fiscal 2019.**
- The result of the survey was announced to all employees in **January 2020** via the company's intranet and in print.

Strengthen the Risk Management of the Kobe Steel Group

- Created the **Standard Practices for the Group** as ground rules to be complied by the Kobe Steel Group.
- To implement the Standard Practices for the Group at each Group Company, the Planning & Administration Department of each business division (in overseas operations, regional headquarters) played a central role to support the implementation.
- Created the **KOBELCO Quality Guidelines**, which were implemented effective May 1, 2018 (English and Chinese versions available).

Establish Compliance Management Department

- Established Compliance Management Department on April 1, 2018, in order to strengthen risk management and compliance across the Kobe Steel Group, as well as to improve their effectiveness. **To further strengthen risk management, risk management activities were transferred to the Corporate Planning Department in April 2019.**
- Engaging in activities to increase awareness for managing risks across all business divisions while implementing and promoting risk management by consolidating risk-management duties of relevant audit functions. ※¹

※¹: Other than safety, environment, and IT departments. Quality-related departments are overseen by the Quality Management Department, which is described later.

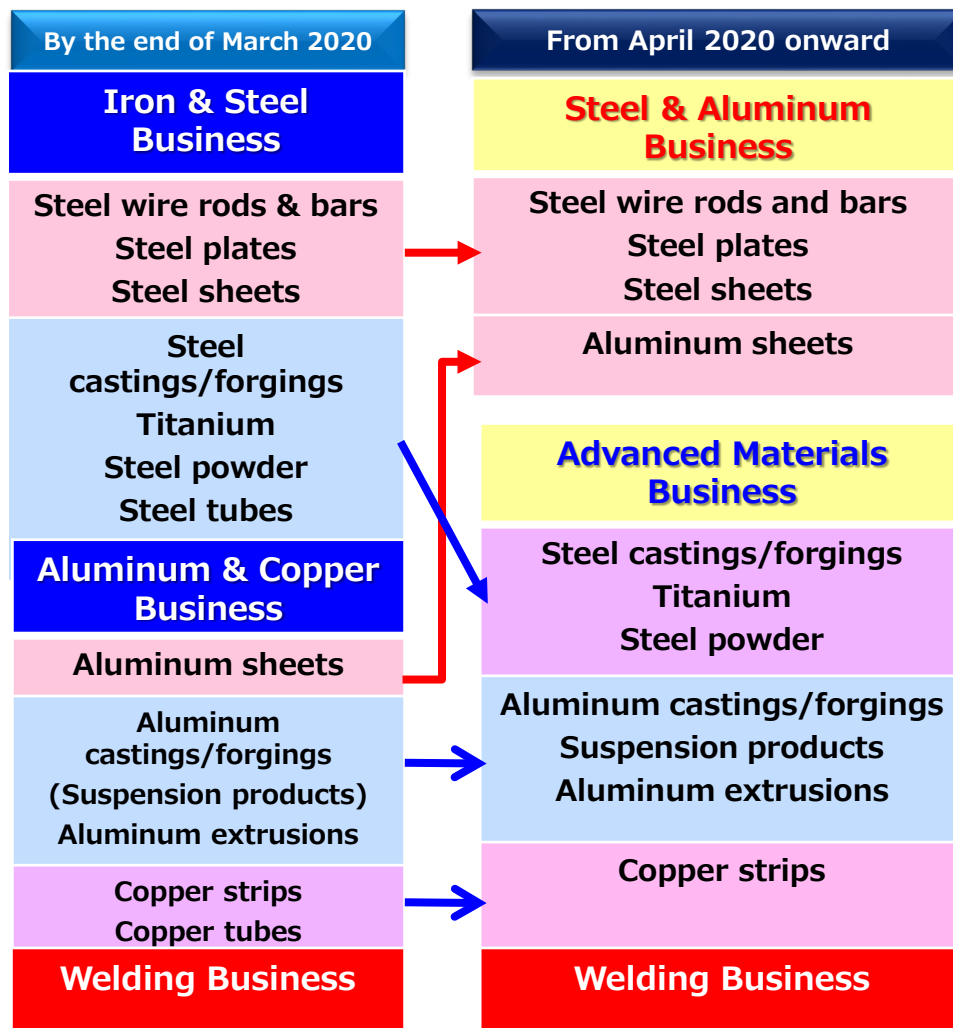
Introduce Compliance Program

- **Started compliance promoting activities in the Group from fiscal 2020 based on the Kobe Steel Group Compliance Program as a common framework (from April, 2020).**
- **Classified the current initiatives being implemented by the Group into 5 items to identify the points to be strengthened for efficient planning and implementation of compliance promoting activities.**



I-4. Reformation of the Organization

➤ Iron & Steel Business and Aluminum & Copper Business reorganized in April 2020



Aims of the Reorganization

Strengthen Strategies by Demand Field

- ✓ Reorganize along **materials** (steel products, aluminum sheets) and **parts** (automotive/aluminum castings, forgings, extrusions; aircraft/titanium and aluminum castings/forgings)
- ✓ **Integrate automotive steel sheet and aluminum sheet sales departments and product marketing/technical services departments**
⇒ **To strengthen automotive weight reduction strategies**

Strengthen Monozukuri Capabilities

- ✓ Link common elemental technologies and quality management across business divisions
[Materials] Rolling, continuous annealing, etc.
[Parts] Forging, extrusion, assembly, etc.

Reinforce corporate governance

- ✓ Strengthen management functions of business segments

Strengthen common functions

- ✓ **Combine the raw materials purchasing departments and IT management departments of both business divisions and place them in the Steel & Aluminum Business**
- ✓ **Combine the intellectual property departments of both business divisions into the Intellectual Property Department in the Head Office.**
- ✓ **Combine the development organizations into the Technical Development Group to improve solution technology and strengthen monozukuri capabilities**

I-7. Understanding Issues Occurring at Worksites

Dialogue between Management and Employees

- Through promoting activities of the Next 100 Project, we have been concurrently conducting dialogues not only by the President, but also by other members of management and the heads of each business division.
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Employee Awareness Survey

- Along with the Compliance Awareness Survey, we implemented the Employee Awareness Survey in fiscal 2018 and 2019. **We plan to continue conducting the surveys in fiscal 2020, too.**
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The Quality Caravan Team

- The Quality Caravan Team is comprised of Head Office departments such as the MONODZUKURI (Production System Innovation) Planning and Promoting Department, IT Planning Department, and Technical Development Group. The Quality Caravan Team is tasked to provide consultation to business divisions on their issues.
 - **For two years starting from fiscal 2019, the Quality Caravan Team plans to visit a total of 110 locations and conduct surveys on issues pertaining to quality assurance and the visualization/improvement of process capabilities. In fiscal 2019, the Quality Caravan Team visited 60 locations.** With regard to the identified issues, external technical surveys and technical development have been conducted and proposals for solutions are proceeding.
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Ⅱ . Management – Ensuring Quality Management

1. Measures for Quality Management
2. Rotation and Development of Quality Assurance Personnel
3. Employee Education Programs on Quality
4. Quality Audits by the Head Office

Updates from the previous announcement (November 6, 2019) are shown in **green bold text** or indicated as “Updated” in the header.

II-1. Measures for Quality Management ①

Establishment of Quality Management Department (January 1, 2018)

- The Quality Management Department conducts quality-related audits while overseeing quality assurance departments of each business division.
- The Quality Management Department gathers information and oversees issues concerning quality assurance in each business division (e.g., quality management indicators, complaints, etc.), reports these issues to the management on a regular basis, and creates company-wide measures to improve the overall quality assurance practice.

Establishment of Quality Assurance Departments under Direct Supervision of Business Divisions (by January 1, 2018)

- Established quality assurance departments under the direct supervision of each business division. Selected quality assurance staff are designated to co-serve in the Quality Management Department and participate in discussions concerning companywide measures.

Enhancement of Quality Assurance Management at Manufacturing Sites

- Guidelines enacted in order for quality assurance departments to secure independence from manufacturing and processing departments and to maintain unwavering independence from manufacturing or processing environments in making proper judgments on products and preventing nonconforming products from being shipped.
- **Official certifications previously canceled or temporarily suspended were restored, and required corrective measures have been completed (excluding one case where recertification is not planned).**

Group Quality Leaders Meetings

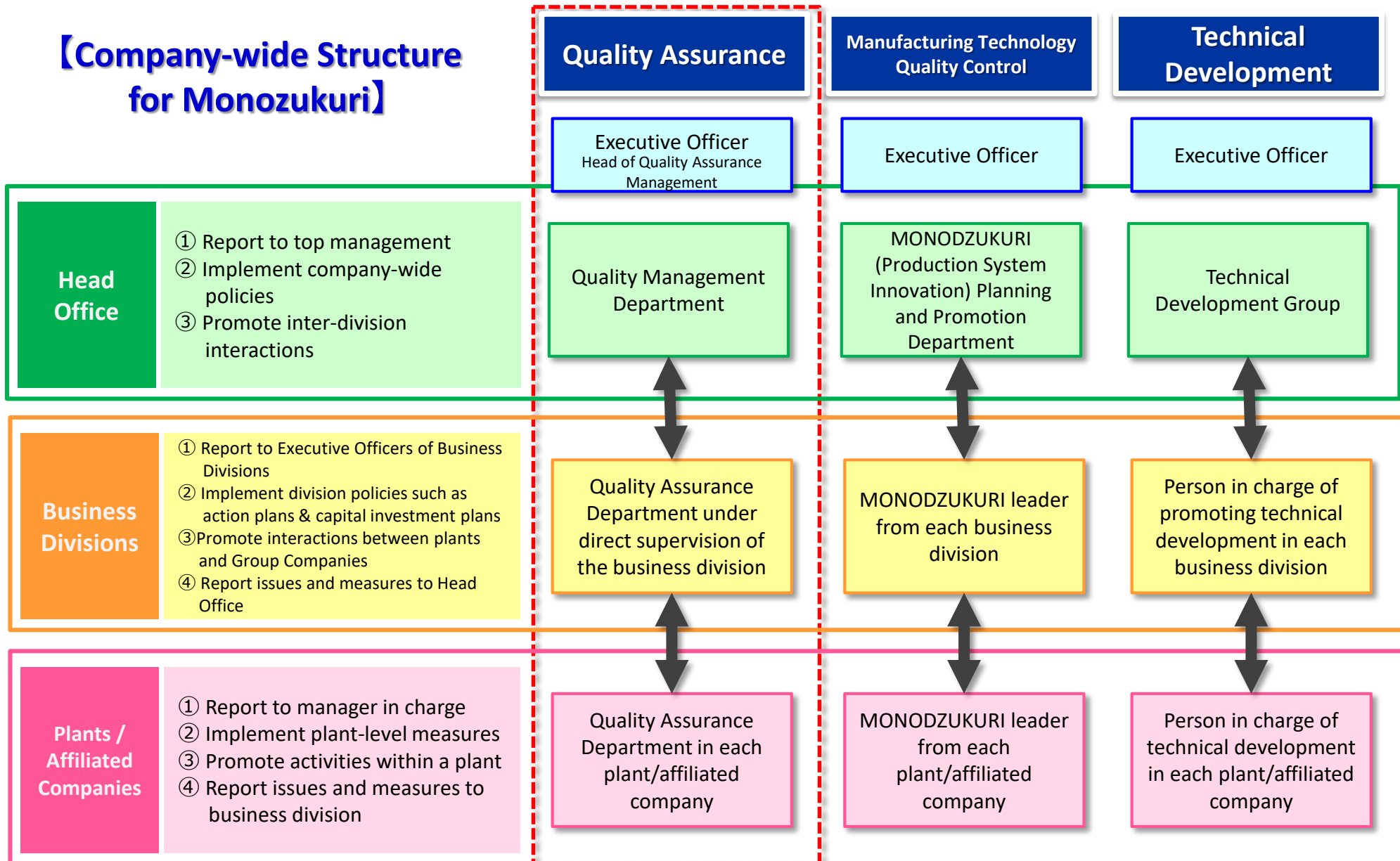
- Quality assurance leaders from Kobe Steel and Group Companies meet and review the implementation status of various measures and share information related to quality control activities. Since fiscal 2018, Leaders Meetings have been held twice in Japan (Tokyo, Kobe) as well as China, Southeast Asia and the United States. We plan to continue this effort.

Establishment of the Quality Management Committee (April 2019)

- With the final opinion from the Independent Quality Supervision Committee, the activities of the Committee concluded on March 31, 2019.
- As an advisory body to the Board of Directors, Kobe Steel established the Quality Management Committee, comprised of 3 external experts and 2 internal directors, which is tasked to monitor and advise whether the Company's efforts to reinforce quality management and the measures to prevent recurrence are functioning properly. **The Committee has met four times at the Tokyo Head Office and manufacturing locations in fiscal 2019 and is scheduled to meet four times in fiscal 2020.**

II-1. Measures for Quality Management ②

【Company-wide Structure for Monozukuri】



【Roles of Quality Management Department】

Quality Assurance
Management as a Head
Office Department

	Head Office
① Secretariat of the Quality Management Committee	●
② Report to the management on the operational status regarding company-level quality control	●
③ Centrally manage public certifications across the company	●
④ Head Office contact point for certification bodies and governments	●
⑤ Report the results of audits to the Independent Quality Supervision Committee 【Quality Audit Section】	●

【Roles of Quality Management Department】

- Conduct quality-related audits while overseeing quality assurance departments of each business division
- Gather information and understand issues concerning quality assurance in each business division (e.g., quality management indicators, complaints, etc.), report these issues to the management on a regular basis, and create company-level measures to improve the overall quality assurance practice

Function to Manage Laterally between
Business Divisions

	Head Office	Steel & Aluminum	Advanced Materials	Welding	Machinery	...
⑥ Create an annual plan for quality assurance, and announce quality compliance policy	●	●	●	●	●	
⑦ Gather information and understand issues related to quality from each business division	●	●	●	●	●	
⑧ Create an education and training plan	●	●	●	●	●	
⑨ Consider and propose personnel assignments	●	●	●	●	●	
⑩ Gather and provide information related to quality (e.g., revision of JIS and ISO)	●	●	●	●	●	
⑪ Gather and provide information related to quality from industry organizations	●	●	●	●	●	
⑫ Conduct relevant quality-related audits 【Quality Audit Section】	●	●	●	●	●	
⑬ Follow up on audit results 【Quality Audit Section】	●	●	●	●	●	

II-2,3. Rotation and Development of Quality Assurance Personnel/In-house Education Programs Regarding Quality

II-2. Rotation and Development of Quality Assurance Personnel

Rotation of Quality Assurance Personnel

- To kick-off our new personnel rotation practice across Kobe Steel's business divisions and group companies, the Company assigned staff from the Quality Management Department to each business division effective May 2019.

Development of Quality Assurance Personnel

- In fiscal 2018, we provided definitions of skills and evaluation of skill levels required for company-wide quality assurance staff and systematized quality-related education (including obtaining qualifications). From fiscal 2019, we started initiatives to review and systematize quality-related education for personnel who are in positions outside of quality assurance.
- We have provided training on reliability engineering by internal instructors in line with our businesses (held in June and October 2019).
- As for quality risk management and preventive measures, we are providing training programs on FMEA (Failure Mode and Effect Analysis) / FTA (Fault Tree Analysis) / DR (Design Review), focusing on the products at the plants.
- We held a Quality Exchange Meeting for Group companies in the Chinese region, attended by persons in charge of quality assurance (July 2019).



The first Quality Exchange Meeting in China

II-3. In-house Education Programs Regarding Quality

Quality and Compliance Training

- We implemented quality and compliance training targeting heads of departments/sections (approximately 600 individuals) of Kobe Steel and its domestic Group Companies. The training has been expanded to all employees through the Dialogue Platforms. We are also in the process of hosting the training sessions in our overseas Group Companies.
- Sharing and penetration of the Quality Charter not only to quality assurance departments, but also to all employees of Kobe Steel Group (e.g., quality and compliance trainings, quality website, e-learning).

Promotion of Other Quality-Related Education Programs

- A "Quality" website was created on Kobe Steel's intranet in September 2018, in which the progress report on the Project for Restoring Trust is shared.
- Education on quality is offered via e-learning (since November 2018) and relevant information is circulated via internal newsletters (starting in December 2018). We will continue these activities.

Audit by Quality Audit Section of Quality Management Department

Audit Item		Schedule
i) Review of compliance status (on-site audit) <ul style="list-style-type: none"> • Cross-reference inspection results of subject products are audited on-site against legal specifications and customer specifications. • Disposal of reserved and nonconforming products are also audited. 		<p>The Quality Management Department implemented on-site audits at all 117 locations in fiscal 2018 and at 81 locations (※) in fiscal 2019. In fiscal 2020, on-site audits are scheduled at 76 locations.</p> <p>※Due to the impact of the novel coronavirus, the number has been changed from 85 locations, which was originally planned at the beginning of fiscal 2019.</p>
ii) Review of quality management systems from the anti-fraud perspective <ul style="list-style-type: none"> • Review laws and regulations related to quality, review the means of determining customer specifications, and confirm the administrative department in charge. • Assess consistency between the instructions given to manufacturing lines and how they are actually carried out. 		
iii) Assessment of compliance awareness <ul style="list-style-type: none"> • Assess the level of awareness of the top management as well as factory workers through interviews in order to prevent misconducts. • Check whether training on quality compliance is properly provided. 		
iv) Review of the implementation status of the preventive measures		
<ul style="list-style-type: none"> • Plants where misconducts were identified: 	Review status and effectiveness of the implementation of the preventive measures.	
<ul style="list-style-type: none"> • Plants where there was no misconduct: 	Review the implementation status and effectiveness of measures that were recommended after quality audits.	

III. Process – Strengthening of Quality Control Processes

1. Elimination of Opportunities for the Improper Handling of Test and Inspection Data and Unification of Shipping Standards
2. Understanding of Process Capability and Utilization (with respect to the materials businesses)
3. Review of the Approval Process (a) for Accepting New Purchase Orders, and (b) when Changing the Manufacturing Process
4. Promotion of Quality Risk Assessment in Capital Investments

【Notes】

- In order to promote the points above, we established the KOBELCO Quality Guidelines of the Kobe Steel Group. The Guidelines went into effect on May 1, 2018 and we are disseminating and enforcing the Guidelines among the Group Companies.
- We will monitor the actual enforcement and progress of the above through quality audits.

III-1. Eliminating Improper Handling Opportunities in Testing/Inspection and Unifying Shipment Standards

Automation of Testing/Inspection Recording and Elimination of Manual Data Entry by One Person

- With regard to the fiscal 2018-2020 plan for automation, the progress rate remains at approximately 60% as of the end of April 2020 due to the outbreak of the novel coronavirus along with a delay in systems development in fiscal 2019 and other factors. However, automation is proceeding generally as planned and we aim to complete 100% of the planned automation by the end of fiscal 2020.

Adjustment of Shipping Standards

- We are in the process of eliminating opportunities for any improper conduct caused by the existence of double standards (customer specifications and internal standards).
 - ⇒ Under the new rule, customer specifications are used as a default standard for shipment approval instead of Kobe Steel's internal standards.

III-2. Understanding and Utilizing Process Capabilities (in the Materials Businesses)

Application and Utilization of Process Capability Index

- Understanding the Process Capability Index: Understand how quality properties deviate from the required standards in manufacturing processes for each category (i.e., production lines, product types, tests/inspections, and customers).
- Utilizing the Process Capability Index: The degree of variation found in the quality properties of manufacturing processes will be used for deciding whether to accept or reject orders.

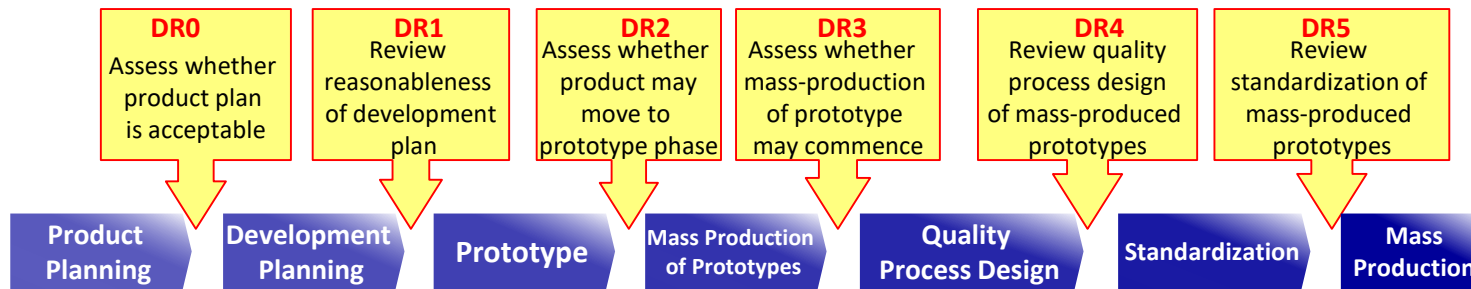
III-3,4. Review of the Approval Process / Promotion of Quality Risk Assessment

III-3. Reviewing the Approval Process for New Orders and Changes in the Manufacturing Process

Reviewing the Approval Process for New Orders

While understanding the process capability for each order, we are in the process of adopting, restructuring and implementing Design Review (hereinafter, “DR”: examination of designs defined by the JIS and ISO 9000). The implementation of DR for domestic locations is scheduled in FY2019.

An Example of Design Review (DR)



Relevant departments from sales, technology, manufacturing, quality assurance and R&D participate in the DR meeting and assess whether a product may move to the next phase of the DR process.

Reviewing the Approval Process for Changes in the Manufacturing Process

- We will prevent potential defects by assessing beforehand the effect on quality when the 4Ms (men, machine, material, method) change and comply with customer specifications.
- Specifically, we will assess risks and clarify the authorization process when changing the 4Ms in the manufacturing process.

III-4. Promoting Quality Risk Assessment in Capital Investments

Introduction of Investment Standard in Consideration of Mitigating Quality Risks

- Some plants and offices have begun considering quality-related capital investment by evaluating quality risks from quantitative factors such as impact, frequency and detection rate. The Company will start utilizing the quality assessments in decisions for key capital investments beginning in fiscal 2019.

II . Management - Ensuring Quality Control

1. Management Structure
2. Education
3. Audit and Support

III . Process - Strengthening of Quality Control Processes

1. Emergency Measures
2. Permanent Measures

Implementation Schedule for Preventive Measures and Progress

Updates from the previous announcement (November 6, 2019) are shown in **green bold text** or indicated as "Updated" in the header.

II - 1. Management Structure

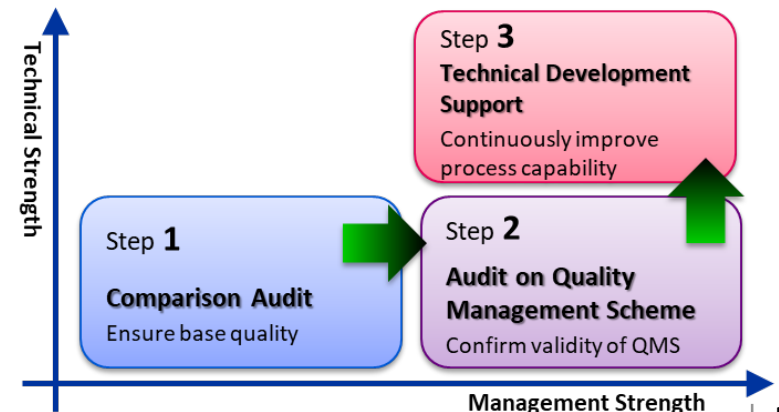
- Established Quality Assurance Department directly under the Aluminum & Copper Business in November 2017.
- With a 3-layered management structure, we are continuing quality-related plans and audits with the Quality Management Dept.
- Share information such as progress of measures and issues at business locations in quarterly quality conferences within business divisions.
 - Sales departments participate and share our customers' voices.
 - Automation, process capability improvement and DR operation are shared with business locations.
- **Completed transfer to the quality assurance system after reorganizing business divisions (April 1, 2020)**
- **Official certifications previously canceled or temporarily suspended were restored in fiscal 2019 (excluding one case where recertification is not planned due to demand trends and other factors).**

II - 2. Education

- Planning and promoting education program from awareness and knowledge perspectives, and developmental activities related to quality compliance.
 - Awareness: Raise awareness for quality compliance through dialogues with the management and heads of plants
 - Education seminars from the customers' perspective (invite customer to speak on quality safety, etc.)
 - Explanation and sharing of the progress update on the quality assurance effort with sales departments
 - Active engagement in quality-related education (encourage to acquire third-party certificate)

II - 3. Audits and Support

- | | |
|--------|--|
| FY2018 | Completed 『Comparison Audit (Step 1)』 and 『Audit on Quality Management Scheme (Step 2)』 |
| FY2019 | <ul style="list-style-type: none"> • 『Technical Development Support (Step 3)』 (Followed up on process capability improvement by quality KPI management) • Conducted the audit of the scheme (Confirmed effectiveness of DR and internal audit) |
| FY2020 | <ul style="list-style-type: none"> • Continue the audit of the scheme and technical development support • Improve and assist issues/challenges identified in FY2019 audits |



III- 1. Process – Emergency Measures

Emergency Measures in Aluminum & Copper Business

i) Compare Test/Inspection Data and Mill Sheets

(To be continued until permanent measures have been completed)

ii) Review Manually-Entered Test/Inspection Results

(To be continued until permanent measures have been completed)

iii) Restrict Access to Databases, Manage Data Logs

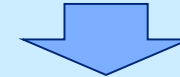
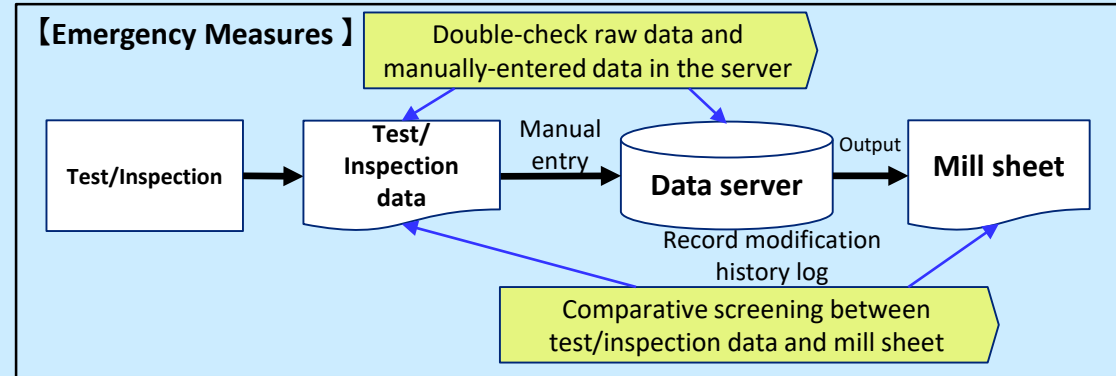
iv) Adjust Shipment Standards [operational] (in progress)

v) Compare Customer Specifications and Manufacturing Standards (Completed in Self-Inspection)

vi) Enforce Rules for Handling Nonconforming Products (in progress)

《Emergency Measures ⇒ Permanent Measures》

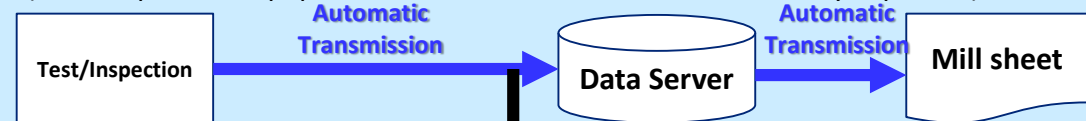
- Transfer to permanent measures starts from locations where effectiveness of data protection has been confirmed by automating testing, inspection recording, etc. (Transfers have been completed at some locations.)
- Emergency measures continue until transfers to permanent measures have been completed.



【Permanent Measures】

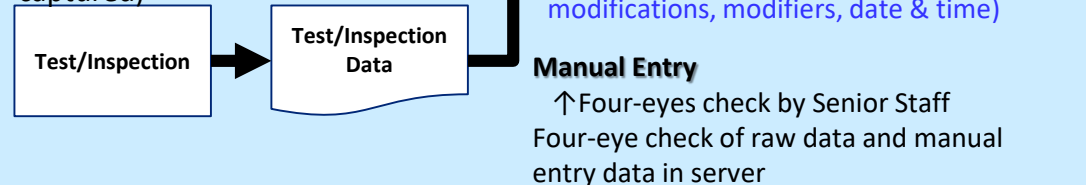
Case ①

(Test/Inspection equipment whose results can be automatically captured)



Case ②

(Test/Inspection equipment whose results CANNOT be automatically captured)



【Permanent Measures】

i) Eliminate opportunities for mishandling the test/inspection data

- Create a system environment where data falsification is impossible.
⇒ **Automation of targeted testing/inspection recording continues and is in progress.**

ii) Adjust shipment standards [system implementation]

- Improvement of the system: Change the system settings so that customer specifications are applied as the shipping standard.
⇒ **Completed**

iii, iv) Understanding Process Capabilities and Improving Inspection Capability

- ⇒ Measures are underway. Started quality KPI management. Following up on process capability improvement.

v, vi) Review Approval Processes for New Orders and Changes in the Manufacturing Process

- ⇒ **Completed review of approval processes. The new processes will be effective from now on.**

vii) Promote Quality Risk Assessment in Capital Investments

- ⇒ Preparing to apply for low-return quality-related investments.

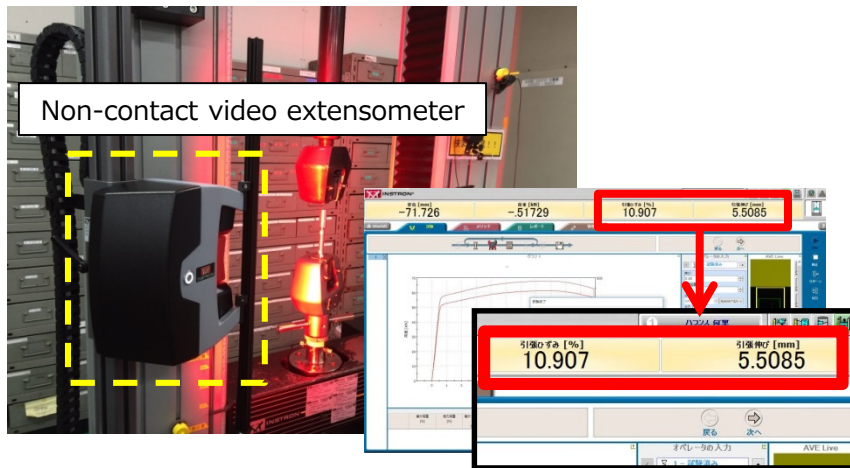
[Permanent Measures]

Automation of Test/Inspection Recording and Elimination of Manual Data Entry by One Person

- With regard to the fiscal 2018-2020 plan for automation, the progress rate remains at approximately 60% as of the end of April 2020 due to the outbreak of the novel coronavirus along with a delay in systems development in fiscal 2019 and other factors. However, automation is proceeding generally as planned and we aim to complete 100% of the planned automation by the end of fiscal 2019.

Aluminum & Copper: Examples of Automation

① Tensile Test (elongation)

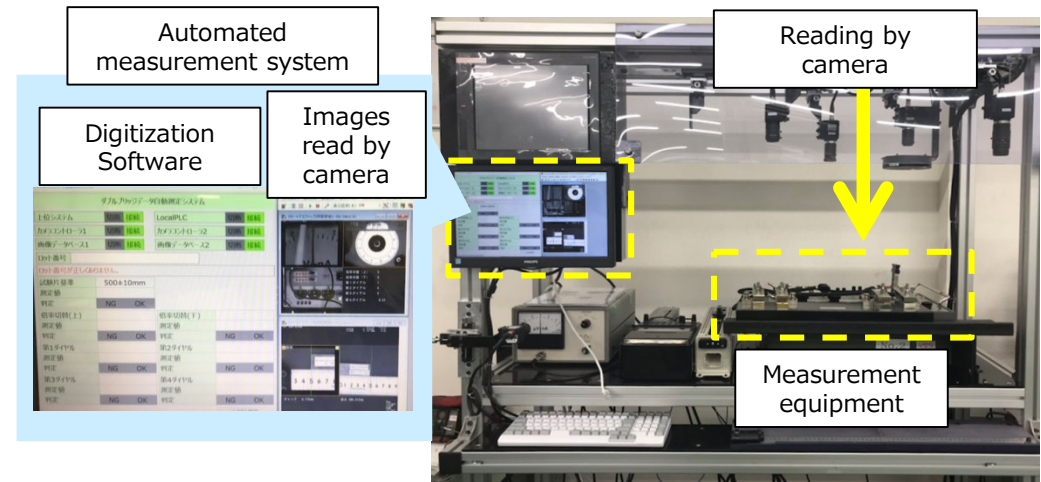


Introduction of non-contact video extensometer

Automatically measures breaking elongation and transmits the results to a PC.

- Eliminate opportunities for mishandling measurement data and values when measuring and rewriting.

② Conductivity Measurement Test



Digitization of analog scales by image processing

Read the scale of measurement equipment with camera and digitize it. The measured value is transmitted to a PC.

- Eliminate opportunities for mishandling measurement results.

【Permanent Measures】

Understanding Process Capability

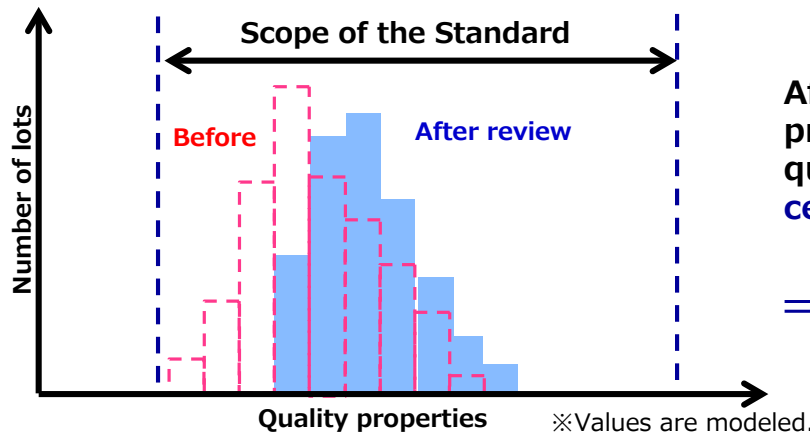
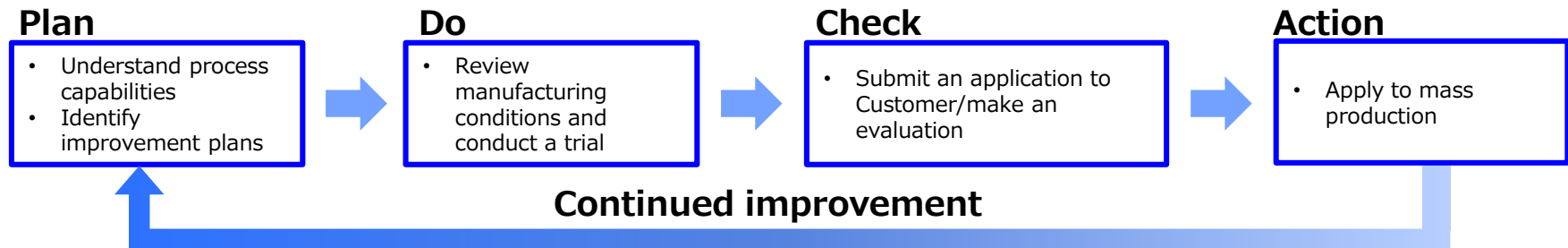
➤ Promoting Visualization of Process Capability

Visualize the inspection data (through graphs/indexing) and correctly understand our process capability.

Visualize using Histogram, Process Capability Index (Cpk), Inspection Items (Quality Property) – Correlation Diagram of Manufacturing Conditions ➔ Utilize the results for determining whether an order can be accepted and identify manufacturing conditions that need improvement. ※Tools exclusively for visualization are utilized at some locations.

Improving Process Capability

➤ A case example of improvement activities



After reviewing the manufacturing conditions (e.g. processing conditions, thermal treatment conditions, etc.), quality properties have shifted from **the lower limit** to **the central part** of the scope of the standard.

⇒ **Achieving stable *monozukuri***

Implementation Schedule for Preventive Measures in the Aluminum & Copper Business

Updated

Aluminum & Copper Business	FY2018		FY2019	
	1H	2H	1H	2H
Management				
Organizational Restructure ※Established Quality Assurance Department in November 2017				
Education		Education		Education
Audit (comparison, mechanism)	Comparison & scheme audit	Comparison & scheme audit	Scheme audit & confirmation of effectiveness of DR & internal audit	
Technical Development Support			Technical development support	
Process				
【Emergency Measures】				
Compare test/inspection data and mill sheet	Completed	Transfer to permanent measures from locations where effectiveness of data protection has been confirmed by automating testing, inspection recording, etc.		
Review manually-entered test/inspection results	Completed			
Restrict access to databases	Completed			
Adjust shipment standards (operational aspect)	Completed			
Compare customer specifications and standard values	Completed			
【Permanent Measures】				
Eliminate opportunities for mishandling the test/inspection data	Automation by test items on a sequential basis			
Adjust shipment standards (system response)	Launch operation (some plants may require additional time to set up the system)			
Understand process capability	Consider PDCA scheme			
Improve process and test/inspection capabilities	Execute sequentially			
Review approval process for new orders	Create rules, test operation / brush up		Launch full operation	
Review approval process for changes in manufacturing process	Create rules, test operation / brush up		Launch full operation	