

# The Development and Changes of Quality Control in Japan

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## 1. Introduction

### 1.1 "Investigation and research era of quality control" (1946-49)

In 1945 after the Second World War, we were nearly on the verge of starvation: over 80% of our industrial facilities had been destroyed, and industrial production dropped to a little over 10% of the prewar standard. It may tell that, Japan was staying without natural resources, nothing but "industrious people and its brains"<sup>1)</sup>.

Japanese Standards Association (henceforth JSA) was established under instruction of Industrial Standardization Law in 1945 and Union of Japanese Scientists and Engineers (henceforth JUSE) was organized in 1946 and have become the mother's body of the quality control promotion of our country since then. While Chairman of JUSE, Ichiro Ishikawa (the first chairman of Keidanren: the Federation of Economic Organizations) planned the overseas technical investigation team composed by the members of learning and experience for revival of Japan industrial business in 1948 with approved the grant of investigation research cost of Economic Stabilization Board, and as a result of investigation it was proposed to introduce "Quality Control (henceforth QC)" into Japan. JUSE carried out a QC seminar (Quality Control BASIC course) in 1949. QCRG (QC Research Group) organized by the members of a lecturer of this seminar had exerted them for development of quality control in Japan later.

In "the statement of the first publication" of the first-issue of the "Quality Control" (present "Quality Management") in March 1950, Ichiro Ishikawa proposed as "For reconstruction of a peace country, a cultural country, and a democratic country, the product of our country must enable it to be positive competitiveness in the world market dignifiedly heading toward 'The Figure which should exist' for the future of our country economy and industry (sentence abbreviated)"<sup>2)</sup>, as the vision of QC of Japan.

### 2. "SQC Ers" (1950-54) and "Era of systematic management reinforcement of QC" (1955-59)

Dr. W.E. Deming was invited and the eight days course of QC was held in 1950. The Deming Prize founded a prize to commemorated Dr. W.E. Deming's contribution and friendship in a lasting way and to promote the continued development of Quality Control in

Japan in 1951, and it became the Driving Force of QC Development of subsequent Japan. Spread and application of statistical quality control (SQC) were prosperous in this time, and it was called SQC Era. Also, the management and improvement by control chart, process control table, or process analysis were advanced by the "Deming Cycle", and it was also called as "Process-Control Priority-Focus Era".

Dr. J.M. Juran was invited in 1954 and his seminar was opened, under Dr. Juran's concept of "QC is a part of business management", and it went into subsequent "the Era of Systematic Management by reinforcement of QC", and progressed "Establishment of the Concept and the Technologies of Management". A Deming Cycle was generalized as a PDCA (Plan-Do-Check-Act) Cycle, and systematization and institutionalization of QC, and the QC Activity System were advocated.

### **3. "Total quality control (henceforth TQC) era" (1960-69)**

By the 1960, "Quality Control magazine" proposed the special issue for "QC Implementation with All Member" by one year's project and the TQC of Dr. A.V. Feigenbaum was also taken into and spreaded, and which were later developed with a next Japanese QC (Japanese TQC). That is, triggered from Dr. Juran's "General management" lecture, the concept of "Management Item" was introduced and further developed into the "Management Item Table by position and rank", "Flag System", and "Policy Management (Management by Policy)".

Further, expanding into substantial strengthening on "Initial Production-Flow Line Quality Control" in new product development and on sale stage and "Vender-Vendee Relation's QC 10 principles", and eventually "Quality Assurance System" were established, and these views were further developed into the improvement of management efficiency, i.e., "Cross-Functional Management" by establishment of management system of quality (Q: Quality), the cost/ price and profits (C: Cost/Profit), and the time for delivery and the quantity of production (D: Delivery/Volume). Then "Policy Management" and "Cross-Functional Management" were established as the fundamentals of business management system. As horizontal management against ordinary vertical management in organization.

On the other hand, QC Circle was born in 1962, the base of "management of humanity respect" was built, and "seven QC tools" and the "QC story for problem solving" were developed as the tools of the activities.

The 1st Quality Control Symposium (henceforth QCS) was held in 1965, and its subject had taken as "Introduction, Promotion and Rooting of QC". The QCS had the role of discussion and discovering right approaches on QC under the collaboration of industrial and academic worlds. "Six Items of the Specific Features of TQC in Japan" was deliberated upon them and announced at the International Conference on Quality Control in 1969 (ICQC'69 TOKYO).

### **4. "Era of establishment of TQC" (1970-79)**

The Japanese Society for Quality Control (JSQC) was established and the Japanese Quality Control Medal was founded in 1970.

In 70/71 years, "QC Circle Koryo (General Principles of QC Circle)", and "How To Operate QC Circle Activities" were published. QC Circle Activities were further had organized nine branches offices in the whole country. Moreover, it began to spread through out the world, and China and Korean version in 76 year, and English version of QC Circle Koryo (word of henceforth each country) were published in the 80-year. The International Convention on QC Circle was held in 1978 (ICQCC1978-Tokyo).

The Deming Prize awarded company came out of the construction industry for the first time in 1979.

The Quality Assurance was compiled into one book as a "Quality Assurance Guide Book", and the concept of quality was also expanded to deal with reliability, PLP (product-liability prevention), environmental management, QC in office work and sales, and conservation of resources and energy problem. Moreover, advanced technologies development, such as "New Seven Management Tools", "QFD (Quality Function Deployment)", and multi-variable analysis using the computer was handled in QC.

So called the "Quality Revolution" to which Dr. Juran was mentioned 3) was attained, and made-in-Japan product was begun to export to a world market, and Japanese TQC had been also come to be accepted abroad.

## **5. "Era of leap and development of TQC" (1980-89)**

Reverse export of TQC of Japan started. Diversification and an advancement of a customer demand had been progressed, "Attractive Quality" was advocated in 84, sensitivity quality is also dealt with. Policy Management and Daily Management had been being substantial and clarifying role of management, the management-strategy problem had also been taken, and Group-Wide QC also progressed. Moreover, TQC was also implemented from manufacturing industry to service industry, the QC of Software develops, and the "Social Quality" lecture by QC magazine had been taken in 86.

Then, the internationalization of the Deming Application Prize was determined in 1984, and Florida Electric-Power and Light Incorporated Company, U.S.A became the first recipient company as an overseas company in 1989. ICQC'87 TOKYO was held in 1987 and "Ten Items of the Specific Features of TQC of Japan" was announced.

The technology transfer of quality prize started in the same year, and the Malcolm Baldrige National Quality Award in U.S.A. was founded by referring to Deming Prize in 1987, and also continued to the European Quality Award founded in 1991.

## **6. "Era of internationalization of TQC and TQM reconstruction" (1990-99)**

While the introduction of the ISO 9000 Quality System / 14000 Environmental Management System to company in our country and the integration with TQM could be considered, it was announced "Declaration TQM" by QCS 1997, and "the Comprehensive Quality Management in the 21st Century" was advocated, and "Stakeholder Relationship Management" with stockholder, customer, employee, society, and environment, etc. came to be considered. Moreover, the systematization of TQM is also proposed and the total quality of a wide sense was defined. On the other side, while "Strategic Policy Management" was

advocated, "Global Quality Management (GLQM)" came to be taken into account in connection with the internationalization of TQM, and international competitiveness and TQM (Japan-U.S.A. comparison) were also studied.

As for Japanese economy, stagnation advanced with collapse of bubble. Eventually, the consensus for Quality Management had been slipped of minds, and caused serious quality problems and ethical business problems, which were further apprehensions of deterioration of business management quality, product/service quality, and social quality which were structured for social industrial base in Japan, and quite afraid of losing Japanese industries competitiveness in the international market. In December 1999, "Hakone Declaration" was adopted as "the Design of Establishment of the Japan Organization for Quality Innovation" at QCS, Hakone.

"Deming Prize Application Guide" was also revised in the same year.

## **7. "Era of TQM innovation" (2000- )**

"The TQM Encouragement Prize Guide" as preceding step of the continuous promotion to Deming Prize was founded in 2000. Moreover, based on the "Hakone declaration" in 1999, "the Japan Organization for Quality Innovation (JOQI)" was founded on May 23 2001 by the cooperation with JSQC and participation of five quality related organizations, and started for the activity to the reconstruction of a Japanese Management model.

And while learning to the way of revival of the U.S.A., it is Japanese Evolution of TQM started.

The basic concept and the examination standard (mark system) of Deming Prize Application Guide were also revised in 2002.

A "Quality Control" magazine also renewed its name under "Quality Management" magazine, and began to study for the integration of new management with TQM, such as Top's Viewpoint and Corporate Governance, Value Management, Balanced Score Card and Customer Value Management as a new current of quality business management, began to be studied.

In November 2002 "the Asia Quality Network" was formed as QC Research / Promotion Organization of ten nations of Asia, to promote "activity which raises the quality as a factory in the world" was started.

Moreover, ICQCC2003-Tokyo was held in October 17-20 2003 and 1400 attendants participated from 22 countries contained Asia 13 countries and ICQCC(International Conference for QC Circle) 2011 Yokohama on September 11-14, 2011 had been attended 14 participating nations, 1108 participants and 177 presentations.

JOQI reported its activities on May 28 2004 and finished the Objective and Role of Establishment of New Quality Management (System) Model in 21<sup>st</sup> Century, the contents of report are as follows;

1. New Commodity Development
2. Business Process Innovation
3. Value Creation

4. Self-assessment of management system
5. Development Program of Management Director of Technology
6. Development Program of Quality Professional Specialist
7. Human Resources Development at Workshop, Evolutional-QC Circle (e-QCC)
8. Structuring of Healthcare Management System based of ISO 9000

ICQ'05-Tokyo (International Conference on Quality'05-Tokyo-) had been held on September 13-16 2005, and attended 51 participating nation, 1066 participants, and 165 presentations.

## 8. "Toward new age"

In order to recovering from dishonor of the Made-in-Japan product of "poor and cheap", we have walked along the Journey of the QC of our country toward first Keidanren chairman Ichiro Ishikawa's vision realization. And it has come to be exportable the product of "good and reasonable price" to the world, and to be called an economic big country like today.

In "Upcoming Century of Quality, 21 Century" which Dr. Juran is said 3), there should announce new vision, and, probably, it should carry out and cut after this. Fortunately it is stated that the 8th chairman of Keidanren, Shyoichiro Toyoda's lecture dissemination as "To be country, Japan which is a Country be trusted and respected by the World", for a future of Japan 4). We wish to move forward with this as the 21st century vision of "Quality Establishment-of-a-Country Japan" in 2003, 5).

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The purpose of this book is to present new concepts, state-of-the-art techniques and advances in quality related research. Novel ideas and current developments in the field of quality assurance and related topics are presented in different chapters, which are organized according to application areas. Initial chapters present basic ideas and historical perspectives on quality, while subsequent chapters present quality assurance applications in education, healthcare, medicine, software development, service industry, and other technical areas. This book is a valuable contribution to the literature in the field of quality assurance and quality management. The primary target audience for the book includes students, researchers, quality engineers, production and process managers, and professionals who are interested in quality assurance and related areas.

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