

## Aiming to Be a Strong Company to Prevail in an Age of Fierce Competition in the Global Economy

In the *Toyota Industries Report 2011*, we welcome Mr. Isao Endo, a business school professor and management consultant well-versed in corporate management strategies and *monozukuri* (manufacturing). Mr. Endo joined President Tetsuro Toyoda to discuss what Toyota Industries must do to realize further growth and advance forward amid the dramatically changing social and economic environment.



In front of the Toyoda Automatic Loom, Type G

### Tetsuro Toyoda

President, Toyota Industries Corporation

### Isao Endo

Professor, Waseda University Business School, Graduate School of Commerce  
Chairman & Partner, Roland Berger Ltd. in Japan



#### Profile of Mr. Isao Endo

Graduate of the Waseda University School of Commerce. Worked for Mitsubishi Electric Corp. and U.S. strategic consulting firms before assuming his current posts. Also holds an MBA from Boston College School of Management. At the Waseda University Business School, he teaches corporate strategy and operation strategy and carries out practical research related to on-site capabilities. Mr. Endo is also engaged in management consulting as chairman of the Japanese subsidiary of the largest European strategy consulting firm, Roland Berger Strategy Consultants. He is highly esteemed not only in terms of strategy formulation but also for consulting that produces results in conjunction with strategy implementation support. Mr. Endo also serves on the Supervisory Board of Roland Berger worldwide. He is an adjunct professor at Cheung Kong Graduate School of Business in China as well as a member of the management advisory committee at Nisshin Steel Co., Ltd.

#### Great East Japan Earthquake

### Cooperating in the Reconstruction of Disaster Areas and Initiatives for Early Normalization of Production

**Toyoda:** It's a pleasure to meet with you today.

I understand you have visited numerous companies both in and outside Japan. You also have a wealth of knowledge and insights about the strengths and challenges pertaining to manufacturing sites.

**Endo:** It is a pleasure for me as well. Your company boasts the world's top market share\* in the three fields of car air-conditioning compressors, which have been adopted by almost all automakers around the world; lift trucks; and textile machinery (air-jet looms), which represents your founding business. Toyota Industries truly has a unique presence within the Toyota Group.

**Toyoda:** Thank you very much. I anticipate that this discussion will provide an excellent opportunity to reaffirm Toyota Industries' strengths and challenges.

**Endo:** To start, let's turn to the Great East Japan Earthquake. It has had an enormous impact globally. What are your thoughts? Was there any direct impact on your business?

**Toyoda:** The recent earthquake left a deep scar on the overall Japanese economy, which was on the verge of economic recovery. It could have an immeasurable impact on the global economy as well. All of Japan must band together to overcome this crisis based on the assumption that the aftereffects will linger for an extended period of time.

Fortunately, our plants and equipment received no major damage, but some of our plants had to suspend operations due to parts shortages. By switching over to alternative parts and supporting recovery of our suppliers, production has recovered significantly. We will continue to make our utmost efforts to restore normal plant operations as quickly as possible. As for measures to help the stricken areas, we have donated relief funds and our industrial vehicles. We are also offering assistance to the devastated areas by using our own trucks to transport daily goods. Looking ahead, we will continue to take a look at various forms of cooperation toward reconstruction.

\* Survey by Toyota Industries Corporation for car air-conditioning compressors and lift trucks; 2010 statistics from the International Textile Manufacturers Federation (ITMF) for air-jet looms



Mr. Endo observes the Toyoda Automatic Loom, Type G.

The Toyoda Automatic Loom, Type G was invented and completed by Sakichi Toyoda in 1924. This was the world's first completely non-stop shuttle-change automatic loom that enabled smooth shuttle replacement and weft-yarn supply without a loss of speed during high-speed operation. The loom also functions to produce no defective products by automatically stopping operation if the warp yarn breaks. Its all-around performance and economic efficiency received top recognition worldwide.

#### Looking Back at Fiscal 2011

### Turning Around Business Results by Strengthening the Business Structure via Streamlining

**Endo:** The earthquake struck on March 11, shortly before the end of the fiscal year. How do you sum up your performance for fiscal 2011? You were able to dramatically turn around business results compared with the previous fiscal year. What initiatives did you focus on?

**Toyoda:** We lowered our break-even point and streamlined our structure via emergency profit improvement activities implemented since 2008. We also succeeded in transforming employees' awareness by repeatedly reminding them that the world has changed and we must change our mindset accordingly. During this time, all employees made concerted, unprecedented efforts to carry out reduction of fixed costs such as zero-based cost reviews. As a result, we were able to improve our profit structure.

Throughout fiscal 2011, we maintained this approach while actively expanding sales to take advantage of a market recovery and avoid opportunity loss, and these efforts produced a certain level of results. At the same time, it is precisely tough times like these, when the earthquake is having a huge impact on our performance, that every member of the Toyota Industries Group must work together, muster our courage and move forward.

Manufacturing and Quality

**Quality Is the Lifeblood of Toyota Industries**

**Endo:** I was just given a look at the Toyoda Automatic Loom, Type G on display in the showroom. What should we learn from the ideas that Sakichi Toyoda incorporated into this loom?

**Toyoda:** Sakichi invented the loom based on his philosophy of “contributing to society and the world through *monozukuri*.” From the perspective of what truly satisfies customers, he created the loom through repeated trial and error, devising simple mechanisms for stopping the loom operation when a warp yarn broke to prevent producing defective goods. However, his first loom was compared with competing foreign products without adequate performance testing, and the results were disappointing. This bitter experience led him to an unwavering conviction that a product should never be shipped unless it has been fully and repeatedly tested with completely satisfactory results in order to avoid inconveniencing customers.

This episode teaches us the importance of going back to the basics and engaging in manufacturing with an emphasis on quality based on *genchi genbutsu* (go and see for yourself).

**Endo:** Quality has been a crucial theme for you from the very beginning. Its importance has become a compelling issue for many companies these days. In some ways, the standardization of parts and the globalization of business seem to have made it easier for quality problems to have a more widespread impact. Could you explain Toyota Industries’ basic stance and initiatives regarding quality?



President Toyoda explaining the mechanism of the Toyoda Automatic Loom, Type G

**Toyoda:** Quality is the lifeblood of a manufacturer. Taking a “Customer First” approach, each division works to further raise quality by incorporating quality through their own work processes and promoting close collaboration.

Some people may think quality and profits are contradictory, but that’s not true. Raising quality leads to improved costs and ultimately generates profits. To maintain quality through *genchi genbutsu*, I personally visit work floors to check the production status and progress made toward realizing improvements.

**Endo:** In that sense, the Toyoda Automatic Loom, Type G can still be considered the origin and basis of quality and invention.

Quality issues have become a key topic lately, but I feel that trust in the quality of Japanese products remains strong. Japanese manufacturers make proactive efforts to generate knowledge and ideas while achieving further advances in operations through ingenuity. It is rare to find such examples anywhere else in the world. I hope to see Toyota Industries maintain its basic stance of incorporating quality and steadily raise its competitiveness even further with a high level of awareness of everyone on the work floor.

Human Resources Development

**Developing Employees Able to Learn, Think and Act on Their Own**

**Endo:** Incorporating quality is achieved not only through tools and quality assurance systems but also through a high awareness of quality and integrity. What are your thoughts on human resources development?

**Toyoda:** I believe the basis of human resources development is nurturing independent people who can learn, think and act on their own. I would like to see employees, whether young or experienced, make efforts to further improve themselves. Reading many books, for example, can expand the scope of one’s own human qualities and abilities, and help acquire decision-making capabilities.

**Endo:** Do you enjoy reading books?

**Toyoda:** I read about 120 to 130 books a year. After I finish, I send them to overseas bases where these books are not readily available locally. They are happy to receive them besides being strongly motivated to learn. Unfortunately, however, with more employees posted overseas, the number of books I can send to any single

location has decreased.

**Endo:** You mean that 130 books are not enough. You should read even more (laughter).

Becoming independent people who can learn, think and act on their own as you envision is then premised on further improving oneself through reading books and other means. What specific measures are you taking to develop personnel who will carry the future of Toyota Industries?

**Toyoda:** I feel the advance of IT has had adverse effects on developing young engineers who will support the company in the future. The fact that enormous volumes of information can be easily obtained via the Internet stresses the importance of *genchi genbutsu*. Information obtained through your own eyes, actions and feelings is real-life information. This also applies to manufacturing because we tend to immediately rely on electronic sensors and computers.

**Endo:** It seems every company faces the same concerns.

**Toyoda:** To address this situation, we are using the Toyoda Automatic Loom, Type G to teach the origins of manufacturing at the Technical Learning Center. Since at university young engineers are taught to use 3D CAD from the beginning, they are put to work without having really understood the basics of design and technical drawings. At the Technical Learning Center, we have them draw using drafting boards. It is necessary to instill the basics before they start using 3D CAD.

**Endo:** A defect at the design stage can easily lead to a major quality problem later.

**Toyoda:** Using 3D CAD enables highly finished technical drawings at first glance. However, if the basics are lacking, a grave design error can occur, leading to quality problems.

**Endo:** That’s why it is absolutely necessary to return to the basics.

**Toyoda:** We are teaching our young engineers the fundamentals of drawing. We also have them learn about steel making and dismantling and assembling engines up to the point of actually starting the engine. Those who



have joined the company recently are thrilled to see and experience the process of assembling an engine from start to finish. As a result, they start to learn about the fascinating aspects of manufacturing.

**Endo:** It’s likely that experiencing such aspects would lead them to put their heart and soul into the design.

**Developing Human Resources Who Can Play Active Roles Globally**

**Endo:** Toyota Industries’ business development is quite globalized. Accordingly, I understand the proportion of your sales generated overseas is high. Could you tell me about the development of global human resources?

**Toyoda:** Now that many of our end users reside outside Japan, the development of global human resources is not a special task but something we must do as a matter of course. However, our globalization happened only in the past 10 years, and it has been a dramatic turn of events.

**Endo:** What happened?

**Toyoda:** In 2000, we made Sweden-based lift truck manufacturer BT Industries AB into a Toyota Industries subsidiary. At that time, we had approximately 10,000 Japanese employees. With the addition of BT Industries’ approximately 10,000 employees, we suddenly became a company in which half our employees did not speak Japanese. Today, Toyota Industries comprises about 40,000 employees worldwide, of which around half are Japanese. Nevertheless, we have few personnel who can respond to the globalization of our company. Therefore,



Presenting the features of the latest air-jet looms

nurturing assertiveness is the first step.

Having said that, our textile machinery sales team has a dynamic global outlook. Long accustomed to the concept of globalization, members set off freely around the world, cultivate new markets and put new businesses on track. Many have a command of multiple languages, and in this regard, it is more effective to send such staff to overseas subsidiaries than to train them in Japan.

**Endo:** Sending talented staff to foreign countries and enabling them to learn through experience provide a valuable opportunity for significant personal growth. One leading retail company sends 30% of its managers overseas for three to six months without any specific assignment other than to find out what they want to do at the company in the future. In the early stage of this program, many people were hesitant and worried the workflow might be disrupted without them, but once this program was put into practice, it was not the case and the program has been a tremendous success.

Technology Development and Product Development  
**Tackling Environmental and Energy Issues Head-On**

**Endo:** As a manufacturer, a great deal of effort is of course poured into technology and product development. What directions will you pursue in the future?

**Toyoda:** With heightened concerns about such issues as global warming and the depletion of oil resources,

customer needs have quickly shifted to electrification, lighter weight and energy savings. To provide what customers really need, we are making Company-wide efforts to develop new technologies based on the 3Es, which stands for energy, environmental protection and ecological thinking. We are honing our elemental technologies that contribute to electrification, lighter weight and energy savings and expanding our businesses in these fields by applying these technologies to new products.

Let me give you an example. Our electrically driven compressors for hybrid vehicles are highly regarded because they can use power from a battery, not an engine, thereby enabling the air conditioner to run even during an idling stop. In industrial vehicles, we are working toward improving basic performance such as the uptime of electric lift trucks and serializing hybrid lift trucks.

**Endo:** I understand that electric lift trucks already make up a high proportion of your lift trucks, which are one of your mainstay products in industrial vehicles.

**Toyoda:** Electric lift trucks account for approximately 60% of our lift trucks. In fact, we are the world's top manufacturer of electric-powered vehicles, with sales of over 100,000 electric lift trucks annually.

We are also developing plastic glazing that realizes better fuel efficiency through lighter vehicle bodies; developing next-generation clean diesel engines by further advancing diesel engines, which emit 20% to 30% lower CO<sub>2</sub> emissions compared with gasoline engines;

developing key components in the car electronics field that respond to the trend toward vehicle electrification; and raising the energy-saving performance of textile machinery in terms of electricity and air consumption.

**Endo:** You certainly operate a wide range of businesses. I now have a much better understanding of how all these businesses are carrying out development with a focus on addressing environmental and energy issues head-on. I think further extending these initiatives to fields beyond your main businesses could lead to the creation of new business models.

I was told that one warehouse company examined the trend toward electric trucks and installed recharging equipment and batteries at some of its warehouses.

**Toyoda:** We are on the verge of commercializing the same line of business. We have built a system within our automated storage and retrieval systems whereby batteries are recharged while being stored, and when a vehicle arrives its batteries can be replaced within one minute.

**Endo:** It appears that interesting new fields are expanding. At the same time, however, companies in emerging countries are also strengthening their technological prowess. What are your thoughts on this?

**Toyoda:** Products closely resembling our air-jet looms are available in some markets. However, the fabric produced by these machines is significantly inferior. This is because the software that operates our weaving machinery cannot be emulated by competitors. We will continue to strengthen the competitiveness of our hardware, but we also intend to focus our efforts on software development to further raise the added value of all our products.

**Endo:** Japan possesses highly sophisticated technologies and technological depth. It is also becoming increasingly important to integrate production technologies and software into a "black box" from the perspective of strengthening global competitiveness.

Global Strategies

**Carrying Out Business around the Globe and Making Finely Tuned Responses in Each Region**

**Endo:** Emerging countries are achieving dramatic growth, while market needs have significantly changed and diversified. How is Toyota Industries responding to ever

mounting global competition?

**Toyoda:** The rivalries among countries and regions, as well as fierce competition among companies that transcends national borders and industries, are unfolding on a scale and at a pace that are unprecedented. It's akin to the situation in Japan in the 16th century when many warlords fought fiercely for domination. We are indeed in the midst of a paradigm shift in which the global economic structure is undergoing a major change.

As this trend unfolds, Toyota Industries has positioned fiscal 2012 as a year for making a new start in order to prevail in an age of fierce competition in the global economy.

**Endo:** I couldn't agree more. The world will serve as the stage for competition among companies.

What about your strategies for each region?

**Toyoda:** We have been building and operating a global optimal structure for each business duly considering where we should carry out production, which regions we will supply, how we will carry out sales and how we should share roles with Japan.

**Endo:** How do you intend to approach emerging countries, which are expected to achieve growth in the years ahead?

**Toyoda:** Besides China and India, markets in ASEAN and Latin America are also expected to grow. Rather than lumping these markets together as emerging countries, it is crucial to accurately identify the different needs of each country and provide products that satisfy customers in



Explaining the mechanism of car air-conditioning compressors



these countries in a timely manner.

**Endo:** How will you respond to markets in North America, Europe and other developed countries?

**Toyoda:** Despite lower growth, Japan and other developed countries are big markets. Therefore, we must continue to protect these markets, whereby it is crucial that we compete through our high value-added products and value chain. A prime example is our large-scale automated guided vehicle (AGV) that carries containers at the Tobishima container wharf in Aichi Prefecture. This vehicle can transport a container, which is approximately 45 feet in length and weighs around 30 tons, at a speed of 25 kilometers per hour. It can carry this mountain-like container and park at a designated location with a margin of error of within 2 centimeters.

#### Future Aspirations

### Deepening Collaboration among Businesses and Combining Total Strengths

**Endo:** Our discussion so far has given me a general idea of the directions Toyota Industries is pursuing in its businesses over the medium and long terms. It appears that collaboration among businesses will become increasingly important, even in your global strategies and technology development based on 3Es.

**Toyoda:** Precisely. To raise synergies, we are working to remove barriers and deepen horizontal collaboration among businesses. We are also striving to standardize everything possible, such as development and cost reduction measures. In the vehicle assembly business, for

example, we are raising productivity based on the Toyota Production System (TPS). We are dispatching staff from the Materials Handling Equipment and Textile Machinery divisions to locations where TPS is implemented in order that they can utilize this system after returning to their respective divisions.

**Endo:** So the overall direction is to combine the total capabilities of Toyota Industries to maximize your comprehensive strengths more than ever.

**Toyoda:** That's right. I often sail for enjoyment. On days with no wind, I gaze at the distant ocean, observe far-off waves and read the wind before it arrives.

**Endo:** Acting before the wind arrives by reading the wind is similar to management then.

Today, we have discussed a variety of topics. I have the impression that Toyota Industries is an extremely unique company filled with possibilities, plus a sense of anticipation about what you will do next.

**Toyoda:** We will make our best efforts to meet the expectations of our stakeholders. Also, always remembering our founding spirit and considering what satisfies customers, we intend to contribute to the world by providing products and services that are useful to society. I believe this is our corporate social responsibility.

