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Insights of Top Management

Interview: Management that Respects Humanity: Footstep of the Growth of a Research and Development Service Corporation

Takashi Yamaguchi (Non-Destructive Inspection Company Limited. The President and Representative Director)

Takashi Yamaguchi
3rd of April, 1932: Born
June 1954: Graduated from Department of Industrial Chemistry, Kogakuin University
June 1957: Founded Non-Destructive Inspection Company Limited, and appointed to President and Representative Director.
January 1978: Received Medium and Small Business Research Institute (Director-General of Small and Medium Enterprise Agency) Award.
January 1989: Received Nikkan Kogyo Newspaper International Contributiotor Award.
Received Director-General of Science and Technology Agency Award (Radiation Safety Management in Person of Merit Prize-Giving)
April 1994: Became a Part-time Instructor at Kobe University School of Business Administration

This interview was conducted in 1997. So, what Mr. Yamaguchi talked in this interview and his background are original.
We desire that you search their website for the latest information.
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There are a number of high tech companies and venture businesses that draw big attention from the society. These are such companies that create big changes and convenience in our life, and even more that suggest new ways of life. On the other hand, there are companies that keep our daily life safe behind the scenes. One of the representative companies is Non-Destructive Inspection Company Limited that we invited in this Top Interview.

In last few years, the company name has appeared on TV commercials. However, until recently, this company was only known to a particular group of specialists for its high level technologies and excellent management, since the company's priority was to complete its work sincerely behind the scenes. We cannot know the value of safety much unless we have a big accident.

Even though every time big man-made disaster happens we always strongly feel how important safety is, we start losing awareness of the safety as time goes by.

That time of Non-Destructive Inspection Company Limited has come. It is the prior assignment in the current society to ensure the safety in not only the industrial infrastructure, but also the social infrastructure in the living environment, as we easily understand from our experiences such as the Great Hanshin-Awaji Earthquake, the Oil Spill in the Sea of Japan, sodium leak from a fast-breeder and so on.

This year is the 40th year for Non-Destructive Inspection Company, and it is going public soon. The company will draw big attention in the stock market. We asked President Yamaguchi of that company to talk about a wide range of topics such as the detailed history from the foundation, the content of non-destructive inspection service, his excellent management skills, the management that respects humanity, suggestions to venture businesses and so.

Editor: The company name, Non-Distractive Inspection Company, is a little strange. .Can you please tell us how you came up with the name and why you founded this business?

Until Finding Non-destructive Inspection Technology

Mr. Yamaguchi: The name, Non-Destructive Inspection Company, expresses what our work is. Our work is to implement inspection tasks using non-destructive inspection technology. Please let me explain non-destructive inspection technology later.

First of all, I like to talk about how I started the company. I graduated from university in 1954. The streets were filled with the unemployed because the shipbuilding industry wasn't doing well at the time. This was around the time when one famous company in Tokyo recruited two new storage workers there were more than 700 applicants who graduated from well-known universities lined up in font of the company. I also went here and there to get a job, but there were no companies that possibly would hire me.

Though Japan was in the middle of economic recovery from World War II, it had financially affected my family too. Because of the Great Tokyo Air Raids on the 10th of March, 1945, the kimono shop that my father ran in Fukagawa, Tokyo was burnt down and I lost my younger brother. And half of my father's body was burnt and exactly one year later, on the 10th of March, 1946, he passed away.

After all, my mother and I were left. I was a third year student of higher school under the old system of education. We had rented the land of the kimono shop and I didn't know anything about the management of the kimono shop, so it was impossible for me to run it again. So we went to my mother's hometown, Ina in Nagano prefecture and later we moved to my father's hometown, Kiryu in Gunma prefecture. Even though we both worked so hard, we didn't have any money for anything else for a long time but just to live. I finally graduated from Kiryu Industrial High School. Then I entered Kiryu College of Technology (currently the Department of Engineering, Gunma University) as a preferred student, but we couldn't keep paying the fee. When I was thinking to quit the university, an intensive teacher training course was founded to train science teachers for junior high schools due to a lack of science teachers. If I entered this course and worked as a teacher for at least two years, not only I could get a tuition waiver but also I would get paid. So I decided to enter this course.

After graduation, I had experienced being a teacher of science and math for two years under the new system of education. Monthly payment was about 5000 yen. But my

mother, who was born in Tokyo, really wanted to go back to Tokyo, and I also had some kind of feeling that I wanted to work in Tokyo. So I quit the teaching position and went to Tokyo. I had a great time with the students for two years. I really didn't know if I should have quit teaching or not, but I presume that I wanted to go back to Tokyo more. I didn't even know where to go to get a job in Tokyo. A teacher who looked after me back in Kiryu told me about this main professor of the Department of Industrial Chemistry, Kogakuin University. So I wrote to him saying, "Professor, please help me out because I really want to go to Tokyo". And he replied to me, "Come and work with me part-time. I can't pay you a lot though". The salary for part time was 1500 or 2000 yen, I think. Since the main professor recommended me taking class, I did and graduated from Kogakuin University.

There was a company called Kyokuei Sangyo that came to the laboratory where I used to work as a part-time assistant and sold science tools such as flasks, beakers, test tubes and so on. They came to the laboratory quite often so I became acquainted with the president of the company very much. Since I couldn't find anywhere to work, I was asking him for device. I was asking him if there was a way I could live. And he told me that there was this guy, his name was Tomio Senda, at Tokyo Metropolitan Industrial Technic Institute (currently Tokyo Metropolitan Industrial Technology Center), and he was researching a technology called non-destructive inspection. "I've seen him many times and he is a really good guy. Why don't you meet him once? You might find him very interesting", he said. So I went to see Dr. Senda. That was the summer of 1955.

The Time for Non-Destructive Inspection Technology and Heavy and Chemical Industry Plant

Mr. Yamaguchi: I was originally a science guy but I didn't like physics so I chose to study chemistry. Yes, I chose to study industrial chemistry. While I was listening to Dr. Senda, even though I couldn't really understand in detail the non-destructive inspection technology, I immediately noticed that non-destructive inspection technology was based on pure physics. Dr. Senda talked enthusiastically about what non-destructive inspection technology was, why non-destructive inspection technology was necessary and so on for more than three hours to me whom he did not know at all. To explain the state of my mind at the time in a casual way, simply I fell in love with

him.

Editor: Can you tell us briefly what you heard from Dr. Senda?

Mr. Yamaguchi: "The industry of Japan will develop centered around heavy and chemical industry from now. And then many chemical plants and other plants will be built in the vicinity of residential areas of this tiny country. We used rivets to put steel plates together for buildings in Japan. But rivet application to thick steel plates in building plants will become obsolete from now. Heavy and chemical industry is a collection of highly developed chemical technologies, so those plans that create chemical materials must be highly developed. What plants will need is not normal steel but high-tensile strength steels that are strong in stretch and the steel connections will be all welded. We will be creating a large amount of chemical materials and storing in tanks or containers made by welded high-tensile strength steels. But Japanese companies that must concentrate on increasing productivity will not be able to consider the safety of the chemical plants, so there will be a series of big accidents. For example, since heavy and chemical industry are operated under the very severe conditions such as high pressure, high temperature/low temperature, vibration and so on, it will be disastrous, like big explosions and leaks, if there are some flaws that cannot be seen by human eyes in the connected parts of thin high-tensile strength steel welded together. Unlike America, the plants are built not far away from residential areas in Japan. Thus we can not use the America safety standard".

He told me about his own theory like that. He concluded his speech by saying, "Non-destructive inspection technology is a technology to protect people. I am academically pursuing the establishment of a technology system to detect flaws of buildings that cannot be seen by human eyes (Flaw detection technology) and at the same time the establishment of a system to evaluate the health of all the plants based on the results from the flaw detection. But even when I establish the technologies we need excellent engineers for inspection tasks. So I also need to think about how I can train professional inspection engineers".

Editor: What did you think about the story?

Mr. Yamaguchi: As I said previously, his explanation of non-destructive inspection technology didn't ring any bell. But it made me think, "This may be very interesting.

This would probably be a job". And I told him, "There is a strong possibility for a private company to provide inspection service". But he gave me a vacant look. He never thought a private company would do that. After a certain period of silence, he said, "That is an idea. But to do so, you need highly sophisticated measuring instruments and excellent inspection engineers. It could be very difficult". At that very day, I asked him to allow me to be one of his pupils. I couldn't spend the rest of my life as a part-time assistant.

From a Part-time Assistant to Entrusted Researcher

Mr. Yamaguchi: But Tokyo Metropolitan Industrial Technic Institute was a local government and they had an employment exam. But they were not hiring at that time. So I couldn't even start studying. So I started working there as an entrusted researcher. In that case I had to pay research fees. But since I quit the part-time research asistant position I didn't have any income at all. So I went to the president of Kyoei Sangyo and asked him, "Can you please let me work for you as a contract worker? I will go and visit laboratories selling science instruments. I don't care if my salary is 1000 or 2000 yen but I would like you to guarantee enough amounts so I can pay 500 yen for the research fees". And while I was working as a sales person, I worked for Dr. Senda as an entrusted researcher at Tokyo Metropolitan Industrial Technic Institute. This lifestyle lasted about 15 months. This is how I found out about non-destructive inspection technology.

Editor: The desperate situations and a connection with people led you to nondestructive inspection technology, I presume.

Start up a Company in Osaka

Mr. Yamaguchi: I think I was really lucky. Until 1956 when I went to Osaka, had studied theories and technologies of non-destructive inspection as an entrusted researcher and sold science instruments to the other laboratories at Tokyo Metropolitan Industrial Technic Institute.

Dr. Senda let me do what I had to do. Apparently there was a regulation to prohibit such an act like mine. But he told me, "Go ahead. Go and sell the stuff". He was very good to me.

Editor: When was the company founded?

Yamaguchi: It was on the 21st of June, 1957. I came to Osaka in November 1956. It was a rainy day.

Editor: Why did you decide to start up a company in Osaka while you left Kiryu to work in Tokyo?

Yamaguchi: It just happened. But it was very lucky. I was the only researcher from outside at Tokyo Metropolitan Industrial Technic Institute when I became a researcher in 1955. There were four or five employees of Tokyo Metropolitan Industrial Technic Institute as assistants.

I think it was the middle of March in 1956. All of the sudden, five or six entrusted researchers came to the Institute. As Dr. Senda expected they started building plants for heavy and chemical industry. Around that time, I think, Tokyo Gas ordered from Ishikawajima-Harima Heavy Industries Co., Ltd. a hundred thousand liter round tank made by the first Japanese 60kg/m high-tensile strength steel. Japanese companies needed to learn the technologies to weld high-tensile strength steels from the beginning, so many companies sent their employees to the Senda laboratory. The number of the entrusted researchers became seven including me.

Two of them were from companies in Kansai. One was from inspection division (currently quality control department) of Kawasaki Heavy Industries, Ltd.. And another one was a young person from Hitachi shipbuilding Corporation. Since I was working there a few months longer, I was asked to look after them. We went to this *yakitori* (Japanese grilled chicken) restaurant in Shinbashi many times and talked about various things. As always, I talked about starting up a non-destructive inspection technology company as a business.

The Soil of Kansai that Creates New Business

Mr. Yamaguchi: Then, they both said, "Mr. Yamaguchi, I think this can be a good business". They continued, "Starting up a new business in Tokyo is not really good. You should do it in Kansai". One of the reasons was because Kansai had a good soil for new businesses. Even now as well, but back then, it was said that new technologies were always created in Kansai and 80% of new businesses were founded in Kansai. Another reason was that Tokyo saw more values in achievement, so new technologies were not well-received but Kansai was more practical and had an attitude of "Good things are good". Thus, if the technologies were good, they would work with you without any achievements or data. That was what they told me.

As they said, the Kanto region was achievement-oriented. I was born in Tokyo; I knew that very well. And then they told me the Kansai region was not like that so I decided to go to Osaka right there. I had never been to Kansai before. That was probably a reckless but wise decision. If I had tried to start the company in Tokyo, this company wouldn't have even been started or delayed 10 years.

There is one more thing that helped me to decide to go to Kansai. There was a movement in 1957 that Osaka University would make a non-destruction inspection course in its welding course of the Department of Engineering. Until the course was completely ready, the university asked Dr. Senda to work as an assistant professor of the welding course or metallurgy course. But Dr. Senda hesitated. If the non-destructive inspection course was established completely and he was invited as a professor, he wouldn't have hesitated. Yet, he actually didn't know what to do.

When I told him that I was going to start up a business in Osaka, Dr. Senda positively agreed with me. And he said, "Hey Yama, find me an apartment when you get to Osaka". And I replied seriously, "Okay. I'll find a room for you in my apartment complex. Just come quickly". And I continued, "If you couldn't come, can you back me up with technologies?" And he encouraged me by saying, "This is my life time wish. I will support with all my life so go to Osaka with confidence and pride". With these words from him, I felt comfortable with betting my entire life on this business in Osaka.

Since I didn't have any money, I couldn't buy a ticket for an express train so it took me over a night to get to Osaka. This sounds very traditional but I only had 50,000 yen in

cash and an old-style paper umbrella.

Editor: By listening to your story, I can tell you had a strong entrepreneur spirit. It seems to me that you had a strong will to do an independent business. Is it because that your father did his own business?

Mr. Yamaguchi: No. I just couldn't get a job even though I really wanted to. I was in a panic and I just wanted to do something and there was only me who could do something. Since I was brought up seeing my father doing business, I thought that "Having one's own business is good" as a kid. Then I met the technology of non-destructive inspection. I just recklessly grabbed the opportunity. I think it was like that.

Editor: How many people did you have when you founded it?

Mr. Yamaguchi: Of course, only me. I happened to conduct non-destructive inspection on the round gas tank that I mentioned previously. I went to the place under the order of Dr. Senda and was in charge of the inspection for about two or three months. And I became acquainted with a couple of students working part time there and invited them to Osaka a few months later to work with me. When I registered and started the company on the 21st of June, 1957, we had 13 people including me.

Three Sacred Treasures of Non-Destructive Inspection

Editor: Can you tell us about inspection service using non-destructive technology?

Mr. Yamaguchi: There were three methods called three sacred treasures of non-destructive inspection; magnetic particle testing, liquid penetrant testing, radiographic testing. In the magnaflux inspection, we created a magnetic field around the part to be inspected and would find a crack by the movement of magnetic particles. In the liquid penetrating inspection, we put some liquid into an object and saw what would happen through development process with another liquid. By these inspection methods, we could tell what shape that crack was. I think you would understand how x-ray inspection works.

We designed the devices for those three methods at the Senda Laboratory, got a manufacturer to make test devices and used these three sacred treasures to conduct

non-destructive inspection on the round tank in Setagaya, Tokyo.

Both magnetic particle testing and liquid penetrant testing didn't require a large investment in equipment. I made the magnaflux inspection device by myself. The liquid penetrating inspection needed a development apparatus and some chemicals that only cost a few hundred yen.

However, the x-ray device was very big back then for the x-ray inspection so we couldn't carry it to the inspection site. There were some portable x-ray devices, but they cost more than one million yen. I only had 50,000 yen so of course I couldn't afford it. So when I had to conduct inspections in Osaka, I borrowed these old devices from Dr. Senda and sent them to Osaka.

Lease Contract as a Last-ditch measure

Mr. Yamaguchi: Because there were some devices Ishikawajima-Harima Heavy Industries Co., Ltd. ordered for inspection on the rounded tank, I sometimes leased them. The rounded tank in Setagaya was a pilot plant; there were no other plants built yet. Since the inspection was conducted periodically, they let me use the devices between the inspections. Back then there was no such word, a lease contract, but that's what I did. But I was suffering from budgeting so I went to pawnbroker's shop many times. Also I became a sales person of a company that sold x-ray devices and earned money. There were almost no companies that would ask my unknown company to inspect their plants even in the Kansai region. So while selling the x-ray devices, I explained how important non-destructive inspection was, and also I asked them to have a lease contract of the device they just purchased from me. That was as risky as a tightrope. It was the same measures as the one I used when I was selling beakers and test tubes. The devices that they purchased were only used about a third of the year. So I got a lease contract with them to use those devices the rest of the year. I could use the x-ray devices anytime and cheaply, and those companies were happy because they could pay off quickly.

A few years after I founded the company, I had so many jobs that I needed x-ray devices all through the year. I had enough money to purchase way more than the devices I had

rented or leased. But the more budget, the better the business. So I bought x-ray devices by installments on the security of their contracts of my customers. Apparently, it was the first time for this manufacturer to sell the x-ray devices by installments.

While doing so, since Dr. Senda was still in Tokyo, I asked for technical instructions by letters or telegrams. I think it was very beneficial for me to have worked at the Senda Laboratory that invented a portable x-ray device in order to expand my business. A long expected non-destructive test course was open at Osaka University in April 1965 and Dr. Senda was invited as a professor. Along with the opening of this course, non-destructive inspection technology was recognized by the society and our business was expanded smoothly.

Cooperation of the Industry and the Academic World that Supports the Growth

Editor: By the way, in business it is often discussed which one is important, needs or seeds. Which one was more important for non-destructive inspection?

Mr. Yamaguchi: Well... when I look back now I think it was the seeds for the non-destructive inspection. We foresaw the necessity of the non-destructive inspection technology and stored the seeds. And big plants were built one after another. Every time some flaws were found, the needs to the inspection technology increased. We learned various things by researching when we went to those plants for inspection. For example, we realized we didn't have a small x-ray device in order to inspect many thin tubes for gas and liquid that set up intricately and at very high places. And then the development of the new device was started. As we realized that there were some problems the x-ray devices couldn't solve, new ideas of other devices came up. In such a process, Iridium 192, a non-destructive test method using radioisotope, was invented. This invention was in 1963. Based on this, we developed different kinds of non-destructive inspection technologies using cobalt 60 whose energetic weight is heavier for thin tubes made by thick materials or cesium 137 for thin materials. The ideas of technologies expanded from ultrasonic sound to electromagnetic to distortion and so on. We now have 120 different kinds of non-destructive inspection technologies.

The back-up tests of the technologies were done at the university laboratories. In our company, the cooperation with the academic world has played a very important role since the foundation of the company until now.

Make Business out of Inspection Service

Editor: I was very impressed by the stories such as coming up with the ideas of leasing and renting the x-ray devices and purchasing x-ray devices by installments on the security of the contracts of your customers even when your company's finance was in good shape. Also you developed new non-destructive inspection technologies one after another. Your business was improving smoothly, wasn't it?

Mr. Yamaguchi: It wasn't very smooth. I don't know how many times I thought I would want to go back to Tokyo in the first two years. I strove a lot between November 1956 and about fall of 1958.

"Osaka is the birthplace of new businesses and materialistic. They will accept if you have good products even though you don't have any achievements". That was how I learned about Osaka and I believed in the words and made a lot of efforts. However, I visited many companies and explained what non-destructive inspection service was. But they said, "Mr. Yamaguchi, what does service mean in Japanese? It's *houshi* (a volunteer work), right? I don't think you can make money by *houshi*". Other companies told me, "Mr. Yamaguchi, how much money can you pay if you cause any trouble by inspection mistakes? You can't even give us 10,000 yen, can you? I don't think even one company in this Kansai region will ask you to inspect their plant".

Those companies who listened to my explanation told me, "Let's say that my company asked you to inspect our plant, since a low weld technology is not perfect yet. But if other companies heard that our company received your service, they would think our technologies were not good enough. I don't think I want to bring down our company image by paying you and receiving your service". Besides, we needed to increase trust of our technologies. We had to overcome all of these problems. What they pointed out was all understandable, if I put myself into their positions.

Overcome Difficulties: Property and Casualty Insurance Special Contract

Mr. Yamaguchi: First of all, how I could overcome the issue of compensation. This was very difficult. It took me 10 years but we succeeded in making non-destructive test special condition insurance. This is the world's first inspection insurance system. We submitted detailed inspection data of a model company to a casualty insurance company in order to prove that if non-destructive inspection was conducted properly the company could avoid big troubles. Thus adding special contract to non-destructive inspection insurance still provides benefits for the insurance company. Currently, if a company buys certain insurance with special conditions, 3.5 billion yen is compensated per insurance policy. We started working on this non-destructive inspection special conditions in 1963, so the insurance was made around 1973, I think.

Overcome Difficulties: Nondisclosure Agreement and Supervisor System

Mr. Yamaguchi: In terms of an issue of non-disclosure of inspection service, we created a detailed non-disclosure agreement. It was a very hard work. Also we started to conclude a quality assurance agreement with our customers. Having a trusting relationship with customers is the foundation of business. So not only concluding the agreement, but also we appoint a supervisor for each customer and we will never change this supervisor until they create a trusting relationship with the customers.

I Could Go Through Because I Didn't Know

Editor: I think your company was accepted by the customers, because you took time to gain trust from the customers. I would like to ask you about how you overcame the difficulties of the first two years.

Mr. Yamaguchi: I think the reason why I overcame the difficulties is because I was working in Osaka. One good symbolic example of them is the toughness of "oba-chan"

(women in late 50s onward). I haven't seen them lately but there used to be some oba-chan around a bus stop selling bus tickets. Do you remember?

Editor: Yes.

Mr. Yamaguchi: We don't have that in Tokyo. They sold tickets out of a discount book of tickets and earned the difference. I was very impressed by that, thinking about what a vitality Osaka had. When I was depressed I looked at these tough oba-chan and calmed myself thinking, "they made a business out of selling bus tickets, so I can do business". And also Kansai dialect helped me a lot. Everyone I met discouraged me by their talk but at the end they all said, "Mr. Yamaguchi, I'll think about it". In Tokyo, if someone says, "I'll think about it", that means he has a positive attitude about it. So I saw my future in the bright light. Thus, I decided to go through the difficult time.

However, people say, "I'll think about it", in Kansai, when they refuse. I didn't know that because I was born in Tokyo. But because of this misunderstanding, I could go through the difficulties. I think the reason why people say Kansai is the birthplace of businesses is because it is materialistic. And it is the background for the business since the period of Hideyoshi Toyotomi. And then we have to blend a factor called language into the background. How many successful entrepreneurs do you think are actually from Osaka after the war? There were not many people originally from Osaka. Most of them were from other prefectures. Therefore, they didn't quite understand Osaka dialect and customs. They were the same as me. Everyone was encouraged by the words, "I'll think about it", and started up the business going through difficulties. I have many opportunities to meet managers who were not originally from Osaka at various meetings, and it looks like they all had the same experience. It may be the strength of ignorance. One more thing that supported me through the difficulties was the existence of Dr. Senda. Every time I was just about to give up I talked to him. And he said, "Are you complaining about what I believe? If you don't have confidence, just quit and go back to Tokyo".

Editor: It is the Kanto dialect this time, isn't it?

Yamaguchi: He was a true Tokyo born person. He just said, "It was you who decided to

devote yourself to my study and started saying that you wanted to make a business out of it. Why don't you believe in it forever? If you don't have a will to keep going, why don't you come back to Tokyo? That's all I have to say", and he hung up the phone. This encouraged me a lot. The period of my difficulties was over when the plant building rush started. This time I got too busy. Then, I spent time to train inspection engineers, to acquire highly developed technology, and to develop our own unique technologies every day. We developed devices. That started from cobalt 60, to making use of ultrasonic wave, and from ultrasonic wave to ECT (Eddy Current Testing) and so on. Of course, besides conducting non-destructive inspection on completed buildings, we started looking at the safety at the design level with the cooperation of the customers. We were working on the non-destructive inspection as well as product development while pursuing higher safety.

Service that is Not a Volunteer Work

Editor: How did you overcome an issue of "service is *houshi* (volunteer work) so it should be free"?

Mr. Yamaguchi: I didn't have any special measures for this. At that time, people took it for granted that air and safety were free. It didn't matter how many times I explained, it was the time that making money out of service was unimaginable. It was 1971 when IBM started for maintenance service and made money from it. This was the memorial year that service was not a volunteer work anymore. However, we had charged for our service 10 years prior to that. What we did was to persistently repeat how important non-destructive inspection was. But no one understood the concept. So I was finally got angry and told them, but very calmly, "It will be too late when an accident happens. Please calculate how much you will lose, how many tens of billions yen will you lose? Don't you cry when it happens. I just wanted to give you one piece of advice". I shouldn't have said that but I did. I was too young to know back then.

Then, my advice came true. They moved their plants a little bit; they had a series of gas leaks or breakdowns. Every time something happened, they had to stop the plants. They created billions and billions of loss. At that time, they tried to spend as little as possible and they omitted as much as possible if they could. It was the time when the

productivity was the priority. So it was normal for them to have troubles every day. I thought, "Look who's laughing now? " They could prevent troubles and accidents by paying a little for non-destructive inspection service. "If Japan kept the attitude of 'You get what you pay for', the Japanese economy would go down big time. It might be okay for a little while. But such business would not be able to survive in the next era. We could make good products cheaper. And we could pay appropriate amount for good products. Isn't this the way the new 'Japan' nation should take?" I kept explaining.

The reason why Japanese companies started paying for "safety" that everyone had thought "it's free" was because they created a great loss as a result of neglecting the inspection. Our company is trying to promote the importance of "preventive maintenance inspection" to society. Before you cause an accident, preventive maintenance is necessary, and for that you need an inspection. If you have an accident, that is the end of the story. However, ironically, every time there was a big accident, our company was developed. The typical examples are the Great Hanshin-Awaji Earthquake, The Oil Spill in the Sea of Japan, the Sodium Leak from a Fast-breeder and so on. But the company should never develop based on the accidents. The company should be appreciated because awareness toward the preventive maintenance increases. I think that's what society should be. I have been telling people this for 40 years since the foundation of the company.

The History of Development of Non-Destructive Inspection Company Limited.

Editor: Did you have any turning points between the time business started rolling and today?

Opening of Shinkansen and Rail Inspection

Mr. Yamaguchi: The first turning point was the opening of *Shinkansen* (bullet train). It was 1964, the year of Olympics. It was the national project to run Shinkansen by November of that year. The speed of *Shinkansen* was 222-230 km per hour, so the

normal rails couldn't reduce the noise and the level of danger. They planned to use jointless rails. Jointless means that rails are connected completely by welding. With the method called thermit welding, they planned to weld rails between Tokyo and Osaka. This was first time, so anything could happen. Since Shinkansen carried people there should never be any accidents. Dr. Senda introduced me to Railway Technical Research Laboratory (currently Railway Technical Research Institute) of Japan National Railways and I visited them many times. Consequently, they asked me to inspect the rails welded by thermit welding. We conducted radiographic testing using cobalt 60, liquid penetrant testing, and ultrasonic testing on the rails.

I sent three young engineers to the Building Research Laboratory at Railway Technical Research Laboratory to study and conduct many experiments on how to establish a rail inspection, correlation between the degree of a crack and the safety (correlation between a crack and dynamic stress and correlation between a crack and static stress etc.) and so on for one year. Then at last, we established acceptance of inspection to specify the tolerance levels in the range of flaws for a certain thickness of material. They started putting rails in the fall of 1962. We did all the inspection of all the rails.

The inspection that uses a radioactive material called cobalt 60 had an issue of radiation exposure, so it was very difficult to get a permit. However, we could get a permit from the Science and Technology Agency for this rail inspection of Shinkansen, so I could say that this opened up the doors to the next business development. When Shinkansen opened, all the mass communications broadcasted that cobalt 60 was used to assure the safety of Shinkansen. This made the existence of a company "who sold safety" called Non-Destructive Inspection widely well-known to the specialists.

The inspection contract price could be a hundred billion yen in the current money value. I got all shaky and goose bumps all over my body when I heard that contract price.

Osaka EXPO '70 and Nuclear Power Generation

Mr. Yamaguchi: The second turning point was EXPO '70 held in Suita, Osaka in 1970. The slogan was "The lights of nuclear power for the Expo" and Japan started the era of nuclear power generation. If an accident of radiation leak happens, it can widely hurt

people for a long period of time. Our country is a victim of atomic bombing so we all have an issue with radiation. This safety management was the priority in terms of starting the nuclear power generation. So a very strict safety criterion was established. However, the inspection technologies we had back then couldn't meet the safety criteria.

The power companies, heavy electronic companies and our company got together to improve the inspection technologies and to develop new inspection technologies. Also we made an effort to diffuse the idea of quality control and quality assurance. However, as I mentioned, even though we had appealed the necessity of the quality control and the quality assurance to the society since the foundation of our company, not many people understood it. As the non-destructive inspection technologies started to be considered as valuable, the interest in QC and QA increased. And since we served to assure the safety of the nuclear power generations, our business from then on went really well.

The Second Oil Shock

Mr. Yamaguchi: The third turning point was the economic recession caused by the second oil shock in 1974. From 1974 to 1975 or to 1978, university students were striving to get a job.

Editor: It was the year 1976 when I graduated from university, so I remembered the situation at that time very well.

Mr. Yamaguchi: That's right. It was a very difficult time. Since the economy was in a slump, it was necessary to maintain the old and worn-out plants. If the economy was rapidly growing, we could have torn down the old plants and built new ones. But we couldn't do that. Actually, we foresaw the era of maintenance would come so we had started to develop the technologies for plant maintenance around the time of the Expo.

There is an actual big difference between the quality control at the time of construction and the quality control of the existing plants. It is very hard to assure the health of the existing plants. That is because a new variable called secular change has to be considered. We don't have to consider secular change for newly built plant. We just

have to consider the status quo and if it is built as it is designed or not. However, we have to analyze the influence of aging degradation and secular change to the existing plants, and it is necessary to set up an appropriate safety evaluation criteria.

It took time to develop new technologies and the safety criteria in relation to the plant maintenance. That is because we had to store data. We turned our attention to it earlier than anyone else, and around the time when the society started asking for the technologies, we had established the foundation of technologies and the safety evaluation. For the development of technologies, we collaborated with the laboratories of big companies and universities.

Editor: The corporations at last realized the importance of plant maintenance because of the second oil shock and came to your company, Non-Destructive Inspection for help.

Mr. Yamaguchi: Yes. We had been waiting for this moment. A lot of companies came for advice one after another. We were giving advice after conducting aging inspection on existing plants. Our advice was that if you use the plants based on the current production planning, it will last at least two years, or this part of the plant will be worn-out badly in three years and cause troubles so you should change it now and so on. During the economic recession, our company kept growing, and the sales reached over 10 billion yen.

Since the era of maintenance came, the management of our company at last stabilized. Thereafter, in a sense, we entered into the era of diversified and sophisticated safety technology development. It has been 20 years or 30 years since the nuclear power generation started operating so it is time to have maintenance.

Development of New Materials and Highly Developed Non-Destructive Inspection Technologies

Mr. Yamaguchi: The non-destructive inspection technologies were developed centered on the material called high-tensile steel. However, new materials such as ceramic were developed. The parts where only those metals including iron could be used were

replaced with new materials. The new materials were developed one after another without stopping, so the establishment of quality control methods for the new materials was delayed. This was a challenge for us and also a big business chance. I think it started around in the early 1980s.

The Great Hanshin-Awaji Earthquake and the Disillusionment with the Legend of the Safety

Mr. Yamaguchi: Then, that Great Hanshin-Awaji Earthquake happened. Until then, everyone had believed that the social infrastructure in the living environment was safe even though no one told them it was safe. We had warned the society about the vulnerability of the social infrastructure in the living environment. However, because of the earthquake, the highway fell, the rails were cut off and buildings were destroyed. Everything that we thought was safe was destroyed. The industrial plants and industrial infrastructure, even one gas station, did neither have a fire nor did those tanks fall down. Almost all maintained safety. Only a gas turbine of a power generation plant in Higashinada, Kobe fell down but it was built thoroughly based on the safety design so it didn't cause a major accident

Editor: These gas stations were really amazing, weren't they?

Mr. Yamaguchi: These gas stations maintained their safety as they were called the best evacuation places. The industrial infrastructure proved its safety like this. We have to pay more attention to the social infrastructure in the living environment. We will need to develop health diagnostics technology and provide service in relation to the social infrastructure in the living environments such as highways, buildings, apartments, columns of elevated railroad tracks and so on.

In this way, our business had developed our technologies and expanded the usage range of non-destructive technologies at these five turning points.

During these times, we had experienced many things. I think you remember the

Japan Airline Jumbo jet crashed into Mt. Osutaka. After this accident, in order to enhance the preventive maintenance of airplanes, all the airlines applied non-destructive inspection for the maintenance of axles, windows and engines. From this point, our business started dealing with not only airplanes but also devices of cargoes.

It is sad to start everything after disastrous accidents happen. However, I am glad that society gradually starts to recognize that non-destructive inspection technology is the core of the safe technology service.

The First Idea, the Second Idea, the Third Idea

Editor: When you create a new business, knowledge and ideas are important. Do you have your own unique method to come up with good ideas? Since you created new technologies one after another, can you please give some advice to people who are thinking to start up a business?

Mr. Yamaguchi: Recently, I have one thing that I always tell people, exactly the same thing to anyone. That is if you do research and development venture business or if you are a potential entrepreneur, it takes three levels of ideas to make business. The first step is the first idea that such technology may be interesting. It can be replaced with the word "knowledge of necessity". This is an idea that is very selfish. This is a stage before you think how this could be turned into a product or service how we will find a new market or whether or not there is an actual possibility to make it happen.

The second idea is to check the feasibility. This is the stage where you have to squeeze out "knowledge of feasibility" to make it happen. The third idea is to think how the products will be accepted in the market. I called this stage, "knowledge of productization".

At the very beginning, you have no money, no laboratories and no people. So the first idea, the very good first idea is very important. You have to rely on others for a lack of management resources. It must be very important to use university laboratories or public research laboratories.

Whenever we have a new idea in our company, we bring it to industrial testing

laboratories or university laboratories and ask them to collaborate with us. We have many good achievements. However, there is a tendency to disrespect the rights of the person who came up with the idea. That is a pity. Without permission from the person, the idea was presented at an academic meeting or written in a research paper. After the presentation or publication, we happened to know about it. That made us so disappointed many times. The first idea is the only asset of an entrepreneur so even in a collaborated research it is no good to be leaked. That makes getting a patent difficult and there are people out there to take advantage of someone else's ideas and make money out of them. Those big companies that can represent Japan are doing business by

someone else's ideas without hesitation. It is a pity that Japan has a low level of respect for maintaining confidentiality and the original ideas. For example, a big company got a patent on an stress measurement technology using x-ray before us. It is important to have an agreement of maintaining confidentiality and to use some strategies to get a patent, but before that I just cannot believe that companies have a lack of morals. If those companies keep doing such things, Japan will be in big trouble. I see such indication everywhere, so I am very worried.

Through experiences we had in the past, we have expertise of what we should present at an academic meeting, what should be checked by public laboratories, what should be taken to universities and so on. I still think companies should actively collaborate with the academic world, but it is very difficult to create a new business unless they know how they should collaborate with the academic world. What we're putting our effort in now is a collaborative research with research teams of big companies. Before we start the collaborative research, we make some agreements with them such as that we apply for a patent together if we decide to do so. It is important to help each other by supplying lacking resources such as research budget, market, sales ability of the big companies, and sharing the knowledge of each other. Everyone should become happy.

At last, we are ready to develop technologies by ourselves. Research and development of high technologies is conducted at our laboratory, Research Institute of safety and Diagnosis Technology. Of course, in order to expand the technologies, we collaborate on research studies with many outside laboratories.

Editor: It sounds like your business that never previously in the world started getting attention and was developed as the time required your service. But, in fact, I was very

impressed that Non-Destructive Inspection as a company and also Mr. Yamaguchi have a surprisingly accurate ability to foresee the change of the society and technologies. Can you please tell us the secrets, for example, a method of collecting information, how to treat the information collected and so on?

Another thing that I want to ask about is the management. The management should be changed as an organization grows. For example, managing 10 to 15 people is different from managing 100 to 200 people. Particularly, you are selling the service called non-destructive inspection technology, so it should be different from selling equipment.

Can you tell us about it?

Read What the Trend of the Times is from the Field

Mr. Yamaguchi: Okay. What you asked were both what I strived for the most. I would like to answer the first one now.

This may sound paradoxical but I always think the small and medium companies can easily get information required for foreseeing. The reason is simple. The real information is in the field. However, those who go to the field are the small and medium companies like us and there are no people from big companies in the field. People at the big companies sit in their chair and argue based on blueprints. People like us actually go to the field carrying non-destructive inspection tools and iridium and cobalt, and inspect everywhere in the field. It doesn't matter how cold it is outside or how humid and hot it is. We run around and inspect the field all the time. So we know how the future is going to be.

The plants are living creatures. So if we inspect them properly, we know their health condition. We don't need profound theoretical physics in the field. We don't care about that. We may not understand profound theories but we know everything about the plants. Only those who know about the field can come up with the first idea. Those who know the field very well can grasp what the society wants, when they read newspapers or magazines. Therefore, only people from the small and medium companies can come up with the first idea.

Luckily, we have excellent inspection engineers from Hokkaido to Okinawa and everywhere in the world so we don't miss out on any information. It is the task of management to come up with methods to convert the collected information into tangible forms. I think we still have to work on this area.

Management in Service industry: Aiming to Become a Group of Engineers with Rich Humanity

Mr. Yamaguchi: Our management is supported by technology and people. It is essential to develop new technologies and to increase engineers' abilities and techniques in order to increase the company's credit. And each engineer must be rich in humanity; otherwise, we will have a trouble. It is very important to bring out the engineer's humanity in an inspection. Usually, when people are told to inspect place A, they will end their inspection when they finish inspecting place A. However, an engineer with rich humanity thinks about the whole picture while inspecting place A. If he has a doubt of something, he will check place B. Our engineer who can do such things saved large plants from having a major trouble. There are many cases like this. It is very hard to do but all the inspection engineers should be like this. It is because our business is about the safety.

Communication between the top and people at the front line is essential to create a group of people with rich humanity. People say humanity education, but we cannot teach humanity. As children grow looking at their parents, humanity has to be learnt by their employees through looking at the top of the company. The company size should be limited as long as the company takes this way to cultivate humanity in its employees. I thought up to 50 is the maximum in order to create a group of people with rich humanity. Therefore, I thought I should spin off the company into separate companies every time it had over 50 employees.

However, one and two people were raised to be the next leaders from those 50 people with whom I worked, cried, laughed, and thought together. So I changed the limit of employees manageable to 100. Once we had more than 100 employees, I spin off the company. Non-Destructive Inspection Service Co. Ltd., Pony Industry Co. Ltd., Japan Test Inspection Co. Ltd., and so on are spin-off companies. Those companies have people

who had been trained in the mother company, Non-Destructive Inspection, as their presidents. I conducted this spin-off management asking each president to cultivate their employees with the culture of Non-Destructive Inspection. I am happy that I have these people who can communicate with around 500 inspection engineers at the front line.

I want my employees to have big dreams. I make an effort to create an environment for them to have big dreams. Our ideal is a group of people who can bring out their humanity with positive attitude.

People say I am too traditional but if you see people in trouble, save them at the risk of your own life, and if you see people crying, cry for them too. When people laugh you laugh together with them. We need such people. A group of such people will have surprisingly great power.

Technologies that we have developed are not only related to non-destructive inspection. For example, we developed instruments against cold and cloths for cold. Since we have to get into bad environments, we have made an effort to develop remote technology to inspect from a remote place and monitoring technology. The starting point of these technology developments was that we wanted people at the field to work in a better environment. These kinds of people with such ideas make us happy. A safe workplace filled up with technologies and expertise for high workplaces is one of our products/services. This consequently became a business. We didn't even think we were going to make money out of it.

Editor: The great first idea reaches the second idea and the third idea and finally it creates products or services. Do you have any systems to support people to come up with ideas?

Mr. Yamaguchi: I emphasize this many times. Even though you came out with the first idea with confirmation of success, one person with rich humanity can make it happen. On the basis that there are such people, we have various systems to bring out the abilities.

Improvement Suggestion Movement

Mr. Yamaguchi: First of all, we have an improvement suggestion movement. But it may be a bit different from an improvement suggestion system of the society. The improvement suggestion movement is a series of activities to have the better first idea. This is not only to support the employees to come up with ideas, to analyze thoroughly what kind of service we should provide to make our customers satisfied, to think how quickly we can collect information at customer's place, how quickly we can convey it to the others, and how correctly we can deal with it, and to suggest in detail how we should deal with our customers in terms of business and so on. As I said, don't you think it is a bit different from the suggestion system of many other companies? All of these are very creative activities so they don't get bored, or data will not be fabricated.

Probably I should mention the award system of the improvement suggestion movement. We give those who came up with any ideas 100 yen or 200 yen worth appreciation. If they are at the stage of first idea, maybe it is something like a telephone card. If those people at the stage of the first idea reach the stage of the second idea, you will get another award. Since it maybe becomes a business, we give them a certain amount of money. This is probably more than an extra prize for an annual best suggestion of some other big companies. And when they reach the stage of the third idea, which is one stage before it becomes business such as measurement tool, service and so on, we pay them royalties. The company takes the patent of the idea and the profits created by the idea. I think it is normal for those who came up with the idea first to get royalty. It looks like that like this incentive system for different idea stages is well received, so they worked really hard.

But there are some people who say, "I don't need awards or royalty". And if we don't do anything about, this kind of people will increase in the company and will take the energy out of the company. It is very difficult to prevent this. I always ask my employees to talk to each other about what benefits them or what it means by finding the work interesting or to think about these things.

Rich Ideas are Created from Liberal Environment

Mr. Yamaguchi: People need to relax mentally to come up with unique ideas, don't they?

Therefore, we have some systems for the employees to have their own time away from daily tasks for a little while.

The first one is an overseas exploration trip system. This is a system that "We will give you one million yen so go anywhere you want for one month". Thirty employees go on this trip annually. One million yen includes everything such as transportation. They have to make a plan and carry it out all by themselves. Only by doing this, they can expand the way they think. To decide where to stay, they have to get a lot of information and make up their mind. However, it is not fair for those who are not good at language, so the company pays for interpreters. They have to give us a brief report, but they don't have any duties at all apart from that. Those who cannot speak any language go overseas without any hesitation. Some went to Miami, spent a relaxing time and enjoyed themselves. I think that is okay. This has become a good opportunity for them to think about Japan in a different perspective.

And we have a Japan exploration trip system. This is a one-week trip and we give them 150,000 yen. They can use it however they want. Recently, there are more people who go to researchers whom they know well and learn from them.

For all the people at the manager level, we apply an any-time-come-to-work system. This is the third year since we have changed the working style. They can come in to the office anytime they want as long as they do what they have to do. Of course, there are no time cards. I think it is fairer to evaluate them by their achievements rather than making them stay by time. Depending on their achievements, their salary, bonus and promotion will increase so they're really working hard.

In addition, I am thinking to apply a new system from the first of April this year to the managers, which is a self-selection holiday system. An any-time-come-to-work system will be applied to the other employees too. We have certain amount of days off a year. Our company doesn't have to work Saturdays and Sundays. We have public holidays. We have our own company holidays. And we have paid holidays. So this is a system that we let the managers to arrange all the holidays however they want. There are some conditions. It shouldn't affect their work and they need permission from their direct boss and the top boss.

I learned from my experiences that when people are restricted, they cannot bring out

their abilities. When we make rules and make people follow them, all people do is to follow the rules and stop thinking. We only need minimum necessary rules. No rules mean that they have to think on their own. When people are put in such circumstances, they tended to have unexpected ideas one after another.

Aiming to Be a Company that Works Only a Half of the Year

Editor: Are you considering having a yearly contract system?

Mr. Yamaguchi: Yes, I am considering it. My final goal is to make the company successful enough for the employees to work only for a half a year to live. So I am thinking of a system to keep the company's size and keep developing while the employees work only 180 days a year. The average number of the operating days of our company is 212-213 days, I think. Any other companies' are around 210 days, I think. I have to reduce 30 more days. I think there are six conditions to make it happen.

The first one is, this is very normal but, to develop innovative technologies. It is to develop innovative and unique non-destructive inspection technologies. The second and the third ones are to improve the techniques of each person. One is to create more multi-skilled engineers, and another one is to give the employees thorough education to make them licensed engineers.

The fourth one is to make groups of safe technology specialists. Since the average life expectancy is rising, I am considering making a system to have the engineers work longer by introducing a 65 year old retirement system. The fifth one is to have competitive strength. In one aspect, it is necessary to enhance the management.

The last one is, as I have been emphasizing, to create a company to bring out the humanity of every employee. If we did all of these, there is nothing to be afraid of. And I think it is not a distant future for us to satisfy all the conditions.

What is a Real Venture Business Support?

Editor: You talked about some related topics about this, but I want you to tell us what

you think about or give some advice on venture businesses. Since we have been having the flagging economy for a long time after the burst of the economic bubble, the appearance of venture businesses that can lead the Japanese industries in the 21st century as a good stimulus is expected. I believe that we do not have one day without the words *venture business* in the paper for the last few years. Can you tell us what you think about ventures or business support?

Mr. Yamaguchi: I rather think that the current trend and support policies – my impression is that they are excessive protection measures – prevent the ventures from opportunities of their growth. They really take opportunities away from the ventures. And they have supported rogue companies pretending they are venture companies. The venture business training institutions in any kinds, of the government, of the local governments, of financial institutions and of private companies, are actively trying to support the venture companies. A while ago, I researched what kinds of business ideas won the venture business support funds and when the support institutes actually gave away the funds. Surprisingly, 90% of the funds were given at the stage of the first idea. There are no other explanations for this other than that they misinterpreted a suggestion, "The support system for the beginning of the start up is lacking in Japan". The venture business funds are given to companies at the stage that only has a value of a telephone card for our company's award system of the improvement suggestion movement. This fact is very surprising.

The first idea is necessary for a new business and very important. However, what percentage of the first ideas will reach the stage of the third idea? It is not the matter of percentage, because it is too little. In short, they invest a few million and a few tens of million yen to an idea that has less than million-to-one chance of success. Ventures are always out of money. However, it is ironical but since they can get money relatively easily, they fail. It creates an illusion for them to think that their idea is highly acclaimed and they will definitely succeed. The rogue ventures have two sins. One is that they steal the funds that should have been used by other entrepreneurs and start-up venture companies who have more potential to create new values in the society. Another is that they do not pay it back, but they use it as simple operating money, or use it in worse ways. Those who give the funds have a responsibility too. It is because they evaluate the venture companies by criteria that has nothing to do with venture training such as "because they have some achievements", "because they have some business doing with big companies", "because a big company guaranteed the success of

the venture" and so on. The timing to give away the funds, if they want to, should be at the stage of the second idea or the third idea. It is the real work for the ventures to grow and ripen their ideas.

It is often said that it is difficult to evaluate business plans but it actually is not. What we have to do is to screen the plans based on how high the degree of the contribution to

the society and how much they can contribute to human life. In terms of the technologies that are proposed, those technologies that are left after a selection are good enough. We have some people who can evaluate the proposed technologies.

But I think the companies that submit business plans should prepare their experimental data and evaluation from a trusted research institute. They take too much for granted if they ask for an evaluation and financial support when their business plans are really need to be evaluated.

Editor: It is said that big companies have recently started seriously working on venture business inside their companies. Do you have any comments on that?

Mr. Yamaguchi: The venture is a good experiment. But the success rate is about the same as venture business. The better the ideas, the more the big companies destroy them. As in the case of the venture support, it may fail because they have a lot of management resources. But the venture spirit is very important regardless of the size of companies.

Editor: When companies start considering entrepreneurship and asking their employees for their opinions in the company, many of them say, "If you guarantee me to take me back to the company in case that I fail, I will take a part in it".

Mr. Yamaguchi: That is no good. Do they think the world is revolving around them? They are just selfish. It is not acceptable. They need to strive, make a lot of effort, and accumulate experiences in order to found a company. If they think that one idea could quickly bloom their business, this business would be a dead flower with a short root.

Editor: Most of the companies plan their strategies based on what market makes them money or has less competitors.

Mr. Yamaguchi: I can affirm that we have never made a move based on how much money we could make for 40 years. We only think how our customers will get satisfied and how we can be helpful for them. The profit and chances of new businesses are only consequences. Recently there is something that made me very happy .Can I tell you about it?

Safe Ideology Thoroughly Spread-Out in company

Mr. Yamaguchi: There was an accident of an oil spill in the Sea of Japan. We are in charge of a periodic inspection of the nuclear power plants in the area of Wakasa in Fukui Prefecture. If the oil got into the water intake openings, the nuclear power generation would stop. If that happened, 38% of the electricity would be shut off. Then, many of the cities in the Kasagi region would stop functioning. Our employees told me that they would want to participate in volunteer work, so we started the volunteer work as soon as possible. The head of the Fukui prepectural disaster headquarters asked us, "We cannot get oil drums. Can you please collect oil drums for us and send them to Obama?" So we immediately started to collect oil drums. I thought we could get a few hundred of oil drums quickly without any problems. But those rogues like hyenas bought all the oil drums, so we could only get five. Those old drums usually cost 750 yen per drum but it went up to 7500 yen.

Editor: The same kinds of things happened when we had the Great Hanshin-Awaji Earthquake.

Mr. Yamaguchi: And I said, "The oil companies should have a lot". But my employees told me, "Sir, that is a lack of recognition of the current situation. They don't have any oil drums because oil is transferred by pipeline nowadays". Then I make a quick phone call to a president of an oil company, he also said, "Sir, we don't have any". They all use the pipelines now. They use tanks to transfer oil. I didn't know what to do so I called every single person I knew asking them," I want to send oil drums to Fukui. Can you get some somehow?" and I could get 460 drums in Kyushu and 350 drums in the Kanto region; in total I could get 810 oil drums. This was also hard but I prepared trucks to transport those drums and asked them to send these drums to Obama.

After a while, the head of disaster headquarters called me up. I couldn't understand what he was saying because he was crying. And I heard, at last, "I felt warmth of

people in each oil drum". I didn't know what he was talking about. I just sent these oil drums as duty. And he continued, "All the drums were opened. And also they were smoothed by the grinders where they opened". He told me that the hundreds of volunteers cut their hands. They had to bring the oil drums to an iron factory in the city and cut them open by a gas burner. And they tried to smoothen the cut by hitting with hammers. This task was so hard that they couldn't use a few tens of the thousands of oil drums sent to them.

However, the drums that we sent were already opened and smoothed by grinders so they didn't have to worry about cutting their hands. On top of that, there are two holes in each drum. And he wondered what they were. If they put a rope through the holes, people could carry it. The positions of the holes were perfect. Before they received the drums, they put the drums in rope baskets and carried them. They received a few tens of thousands of drums but 70% of them were not opened and 30% of them were opened but the cut wasn't smoothed. But our drums contained "warmth of people", he said. We found out later but the drums from Kyushu were sent by Sasebo Heavy Industries Co., Ltd., and led by their Vice President and under the instruction of the vice president 20 of their welders and people involved in slitting operation came to work even though they were off duty. So I called them up and said, "Thank you for the nice work". And then he told me, "You told us to cut the drums open and make the holes in the drums. We just did what you told us". They did what they were supposed to do, but I was so happy. That is because my employees came up with the idea. They applied the safe ideology for this too.

This incident gave a good influence on our businesses. I think that is because we worked from a point of human respect, not for business. This kind of thing can't be done while thinking about profit or loss.

To Become a Safety Protector for the High Technology Society

Editor: How will you expand your business for the 21st century?

Mr. Yamaguchi: Before anything, I would like to contribute to the society as a safety protector of the high-technology society to protect the safety of human life through the non-destructive inspection technology service.

Our second aim is to make the world know what the real safety technology service is and to establish the system of the safety technology service. One of the main factors that consist of the real safety technology service is to develop and provide high safety technologies.

And I have to repeat what I have said previously but let me tell you this. It is necessary to improve the ability of each engineer. In relation to that, it is necessary to set up an international qualification for safety service engineers. We don't have any international qualifications now. In order to contribute to the safety, we must set up that and create a group of high-level international engineers. And this sounds incoherent but we're working on a system that lets normal people to conduct safety inspections. I think this is ideal.

And the safety culture must take root in the society by any means. The safety culture is basically the morals and ethics. It means that everyone should be able to tell the right from wrong. The safety culture is harmony of the morals to the safety, the awareness of the safety and the corporate culture that consists of humanity.

The third aim is to systemize the technologies of safety inspection while operating the plants. Currently we have to stop the operation of the industrial plants and check the aging degradation. I would like to create a system that can monitor the health of the plants without stopping them by improving the remote technologies and the monitoring technologies even more.

The fourth aim is to create a central control center to monitor all the plants in the world here in Osaka. I want to have a system to maintain the safety by monitoring the aging degradation while talking to these companies.

And I want to improve non-destructive inspection technology itself. We are working on many research projects. For example, a Non-contact laser ultrasonic testing might be able to be a success, even though this was the first idea from an amateur. We have loads of assignments to solve in terms of the safe technologies for nuclear power generations and fast-breeder reactors. Moreover, the study in the use of fission energy and ion energy has already started so we have to develop safety technologies for them. We have to come up with new safety technologies for new materials and biotechnologies. We have a zillion of things to do.

Also, we have to think about Product Liability Law. Japan will be a big society of lawsuits like America in the 21st century. Therefore, we need to make the safety control systems for the manufacturing process more sophisticated in relation to the process manufacturers and manufacturers. We have already set up some systems that automatically control the safety. This will grow into a serious business too. There is a system to submit quality control data of the whole system that is required by the modified Pharmacy Act, we call it Computer System Validation. This will draw more attention in the future. Like this we have tons to do. Therefore, the economic fluctuations or the exchange rate fluctuations will not affect our business. All we want to is to contribute to the society and enjoy it.

Before Going Public

Editor: Can you please tell us if you have something in your mind before going public?

Mr. Yamaguchi: This year is our 40th anniversary. There are many people inside and outside the company who suggested going public for the last 40 years. However, until now I didn't even think about going public. It was because we, the safety technology company, should be working at the backstage and shouldn't play on the stage in public. That was what I thought. However, my young officers and employees told me, "Sir, the way you think is wrong". We need the whole nation, all the 130 million Japanese, to recognize the necessity of the safety; otherwise, we cannot enhance the safety. For that purpose, it is necessary for the society to widely recognize the existence of our company that provides the real safety technology service. That was their opinion.

I totally agree with them. So I decided to go public. So this is not to prepare budget from the stock market. I had a hard time in terms of money. I would like to keep operating the company by self-financed management, no-debt management from now too. It will not change. I asked my successors to keep this management even when I retire. I told them that this is my will.

Editor: Thank you very much for your time.

[From Editor]

This interview was extended more than five hours. Even so, I still want to ask some more questions. During the interview, my eyes got watery because I was moved. I only can think of unsophisticated words but I thought that "management is a dream" for the first time in a long time.

Every time a big accident happens in the world, the technologies of Non-Destructive Inspection Technology will improve and the business grows. However, it is not a pleasant thing for the company. It is more important that the awareness of the society against the safety should be increased. Of course it is important for people to thoroughly have safety ideology and to prevent tragic accidents from happening again. To widely diffuse safety in a society is the company's activity, and the growth and development of the company is only the consequence. I found it very attractive that "Do the right thing" is actually connected with their business success. I would like to hope that there will be many companies that grow through the contribution to the society in the Japanese society and in the world. I don't think such business opportunities are rare. One of my achievements in this interview is that I actually sensed the possibility.

I wrote this article in a hotel room on my business trip in London. The news station on TV kept broadcasting Labor Party's landslide victory in the general election while playing The Beatles and Bob Dylan. Many things that are good to the society succeed as business and by that, "The Times They Are a-Changin". Maybe this is a bit of "Revolution".