For Members of the Quality Engineering Research groups

Robust Quality Engineering Magazine

~This is the place where members can freely exchange their ideas and gain knowledge~

Winter 2023 Issue

< Participating Research Groups>

Hokkaido Taguchi Method Study Group, Nagano Quality Engineering Research Group, Chubu Quality Engineering Research Group, Shiga Quality Engineering Research Group,
Kansai Quality Engineering Research Group, Hiroshima Quality Engineering Research Group

*Hereafter “Quality Engineering Research Group” is referred to as” QERG.”

*The original copy of this magazine is in Japanese.

【How to use】
1. Click on the title to display the article.
2. Click "Back to Contents" on the right side of each page to go back to Page 2 CONTENTS.

CONTENTS

Back to CONTENTS

Preface for Robust Quality Engineering Magazine Winter Issue.

Nobuhide Takeshige, Chairman of Hiroshima QERG (Mazda Motor Corporation)

Academia is a social activity and exists to contribute to society. To fulfill this role, it is necessary to "advance academics so that they can contribute to society" and "make academics widely known and utilized by society.

First of all, in order advance academic, it must be able to do things that it has not been able to do in the past, improve on existing problems, etc. Has Robust Quality Engineering been able to do these things? Unfortunately, the pace of advancement has been extremely slow since 2008, and I feel that we have not done enough.

According to David Salsburg, until 1900, statisticians were viewed with a white eye by society because they spent most of their time playing with mathematics and failed to make any significant social contributions. It was Fisher who made turning trend in this point. At the Rothamsted Agricultural Experiment Station , he used statistics to advance research on increasing agricultural productivity. In the process, he developed a wonderful method called the Design of Experiments.

Academia is a wide world, and there is always the concern that if we pursue it alone, we will become statisticians up to 1900. If we advance our academia by constantly applying them to problems and issues in society and business, we can advance our academia efficiently like Fisher, and at the same time, we can contribute to society. I believe this is the reason why Dr. Taguchi persisted in "discussing actual cases," and similarly, statisticians after Fisher, such as Dr. Mahalanobis, Dr. Kitagawa and Dr. Masuyama also persisted in this research style.

Next, in order for readers to make use of the study, it is necessary for them to understand "what kind of happy things (needs) will happen with what kind of methods (seeds). To do this happen, I believe it is necessary to provide information on seeds and needs so that those who are not familiar with quality engineering can understand the quality engineering that has been established so far.

When I heard about the launch of this journal, my first thought was that I wanted it to be useful for the evolution of quality engineering. To this end, it is essential to have needs, such as making possible what could not be done in the past or improving conventional problems, and the seeds that make these needs possible. It is perfectly acceptable to start from the needs or the seeds, but if you start from the seeds, you should always be aware of the needs and wonder what this could be used for, so that you do not become a statistician up to 1900.

In addition, academic conferences are a place to present the results of research, and although presentations are possible even in the mid-stage of research, there are some aspects that are somewhat difficult to present.
If a flow of discussions could be held in this journal before or during research, such as "I have a need for this kind of product, but how can I go about it? If such a flow can be created, the evolution of quality engineering will be spurred on.

Furthermore, it would be wonderful if we could disseminate information to the general public to make them aware of quality engineering.
We hope that this journal will contribute to the "evolution of quality engineering" and "utilization of quality engineering.

That’s about it.

Back to CONTENTS

Expectations and Suggestions for Robust Quality Engineering Magazine

- Comments on the First Issue

Shoichi Teshima, Chairman of Hokkaido TMRG (AngleTry Associates)

I would like to describe my impressions and expectations after reading the first issue of Robust Quality Engineering Magazine. First, I think the purpose of the Information Magazine overlaps considerably with that of the Journal of the Society for Quality Engineering, but I would like to mention some inherent advantages:

(1) High speed of information dissemination
(2) Since it does not pass through the filter of peer reviewers, the sender's views are conveyed straightforwardly.
(3) It is open to non-members of RQES.

I think this is a good thing. (Of course, there are drawbacks, but I think that these drawbacks are to be expected from the moderation of the sender and the secretariat.:

Another important role of Robust Quality Engineering Magazine is to provide a clear guidance about the article by Taro Tetsumi in the first issue of the Magazine, "Is Robust Quality Engineering no longer useful? No, it is not".

What made me addicted to Robust Quality Engineering was the fact that errors are inevitable but can be discounted because they can be converted into monetary values, and the ease of use without the analysis of variance that plagued the design of experiments.

Furthermore, I remember being impressed by the philosophical depth of concepts such as generic function and shape retention. I think it would be good to have a chewed up article on these points to introduce Robust Quality Engineering to a generation that does not know Dr. Taguchi's face.

On other points, I have written an article on the differences between MT and deep learning. Similarly, it would be good to have an article on the differences between the response surface method and the robust parameter design.

Finally, as for my opinion on the Magazine's style, I think the number of words per line could be a little less. It would increase the number of pages, but since it is not a paper publication, I think there is no need to economize on that.

These are just a few comments from me. I hope that this Magazine will be further enhanced, become a library, and be used by Rapidus in Hokkaido.

That is all.

Back to CONTENTS

From Robust Quality Engineering as a Method to Robust Quality Engineering as a Mechanism

Tetsuo Hosokawa, Kansai QERG (QE Compass)

There was once a time when Robust Quality Engineering was booming. When any method or technique booms, there is a tendency to prioritize its use before understanding its purpose and effectiveness. Now that the Robust Quality Engineering boom has passed, we can understand its purpose with a sense of conviction and calmly judge its effectiveness.

So what is the purpose of Robust Quality Engineering? There are many different answers. Robust Quality Engineering has been used for a variety of purposes: evaluating quality, improving quality, optimizing systems, reducing losses, and so on. The effectiveness of Robust Quality Engineering for these purposes will remain unchanged. However, the needs of companies are changing with the times. We want to continuously provide products that exceed our customers' expectations. In order to achieve this, we want to establish our own proprietary technologies. These are the needs of today's manufacturing companies, and breaking away from side-by-side competition is a prerequisite for business growth.

It is precisely in these times that the effectiveness of the original Robust Quality Engineering is increasing. It is Robust Quality Engineering as a way of thinking and a mechanism for creating technology. It is important to define what Robust Quality Engineering is as a mechanism for creating technology, and to correctly recognize how it can be effective. I believe that advancing from the conventional Robust Quality Engineering as a method to Robust Quality Engineering as a mechanism will expand the possibilities of Robust Quality Engineering and lead to greater recognition of Robust Quality Engineering in society. I hope that each Research Group will promote discussions on Robust Quality Engineering as a mechanism as well as method. In addition, I have summarized my own experience as an engineer in reaching the understanding that Robust Quality Engineering is a mechanism. I am available to visit you and talk about the summarizes. For details, please refer to "Call for companies wishing to speak" on p. 14.

That is all.

Back to CONTENTS

The truth of Robust Parameter Design (Prologue)

Katsuyuki Ohta, Kansai QERG

Robust Parameter Design (hereafter RPD) is one of the many Robust Quality Engineering methods proposed by Genichi Taguchi. RPD differs significantly from conventional methods in that it aims for "stability against unknown noise. The following is a review of how this is achieved within the RPD procedure.
When the results of the verification of the procedures and calculations using the model were checked against Taguchi's statements, it became clear that there are many points where the true meaning of the model is misunderstood. Some of the verification results are shown below.

1. signal-to-noise ratio is not a measure of stability against unexpected noise.

For example, creating a system that is robust against changes in temperature, one of the expected noises, can be handled by feedback control according to the noise, but this is not a robust design. It does not improve against noise other than temperature, and moreover, it is unclear whether the system is robust against unknown noise.
The RPD recommends that the noise factor be evaluated using the signal-to-noise ratio. Many people understand that a large signal-to-noise ratio indicates stability against unknown noise, but this is a misunderstanding. The signal-to-noise ratio is a measure of stability against the assumed noise (in this case, temperature), not a measure of stability against unknown noise. The same is true for many types of noise and for different noise levels, and it is only a measure of stability only for the assumed noise conditions. Therefore, a high signal-to-noise ratio is an improvement similar to feedback control, which is a type of tuning.

2. interaction between control factors is required to improve stability.

It is often said that "interactions between control factors are bad, while interactions between control factors and noise factors are good. However, Noise Factor is a factor that changes the level of a control factor, and both are the same factor when considered in terms of the change in the level of the control factor. If there is an interaction between the control factor and Noise Factor, then naturally there is also an interaction between the control factors. In other words, "interaction between control factors is

necessary to improve stability."

3. the essence of RPD is not the signal-to-noise ratio, but the use of orthogonal array.

Robust Assessment without Orthogonal Array is Not Reliable.

Note: Part of this article has already been published by Hiroshi Shibano in the Journal of the Society for Quality Engineering, Japan.
(Journal of J Robust Quality Engineering Society, 2020 No.6, vol.28, p.85, 2021 No.3, vol.29, p.102)
Since understanding these new interpretations involves a wide range of issues such as orthogonal arrays, differences in factors, reviewing signal-to-noise ratios, understanding interactions, the meaning of confirmation experiments, how to handle response graph, and how they relate to each other, we will explain them in the form of a series of articles.
I hope that this will help readers to understand Dr. Taguchi's difficult and fragmentary discourse in an orderly and continuous manner, and to feel the true meaning, depth, and effectiveness of RPD, wondering if such a meaning actually exists.

I thank Mr. Hiroshi Shibano for encouraging me, a slow writer, to contribute and for giving me the opportunity to do so. (2023/12/4)

Back to CONTENTS

What is a Honmamon (real/genuine) engineer: No.2

4) Be a noise-tolerant engineer.
5) Be an engineer who delivers results without redoing.

Kazuhiko Hara, Advisor of Kansai QERG

Continuing from the previous issue, I would like to talk about my own idea of a "real engineer". This time, I mentioned the following two points.

4) Be a noise-tolerant engineer.

Creating systems in manufacturing is an artificial "technical world. However, engineers who are obsessed with scientific thinking design systems (functional design) using only standard conditions, and then repeatedly conduct a series of reliability tests and lifetime tests to destroy the problem by so-called "whack-a-mole. These engineers also mistakenly believe that the "defect rate," which is a statistical variability, is the market variability, so they use n identical prototypes and conduct many tests to determine whether the product passes or fails the standard. In reality, however, the quality level of good products that pass the standard is related to the market claim. In other words, if the market claim is 100%, and the safety factor is 4, "manufacturing quality" is only 6%, and 94% is a matter of "design quality. Manufacturing quality is expressed in terms of n variations, while design quality is expressed in terms of market variations such as environmental conditions and deterioration, which are the cause of claims.

In addition, we use MTBF (inverse of failure rate) and other measures to evaluate results to assess reliability, but it is too late to examine the failure rate, defective rate, and other measures to evaluate results. Conventionally, we consider life and degradation as one of the characteristics, but it is important to consider this as one of the noise as well as the operating temperature, and to perform Robust Assessment of function's robustness. It is the engineer's role to consider not only the passive noise of the natural environment and degradation, but also the active countermeasures against artificial noise such as false coins and viruses.

5) Be an engineer who delivers results without redoing.

As an agrarian people, most of the Japanese people consider diligence and hard work to be virtues, and even if they do not produce results, they are valued for their daily efforts. Many of the stories that appear on NHK's Project X (a Japanese TV program) are tales of great achievements, but behind them are stories of long hours of sweat and tears. Such efforts are completely meaningless if we are to beat our competitors in the global society of the future. Page 538 of the lower volume of "Design of Experiments" (written by Genichi Taguchi) published around 1950 says that when a person works hard

and long hours but achieves zero results, his or her workload is considered to be zero. In order to work efficiently, it is important to clarify the process for achieving the goal at the planning stage and to minimize unnecessary work. Conventional design is the nigirizushi (hand-formed sushi) method for one product, while Robust Quality Engineering is the Chinese cuisine method for simultaneous development of a variety of products. It is important to imagine future product trends and precede the technological development of element of technology and manufacturing technology common to each product variety, so that the editorial design of a variety of products requested by the customer can be performed efficiently.

That is all.

Back to CONTENTS

An Old Tale from Quality Engineering Research Group: No.2

What should be done about measurement characteristics and methods - measuring good taste

Hiroshi Shibano, Advisor of Kansai QERG (TM JISSEN JUKU)

In the previous issue, we introduced the teaching and generic function of "Seeing the Tree and Not the Forest" and a case study of guidance on pig farming in Taiwan, which was presented by Dr. Genichi Taguchi at the Chubu Robust Quality Engineering Research Group. At that Research Group, there was another interesting discussion, which I would like to introduce. That is, how should we measure and evaluate the taste and flavor of pork? Defining the generic function of pig farming as the fast and large growth of pigs and optimizing it will increase the amount of pork shipped, but if the meat is not tasty, it will not sell. In other words, this generic function alone is not sufficient or secure.

The case presented was a case study of a company that manufactures Miso (fermented bean paste. It is used for miso soup, etc.) and Soy sauce in Aichi Prefecture that worked to develop a new product with the aim of increasing demand for miso. The company set the following two goals for the new product

(1) To be accepted by a wide range of people, from the young to the elderly.
(2) To be compatible with a variety of dishes and ingredients.

Until now, at that company, the task of deciding the direction of new products and judging whether prototypes were good or bad had been left to in-house experts. The judgment of an expert who knows the company's products inside and out is important for preserving traditional flavors and aromas. However, to uncover new markets and demands, it is necessary to accurately understand consumers' opinions and reactions to products. Therefore, we conducted a market survey in the following manner.

1) Prepare miso made under various conditions.
2) Prepare dishes using the miso.
3) The dishes are offered to kindergartens, schools, companies, and facilities for the elderly. At this time, the weight of the dishes served is measured.
4) Collect leftover food at each facility.
5) The weight of the leftovers is measured.

In other words, the less leftovers, the more accepted the product was by consumers, and the weight of the product was used as a barometer of its deliciousness. Using this number, we can quantitatively analyze the quality of a new product and determine differences by type of dish or ingredient, or even differences in tastes by age group. Of course, we would need the cooperation of companies and schools to collect leftover food, but many of them would be willing to cooperate if the food is offered free of charge. This is a very clever idea.

Unfortunately, this is all that has been disclosed about this story, and no mention was made of what products were developed as a result of this experiment and how they sold in the marketplace. That is the limitation of corporate case studies. When defining generic functions, it is also important to consider

the measurement characteristics and how they are measured. This was a valuable talk that taught us that even sensory and qualitative characteristics such as taste can be quantified with ingenuity.

But now, we could consider using the MT system for sensory evaluations such as taste. How would you all address this issue? Please consider it in the Research Group.

That's all.

Back to CONTENTS

Nagano QERG Activity Record

Chigono Takeo, Secretariat of Nagano QERG (Nagano Prefectural General Industrial Technology Center)

Date: August 10th 2023
Place: Nagano Prefectural General Industrial Technology Center, Precision, Electronics and Aerospace Technology Division (Okaya, Nagano) and online (Webex)
Number of participants: 13
We discussed about following three issues:

【Case Studies】

1. Multiplicity Quality Loss Functions

(Advisor: Yukihiro Iwashita)

We examined a multi-property quality loss function. As in the previous presentation, optimization of conditions can be achieved in robust parameter design by (1) estimation equation using the T method and (2) optimization by loss function, but in order to optimize multiple characteristics such as Engineering Measure, the method using loss functions for multiple characteristics is effective.

2. Quality Control in the Medical Product Manufacturing Industry

(Presenter's name will not be disclosed due to company reasons)

A quality assurance representative from a manufacturer of medical-related products reported on the features of related products, introduction of his company's products, manufacturing methods, and quality control methods.

While medical-related products differ from industrial products in some aspects of product management from design to post-delivery, the members gave advice and lectures on how Robust Quality Engineering can be utilized in this area.

3. What if the gain in signal-to-noise ratio is reproduced?

(Advisor: Satoru Tokida)

He reported that in robust parameter design, the reproducibility of gain in signal-to-noise ratio is checked in confirmation experiments, but the judgment of whether there producibility of the gain is good or bad is ambiguous. If possible, we would like to use the gain not only to improve quality variability but also to improve productivity. We would then like to use the quality loss function to predict the effect of the improvement in production costs. If this leads to an annual cost improvement, it will increase the company's profit. In other words, we reported that the pursuit of gain reproducibility is the pursuit of improvement cost reproducibility.

Date: September 8th 2023
Place: Nagano Prefectural General Industrial Technology Center, Precision, Electronics and Aerospace Technology Division (Okaya, Nagano) and online (Webex)
Number of participants: 12
We discussed about following three issues:

【Case Studies】

1. Optimum combination of fan efficiency

(Nozomi Tsuji, Shinano Kenshi Co., Ltd.)

In this experiment, the reason that the reproducibility of the gains was not good was that confirmation experiments were conducted with small gains and reproducibility was not checked with precision. This was a problem before considering the possibility of interaction between control factors. Since the purpose was not to check reproducibility, the best condition from L18 was selected as the final optimum combination. About half of the conditions were reversed between N1 and N2, but since the difference between N1 and N2 was small except for one condition, I was advised to consider it as a condition that is resistant to noise. I was also advised to consider the dynamic response in terms of energy, although I evaluated the nominal-the-best response this time.

2. Issues and Considerations for Inspection.

(Advisor: Yukihiro Iwashita)

The inspection design considering Bayesian probability was examined. As a result, it was found that the change in the critical defective rate is small even when Bayesian probability is taken into account. When the potential defective rate is small, the loss can be reduced by conducting a simple inspection, which is less accurate but less expensive than the normal inspection, and then re-inspecting the defective products by the normal inspection. This result is effective for biological tests with poor testing accuracy, and it was found that in many cases, such as testing for new coronary infections, it is more efficient to perform PCR testing of those determined to be infected by the kit-based test.

【Common Theme】

3. How to Evaluate Function in Screw Tightening.

Common Themes" that Research Group members have worked on together in the past. The members of the study group proposed to work on a new theme from this time on. The theme was "Methods of Evaluating Functions of Screw Fasteners," and the study was started on bolts and nuts commonly used in general machinery. First, the members were asked to identify problems related to screws in their companies, and then the methods and problems of screw fastening were introduced based on JIS. In the next session, we would like to discuss the functions of screw tightening.

Date: October 13th 2023
Place: Nagano Prefectural General Industrial Technology Center, Precision, Electronics and Aerospace Technology Division (Okaya, Nagano) and online (Webex)
Number of participants: 9
We discussed about following three issues:

【Case Studies】

1. Quality Control and Definition of Abnormality in Automated Production

(Tomoko Hadama, Taiyo Industry Co., LTD)

The members gave me some guidance on how to define abnormality judgment for a system to be incorporated into an automatic production line. I would like to reexamine the issue within the company, as they suggested using Robust Quality Engineering to make the judgment.

2. Application of Remote Sensing in Rice Paddies Using UAVs

(Toru Nakanishi, NANSHIN AERIAL SERVICE)

A drone equipped with a multispectral camera was used to check the NDVI distribution of the field during the summer, which revealed areas of insufficient growth. Therefore, fertilizer was applied by drone only to the underdeveloped areas, and sufficient recovery was achieved.

Furthermore, the area with high NDVI in mid-July coincided with the area that collapsed in early September, indicating that NDVI can be used to predict collapses.

From next year onward, we would like to apply Robust Quality Engineering to the agricultural field by utilizing the T method to predict NDVI and by using robust parameter design to make NDVI uniform.

3. Introduction of Shinano Kenshi's activities to promote robust parameter design

(Nozomi Tsuji, Shinano Kenshi Co., Ltd.)

He/She introduced his/her company's approach to robust parameter design and how it is applied. If you insist too much on Robust Quality Engineering, some people may not want to use it, so it may be a good idea to take an approach to the problem in question. For example, for those who say that the L18 orthogonal array takes too much time, it is effective to recommend the L8 orthogonal array, and for those who do things on their own, even if it is L18, they can proceed with the test one condition at a time.

4. A story of Robust Quality Engineering that proceeded to orthogonal array experiments without preliminary experiments, resulting in a useless optimization

(Setsuya Masuda, Masuda Engineering Consultant Office, Inc.)

I presented a case in which a robust parameter design with Noise Factor having a low impact on function resulted in almost no improvement. As a countermeasure, a preliminary experiment should be conducted before the orthogonal array experiment to determine the degree of influence of the noise.

Back to CONTENTS

～News from Robust Quality Engineering Research Groups～

◆From Kansai QERG◆

1. Robust Quality Engineering Symposium 2023 (Remote Teams + Venue) was held.

Theme: Exploring the Essence of Robust Quality Engineering - Loss Reduction through Integration with MBSE/MBD

Date and Time: Friday, October 6, 2023, 10:00-17:00 (Venue + Online)

Venue: Nikkan Kogyo Shimbun Nishi-Nihon Branch 10F Conference Room

＜Program＞

Keynote Speech: "Architecture and Management in System Design”

Kazuhiro Aoyama, Research Center for Artifact Engineering, Graduate School of Engineering, The University of Tokyo

Invited Presentation: “Optimum combination of heat treatment conditions for thrust bearings by Taguchi's design of experiments and search for new response”

Nobuyuki Hagiwara, NSK Ltd.

Case Study 1: “Grid Search robust assessment by Using Machine Learning Models to Find robust Optimal Solutions.”

Takamitsu Yamanaka ROHM Co., Ltd.

Case Study 2: “Increased robustness by using interactions between control factors.

Hiroshi Shibano TM JISSEN JUKU

Case Presentation 3: "Development of MEMS process technology by utilizing multiple creative techniques in collaboration”

Taiga Ezura RICOH COMPANY,LTD.

Case Presentation 4:“Reducing Social Losses in Mazda Vehicle Development - Part 2”

Nobuhide Takeshige Mazda Motor Corporation

<Number of participants> 136 (40 at the venue, 96 via online remote)

<Summary of the Symposium>

The symposium was again well attended this year, and we were able to achieve our goal of holding the symposium by having a lively exchange of opinions and discussions on Robust Quality Engineering. The keynote speech by Dr. Aoyama of the University of Tokyo, proposing an efficient way to proceed with

development work as a whole, was well received by the participants. On the other hand, some issues were pointed out, and we would like to refer to them for future symposiums.

2. Kansai Quality Engineering Research Group Membership Information

List of membership categories, annual fee, and membership benefits and subsidies

Membership Categories	Annual fee	Eligibility, benefits, **subsidies**, etc.
Regular Member	¥30,000	-Only the person himself -Subsidies for participation in various events, distribution of books, and other services are available.
Corporate Member	¥50,000	-Up to two persons can participate: the registered corporate member or the member's representative and one accompanying person. -Subsidies for participation in various events, distribution of books, and other services are available.
Senior Member	¥5,000	-Only by those who are 60 years of age or older -Subsidies for participation in various events, distribution of books, and other services are available.
Student Member	¥2,000	-Students enrolled in educational institutions such as universities (except trainees) who participate only by themselves -No subsidies for participation in events, distribution of books, or other membership services

■Services■

-Subsidies for Society events: Participation and accommodation expenses for the New Year's Party, Kansai Region Quality Engineering Symposium, and the Research Group Training Camp, etc.

-Subsidies for events held by the Research Group: Participation fees for events held by the Japan Society for Quality Engineering, Research Group-approved seminars and events.

-Past subsidies include: participation fees for the Quality Engineering Research Conference, Technical Strategy Research Conference, Corporate Social Activities, Quality Engineering Forum, and Introductory Seminar on Quality Engineering.

-Free distribution of books: Distribution of the Proceedings of the Research Group on Quality Engineering and newly published books related to quality engineering to Research Group members, etc.

■Payment Method & Term ■

Payment Method: Regular, Corporate and Senior Members can choose to pay their dues in a lump sum for the year (January-December) or in semi-annual installments (January-June and July-December).
or semi-annual installments (January to June and July to December).

■How to apply■

Please refer to the Research Group's website: https://kqerg.jimdofree.com for information on how to apply for membership. Please refer to the "How to Apply" page on the website of the association: 95.

◆From Nagano QE Research Group◆

1. Overview of Nagano QERG

Name	Nagano Quality Engineering Research Group
Establishment	May 29th 1996
Members	17 organizations (as of May 2023)
Location	1-3-1 Nagachi-Katamacho, Okaya, Nagano, 394-0084 Japan Nagano Prefectural General Industrial Technology Center, Precision, Electronics and Aerospace Division
Home Page	http://nqes.web5.jp/index.html
Contact	Secretariat: Nagano Prefectural General Industrial Technology Center TEL：0266-23-4000 E-mail：nqes21_tgqdmqbmf@nqes.web5.jp
History	1996: Established to promote Quality Engineering in Nagano Prefecture. 1998 Lecture by Dr. Genichi Taguchi 2004 The 1st Three Prefectures (Hokuriku, Saitama, Nagano) Joint Research Group was held in Nagano Prefecture. 2005: Invited Dr. Genichi Taguchi to give a lecture in commemoration of the 10th anniversary of the foundation. 2016 20th anniversary
Purpose	The purpose of the Society is to contribute to the development of the industry by promoting the advancement of knowledge and engineered quality of Quality Engineering, its dissemination and exchange of information, based on the initiative of its members. (From the Constitution)
Main Events	-General meeting in May -Regular meeting: Once a month on the second Friday -Joint Meeting (Hokuriku, Saitama, Yamanashi, Nagano) -Co-organize following seminars With Nagano Industrial and Commercial Encouragement Organization. Introduction to Quality Engineering 1 day Basic seminar on robust parameter design 2 days MT system seminar: 1 day On-line quality engineering seminar: 1 day
Outline of Activities	Regular meeting Introduction of recent activities of members (one person's comment) Presentation of one or two Quality Engineering case studies Joint research on Quality Engineering
Membership	-Trial Participation is available: We are always looking for new members. In order for non-members to learn more about the activities of the Research Group, we also invite non-members to participate in the Research Group on a trial basis. If you wish to join, please contact us at the following address 【Contact】 1-3-1 Nagachi-Katamacho, Okaya, Nagano, 394-0084 Japan Nagano Prefectural General Industrial Technology Center, Precision, Electronics and Aerospace Division TEL0266-23-4000　FAX0266-23-9081

Back to CONTENTS

◆Invitation for companies wishing to give a lecture◆

Why Robust Quality Engineering?

～ From Success in Optimization to Success in Technology Development and commercialization~

Based on the framework of the speaker's own experience, Robust Quality Engineering is effective today and will continue to be effective in the future. From failures to successes, the content of this seminar is unparalleled. The contents of the lecture will resonate with engineers, managers, and those unfamiliar with Robust Quality Engineering.

(1) Speaker: Mr. Tetsuo Hosokawa, Representative of QE COMPASS (formerly Ricoh Company, Ltd.)
(2) Lecture content: (1 hour and 30 minutes including Q&A)

1. Origin as an engineer
   - Startup of new business with new technology
   - Experienced shipment stoppage immediately after assignment
   - Market quality is determined at the technology development stage.
   - My state of mind at that time

2. Failures experienced by Japanese manufacturing companies in the past
   - The decline of the semiconductor business as seen in the field
   - Ideal and ideal direction of management
   - What happened to many companies that promoted Robust Quality Engineering
   - Robust Quality Engineering is a Means to an End
3. Thinking in terms of functions, then mechanisms
   - Commercialization is absolutely impossible with this approach.
   - The concept of noise factor gave me an intuition that "this is it.
   - I hit the limit of my own way of doing things.
   - I was completely blanked out by Dr. Yano's question.
   - The concept of function allows us to grasp the totality of the system. I could grasp the total system with the concept of functionality.
   - Can you market the system with that?
   - PDSA cycle of system design was established.
   - Overcame two crises at the start of mass production
   - Successful commercialization
   - The latest Robust Quality Engineering

4. Expectations for you
   - The concept of function is useful outside of the technical field.
   - Robust Quality Engineering is a Golden Opportunity for the Devil

Q&A

(3) Lecture fee: Please contact the following address if your company is interested in giving a lecture. We will be happy to provide you with a quotation.
(4) For applications and inquiries, please contact

Contact: Hiroto Funayama, ITEQ International, LTD.
TEL：052-917-0711　E-Mail：Hirotoitoh@iteq.co.jp

◆Notice from the Editor of this QE Magazine◆

If you are a Research Group that supports Quality Engineering Magazine and would like to make an announcement in the Quality Engineering Magazine, please contact the Quality Engineering Magazine Editor below.

Editor: Hiroshi Shibano from TM JISSEN JUKU: tm-shibano@tmjissen.com
Toshiharu Ehira from ITEQ International Ltd.: toshiharu.ehira@iteq.co.jp

◆Notice from Translator◆

This English version of magazine is a translation of the Japanese version. The translator is an amateur translator and is a volunteer. Please understand that the translation may not be perfect in some places. If you find something in the translation that is so strange that it cannot be overlooked, please contact the translator below for the sake of other readers.

Translator: Hiroto Funayama from ITEQ International Ltd.: hiroto.itoh@iteq.co.jp