

Commitment by Top Management

Semiconductors in Modern Society and TEL's Commitment

The Japanese semiconductor market is worth about five trillion yen per year, only about 1% of the national gross domestic product (GDP) of 500 trillion yen. Still, considering other fields in which semiconductors have become indispensable – transportation, communications, finance, healthcare and education – semiconductors affect half the overall economy. It is no exaggeration to call semiconductors one of the driving industries in Japan.

When one considers the effects of semiconductors on our lives in realms besides economy and industry, it is abundantly clear that the semiconductor industry and related businesses, the sector to which our company belongs, have a powerful influence on society.

Semiconductors are part of the base of the modern information society. Not only do they stimulate the economy, they help to make our lives more convenient and comfortable, and they inspire dreams and hopes throughout society. Semiconductors must continue supporting the base of society, so that the ease and comfort we enjoy can be extended throughout the world in the future.

It is also essential for us in management to keep the four elements of environment, health, safety and quality in mind as we pursue business activities. It is to be expected that, in the short term, there will be trade-offs between these four elements and concerns for technological development and sales. We must clearly direct our employees to strive for the four elements. In the long term, there is no contradiction between these four elements on the one hand and technical progress and the advancement of civilization on the other. Showing that these goals are compatible is an important role of management.

Semiconductors in the Future and the Role of TEL

The fundamental structure of semiconductors has changed little in spite of the continuous evolution wrought since they were first invented. Microprocessing technology has been the chief driving force during that evolution.

The fundamental structure of semiconductors was well chosen and has needed few major changes for several decades. But now, it is running into several limits imposed by the structure, including energy consumption due to heat generation and problems in trying to increase calculating speeds significantly beyond the current level. As semiconductors and the added value they bring spread around the world and come to impact every aspect of our lives, people will, more than ever, depend on them for solutions to problems like reducing energy consumption and raising the efficiency of electronic products. It is crucial to develop semiconductors which require even less energy to operate, while operating at even greater speeds.

In order to develop the next generation of semiconductors, we believe that industry must move away from the model in which each enterprise tailors itself to perform one function in isolation from other functions, and toward a model that aims to integrate expertise from many sources. Under this model, different nations and enterprises will lend their individual strengths to new partnerships. As a maker of semiconductor production equipment, we expect our role in the advancement of semiconductor technology to expand far beyond its present scope. TEL will never forget its duties as a leader of this industry to support and accelerate the coming technological innovation. Our stakeholders can count on our very best efforts to achieve a society that is both comfortable and inspiring for its members.

Tetsuro Higashi
Chairman & CEO
Tokyo Electron Limited



Efforts at Equipment Design Stage Drastically Reduce Environmental Burden

We at TEL are quite aware of our social responsibilities to preserve the environment and maintain safety. We have been charged with this by the commitment of CEO Higashi. As the COO of the company, I would like to describe our plans for our environmental and safety activities.

Of the various stages in the life cycle of a piece of semiconductor production equipment, more energy and materials are consumed during mass production of the semiconductor itself than at any other stage. It is very important to consider the environment and safety during design of semiconductor production equipment in order to reduce its environmental burden.

Let me give two specific examples of our approach to this problem. One directly addresses reducing the energy consumption. This equipment does not actually operate all the time; much of the day is spent waiting. It is desirable to reduce the amount of energy consumed while equipment is on stand-by; the energy savings would be considerable. Our current development and design programs are going forward on that assumption. The second approach addresses the generation of greenhouse gases while the equipment is in operation. Up until now, we have required removal of these gases and used substitutes which pose a lighter environmental burden, but future designs will call for development of equipment which re-compresses and circulates gases.

TEL will not only pursue such designs in response to requirements from customers but also strive to conceive new ideas on our own, in order to reduce the environmental burden of our semiconductor production equipment during operation.

Consideration for Safety and Management of Employees

As semiconductor production equipment has become larger and larger, operators increasingly must work in high locations and handle heavy components. Since the processes of semiconductor production also require use of materials which are toxic to the human body, operators must take many precautions in order to protect themselves. Safety procedures must be accounted for during equipment design and the builder of

the equipment needs to have a thorough knowledge of actual work operations in the semiconductor production plant. TEL employees are required to get thorough training in safety so that they will be familiar with proper procedures.

The semiconductor industry is subject to much higher fluctuations in demand than other industries, so the systems must be flexible, able to accommodate both peak and bottom volumes of sales. When a maker is increasing its workforce during busy periods and cutting back during slowdowns, new employees cannot amass much knowledge or experience in the technical realm or in environmental and safety measures. Thus, an essential part of our programs is to make all the tasks associated with development, manufacturing, start-up and process assessment as efficient as possible. Needless labor, which hampers programs to improve quality, must be eliminated. The goal in our new designs will be to allow variation in production volume with a constant number of employees.

Future Approaches to the Environment and Safety

The conventional business model for making semiconductor production equipment has been to design that equipment in response to each customer's needs. This has delayed standardization. In recent years, however, TEL has begun to standardize equipment platforms and the modules which are integrated into the platforms. We look forward to speeding up this process, as it will pay off in increased quality and in more effective environmental and safety measures.

Our approaches are spurring activities throughout the industry to improve environmental performance and safety. TEL will continue to lead these efforts by example and, as part of the process, to address a wide range of issues.

Kiyoshi Sato

President & COO
Tokyo Electron Limited

