



Refocusing on across-the-board, thoroughgoing quality management, we are promoting Total Quality Management (TQM).

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Drawing Lessons from a Major Incident, We Redoubled the Priority We Place on Prevention

In December 2017, partial crack was found on the bogie frame of a series N700 Shinkansen railcar manufactured by Kawasaki Heavy Industries. After this incident, we set up the Companywide Quality Control Committee. Including external specialists, the committee investigated the causes of the manufacturing defects and discussed corrective measures aimed at prevention. Participating in the committee as then president of the Aerospace Systems Company, I found it significant and meaningful, as it brought objective viewpoints into the investigation of the incident.

Dr. Takeshi Nakajo, a professor at Chuo University, served as chair of the committee, and highly knowledgeable specialists contributed useful, insightful suggestions, putting us on the right path as a *monozukuri* manufacturer.

The committee concluded that the main causes of the manufacturing defects were poor quality management attributable to excessive dependence on the manufacturing frontlines and the absence of a robust risk management policy systematically requiring taking preventive measures against defects when subcontractors are replaced.

Thoroughgoing Measures to Reclaim Trust

First, we reviewed the entire operational process. It was obvious that the root causes of this problem lay within business units whose processes are routinely dependent on the manufacturing front lines. In response, we promoted concurrent activities that transcend sectional boundaries to step up the preliminarily verification of any manufacturing issues. This resulted in information sharing between business units charged with design and development and those charged with sales, procurement, manufacturing and quality assurance. By striving to ensure built-in quality, we are ensuring that robust measures are introduced at even earlier stages, for example, product design discussion meetings.

The committee's investigation suggested another shortfall; Kawasaki Production System (KPS) activities had yet to be fully embraced. In response, we took a top-down

approach and implemented KPS throughout the organization to make it easier to confirm operational conformity. Adoption of KPS began at the motorcycle division, moved on to the aerospace systems division and is now well established. KPS standardizes operational procedures and mandates that each procedure is observed and the outcomes of each process recorded. This ensures that any abnormality is swiftly addressed and nonconforming process corrected. Having fully embraced KPS, we are ceaselessly endeavoring to improve quality via a cycle of (1) detecting abnormalities; (2) pausing to determine the cause; and (3) implementing improvements.

The insufficiency of information sharing with regard to changes in subcontractors is also being addressed through the reinforcement of risk management. Any change carries the element of risk, so we have made it a rule for upstream sections to quickly inform downstream sections of every alteration. Manufacturing records are also being examined to identify issues and incorporate takeaways into future projects.

Moreover, we learned a major lesson about the consequences of poor cross-departmental communications. In addition to enhancing vertical upstream-downstream two-way business unit communication, we are facilitating horizontal coordination between departments. A broader range of employees is now being encouraged to engage in discussion that transcends organizational boundaries.

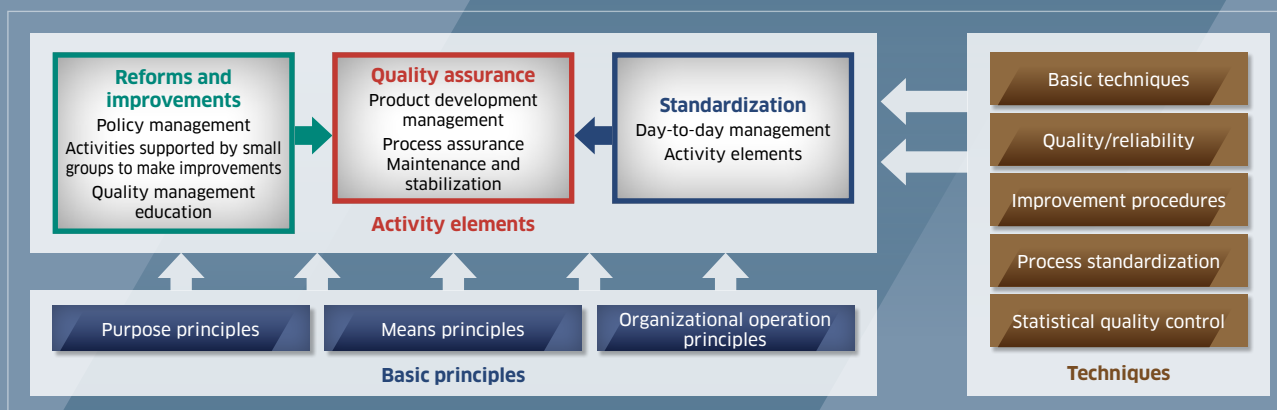
Furthermore, we overhauled our employee education systems. With a shared sense of crisis, all business units are engaged in robust staff education on operational process and quality management.

Thanks to these measures, over the past year I have seen positive changes at the Rolling Stock Company. The prevailing culture is now even more conducive to information sharing and open discussion. Everyone has taken the incident seriously and is strongly determined to regain the public's trust. This determination continues to drive us toward further improvement.

Promoting TQM to Establish an Overarching Quality Management Structure

In addition to the initiatives discussed above, we sought to

TQM Framework



upgrade Total Quality Management (TQM), our system of quality management and in-house quality standard evaluation and enhancement.

We believe TQM represents our commitment to ceaseless quality improvement. Improving product quality requires the involvement of top management as well as every employee in every relevant department, so in fiscal 2018 we carried out across-the-board quality inspections embracing the TQM perspective, beginning with the Rolling Stock Company and going on to all other business segments.

In fiscal 2018 we established the TQM Promotion Department and focused on three areas: policy management, day-to-day management and quality management education.

Policy management entails rolling out policies determined by top management at each organizational layer and their full adoption by frontline workers. It is important to ensure that takeaways from issues identified in the course of operations are shared vertically with upstream sections and horizontally with other departments for policy optimization.

In day-to-day management, we prioritize the standardization of operations and detection of abnormalities, to this end engaging in KPS activities to break down the time frame allotted for and compile records about each operational process. We are able to identify potential issues and opportunities for improvement, for example, taking four minutes to execute a three-minute process. The detection of abnormalities requires monitoring and quick response systems. From a broader perspective, we aim to ensure that managers are on the lookout for abnormalities that may have become normalized in routine operations.

With regard to “quality management education,” we have positioned the MTBP 2019 as a starting point and are reviewing the educational curriculum in place at the corporate level under the initiative of the TQM Promotion Department. Similar efforts are under way at each business segment. We are thus redeveloping our platforms for employee education and sharing information as necessary.

The Companywide Quality Meeting facilitates the sharing of best practices as some business segments have already determined TQM-based quality policies and created

relevant guidelines. The TQM Promotion Department helps each business segment realize its ideals by working with relevant segment staff to assess the segment’s current status, spot any ambiguities or issues, and take action as appropriate.

Driving current initiatives is our sense of crisis since the N700 Shinkansen railcar incident. We recognize that the incident may have stemmed in part from pitfalls found in manufacturing operations generally, not just at the Rolling Stock Company. All Group employees must therefore learn to spot such pitfalls and devise ways to prevent incidents. The foundation of these efforts is TQM, which is highly compatible with KPS. I am determined to foster a quality-oriented corporate culture by leveraging the activities of both.

Organizational Strength through Active Discussion

When the across-the-board TQM initiative launch was announced, some argued against it. I welcomed these questions, as I believe that active discussion is key to fostering an open organizational culture.

While TQM helps us put customers first, it also enhances employees’ sense of fulfillment. Therefore, everyone at Kawasaki is committed to ceaselessly improving quality and standardizing operations while determining and countering the root causes of abnormalities, thereby shoring up its foundations and contributing to a strong and resilient organization in line with our corporate slogan, “Changing Forward.”

Looking ahead, through the Companywide Quality Meeting we will clarify where improvement is called for and implement countermeasures based on the variety of ideas put forward.

Deep reflection on the aforementioned incident and our work since has made us more aware of the need to thoroughly embrace TQM. Having begun in fiscal 2019, we will strive toward a corporate culture in which TQM is firmly embraced by setting short-, medium- and long-term targets.