#### The importance to our company

In accordance with our Medium Term Plan which started in fiscal 2015, we are focusing on the three priority markets of automotive, ICT and industrial & energy, taking advantage of our proprietary technology development capabilities to open up new business opportunities and realize *Monozukuri* reform. The overall aim is to offer products that make a meaningful contribution to society while also resulting in a sustainable improvement of corporate value.

#### Expectations by stakeholders

Responding to climate change by harnessing TDK's core technologies, in particular energy conservation and renewable energy, promote the development of new technologies and the spread of products that help to bring about a low-carbon society.

#### Important CSR Issues

## Contribute to the World through Technology

- Contribute to resolving social issues through development and provision of new products in three priority markets
- Pursue zero-defect product quality

Important

Themes

### Basic Policy

Contribute to the world through technology is a key concern for TDK. Toward this end, we are focusing on innovative technology development in our three key markets of automotive, ICT and industrial & energy, helping to save, store, and reuse energy and solve other pressing issues that modern society is facing. Furthermore, the pursuit of "zero defect quality" based on superior technological competence and realized through a unified production process that extends from the raw materials to the final product will continue unchanged in the future. Providing high quality products and services is our way of striving for the advancement of humankind.

### Summary of Fiscal 2016 and Outlook Going Forward

Under the basic policy of the Medium-Term Plan through fiscal 2017, "Advance autonomous collaboration of the group and realize further growth", TDK mobilized magnetic technology, the core of its engineering expertise, to develop next-generation products for the IoT market, while also channeling keen energies into building an even more efficient development system. As one phase for pioneering magnetic sensor technology, an area being strengthened as a key TDK growth field, we realized the world's first measurement and visualization of cardiac activity using MR sensors.

Completed in October 2016 were a streamlined new *Monozukuri* mother factories in the Akita region, earmarked as a driving force in promoting growth strategies. In the quest for "Industry 4.0 + Zero Defects," these factories are positioned to function as pivotal sites in supplying state-of-the-art parts and components "from Akita to the world."

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**TDK** technology contributes to building a "Super Smart Society," ensuring greater affluence and fulfillment

Dai Matsuoka

#### Creating new value to address social needs

For the TDK Group, which subscribes to the corporate motto of "Contribute to culture and industry through creativity," utilizing technical expertise to enrich people's lives is an unwavering corporate mission. Under the guidance of the government's 5th Science and Technology Basic Plan, Japan is currently working to emerge as a "Super Smart Society"." Revolutionary social changes driven by innovation are christened "Society 5.0\*"-a domain we are positioned to contribute to through the various technologies of the TDK Group. The "Society 5.0" vision speaks not only to Japan, but also to advancing global culture and industry. TDK is now grappling with the question of how best to approach this vital new challenge. Closer communications with customers, while raising the synergy between the Technology and Intellectual Property HQ and other TDK business groups, holds the key to creating new value. This also harbors potential for expanding new products and services beyond the current three priority markets of Automotive, ICT, and Industrial and Energy. The cornerstone of such progress promises to be magnetic technology-the DNA embodying the TDK Group. Recent years have witnessed steady expansion in fields in which TDK products and services are being put to use. Examples include magnetic sensors applying HDD head technology, automotive electronic components for EVs, HEVs, and other eco-friendly cars, and sensors for use in the medical and health care field. Fully harnessing strengths that only TDK can deliver, our goal is to help pave the way to making "Society 5.0" a reality.

#### Developing highly social-sensitive engineers

People must shoulder the technologies that support society, pointing to an equally critical need for individual engineers to raise their awareness and sensitivity toward the world around them. Demanded today is the perspective of identifying special social issues, systems to help resolve those challenges, and the products to get the job done. As CTO, I believe that my foremost role is to promote the milestone mindset shift from Monozukuri to Kotozukuri. From the standpoint of training young people, the Technology and Intellectual Property HQ dispatches engineers to the various business groups in their third to fifth years with TDK. There, they are expected to actively engage in new product launches, etc., think on their own and steadily accrue opportunities to expand experience. Moving forward, one of the key challenges is to establish an effective R&D system on the foundation of worldwide personnel exchange. Likewise, in view of the growing number of engineers also raising families, a scheme to support a positive balance between work and child-raising is another key to success. Taking this to heart, my mission is to make TDK a work-friendly company for our vastly diversified employees, fully utilizing people potential to raise the essential technologies at TDK to ever-greater heights.

#### \*Super Smart Society

Addressing a vast range of needs with the supply of the necessary goods and services to customers when they need them and in the proper quantities, in support of an energetic and comfortable society where everyone enjoys access to top-caliber services

#### \*Society 5.0

Creation of a new social mode, following in the footsteps of the hunting, agricultural, industrial, and information societies before it, championed by technological innovation



### **AUTOMOTIVE**

#### Contribute to environmental burdens reduction with new HAC 37xy sensor

This new direct angle hall sensor provides high performance in strength evaluation of horizontal and vertical magnetic field components and enables angle measurements of up to 360° or linear measurements of up to 40 mm. It contributes to reduction of fuel consumption and CO2/NOx emissions, and also provides cost reduction. This product is the accomplishment of collective effort of several experts



## Bringing professional audio quality to smartphones

Smartphones and action cams already offer great video. My team's design goal was to create a miniature microphone with the best audio. Thanks to our patented MEMS\* design, the T4071 MEMS microphone sets the benchmark for nearly noise-free signal quality and lowest distortion - a true competitive advantage for TDK. As a result, users of these compact devices can now make videos with professional audio, even with really high sound levels.

\* Micro electro mechanical systems (MEMS) are extremely small highly-functional devices and systems. Their miniaturized integrated mechanical components and electronic circuit are manufactured using microfabrication techniques similar to those used for ICs



The T4071 MEMS microphone features the industry's lowest noise and distortion in loud environments





HAC 37xy uses a so-called pixel cell consists

of horizontal and vertical Hall elements and

provides multidimensional measurement

Mr. Michael Besemann (Left) Project Leader R&D TDK-Micronas GmbH

Mr. Jens Schubert (Right) Product Marketing Manager Magnetic Sensors TDK-Micronas GmbH



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## **TDK's Three Priority Markets**



### Industrial and Energy

#### Further enhancing wireless power transfer technology, bringing innovation to the industrial equipment market

A revolutionary product engineered for wireless and automatic charging of batteries primarily onboard industrial equipment. This eliminates the need to insert and extract plugs and replace batteries. The results include 24-hour operation based on the automatic charging system, reduced maintenance costs, lower electric shock risk, and other benefits. For the emerging industrial equipment market, this product holds outstanding potential for use in automatic guided vehicles, industrial robots and other applications. Looking ahead, our goal is to raise overall system efficiency based on keen attention to safety and the environment.



A system built to utilize the magnetic resonance between power feeding and receiving units combining coils and capacitors

Dr. Anton Leidl Head of R&D MEMS Microphones Business Division, TDK Sensor Systems Business Company, Munich EPCOS AG



Yoichi Kyono Development Office II, Energy Unit Development Division Technology and Intellectual Property HQ TDK Corporation



# Interview

Mobilizing the Akita Future Project to triumph in global competition

#### Hiroyuki Uemura

Senior Executive Vice President, Chief Executive Officer of Electronic Components Business Company, in charge of Magnet Products and Safety & Environment TDK Corporation

#### - Honjo Factory East Site

A mother factory for multilayer products, aiming for zero defects Completed in September 2016 in Yuri-Honjo City, Akita Prefecture. The Factory is designed mainly to serve as a mother factory for multilayer products, covering the development of new products, from prototyping to mass production, as well as the development of elemental technology. In addition, a model line targeting zero defects is to be configured here, to demonstrate TDK's Monozukuri power to visiting customers.

#### Inakura Factory East Site

A mother factory for ferrite, the magnetic material in TDK's DNA Completed in August 2016 in Nikaho City, Akita Prefecture as a ferrite mother factory. This facility features an integrated production system ranging from ferrite through coil products, located adjacent to a materials technology development center. Engineers specializing in capacitors, high-frequency components, and various other products gather here, where they engage in precious information exchange.

# Cutting-edge Monozukuri site drives growth strategy

#### Zeroing in on the future from Akita

The Akita region is a birthplace of TDK, and for many years has served as the thriving hub of Monozukuri in the passive components field. Each business division has pooled people and technology rich in regional strengths, launching subsidiaries to serve as manufacturing sites, and charting steady progress. This approach generated solid growth in the midst of the fierce competition that characterized Japan's period of accelerated economic growth and other market boom times. However, as global rivalry heated up against the backdrop of market stagnation and offshore transfer of production bases, concerns emerged regarding possible declines in the essence of *Monozukuri*. Such worries reflected signs of lowered efficiency, scattering of elemental technology and other consequences of transfers between business sites. This directed attention to the need for initiatives targeting the strength of TDK, a company that had accumulated major capacity in the Akita region. We regarded how best to utilize that capacity as a corporate group, ensure sustained growth, and effectively link such approaches to renewed progress. The Akita Future Project was conceived with this background in mind.

The goal of the Project is to integrate business sites that have grown decentralized, pursue optimization and improved efficiency for both people and technology, build employee-friendly workplace environments and use other activities to achieve sustained progress for the electronic components business, nurturing the power to compete in the global marketplace.

#### Production base reorganization, mobility of human resources, and sustained earning power

The Akita Future Project is conceived from the three cornerstones of "production base reorganization," "mobility of human resources," and "sustained earning power." While products may differ, there are numerous areas shared in common for elemental and other basic technology. However, with sites and business departments having drifted apart, it has become difficult to surmount the walls to link those operations together. Thus, one key goal of the Akita Future Project is to concentrate and reorganize production bases with the focus on elemental technology, thereby enabling a rapid response to market changes with swift new product development. Regarding effective utilization of human resources as well, the idea is to eliminate the conventional sense of distance between the "thinkers" and the "manufactures," advance optimum mobility in the use and placement of personnel and promote greater technology sharing and efficiency.

When attempting to infuse change, it is vital for each team member to shoulder their own responsibilities. For older and outdated sites. the Company will do everything in its power to make improvements aimed at comfortable working environments. As such, one of the key messages in the Akita Future Project is to encourage all employees to manifest the full extent of their abilities within such new workplaces.

My aim is to encourage everyone to work hard to realize a reliable cycle devoted to creation of quality products generating positive fruits and profit, empowering growth of human resources and the ability to sustain our business at this location.

#### Global support as mother factories

Under the Akita Future Project, we are incorporating model lines envisioned to fundamentally transform the mother factories of the Honjo Factory East Site and Inakura Factory East Site into the realm of Monozukuri

The greatest emphasis within such efforts is the pursuit of "Defect-free Monozukuri." In my view, the most critical need is to firmly grasp how customers actually use TDK products and how best to satisfy them, then use that knowledge to build in optimum product quality. For that, we must thoroughly pursue the four quality domains in which TDK truly shines—design, materials, process, and management technology. This stems from the belief that quality is clearly the ultimate service, as well as the source of all competitive strength

The primary mission of the mother factories is to use the launch of this type of model line construction to empower manufacture of products with equal quality at any site around the world, in other words, location-independent capability. While moving forward in that direction, each site will also continue to innovate and evolve on its own, increasingly carrying those achievements overseas in a genuinely endless challenge

The environment currently surrounding our business is both global and marked by a complex mix of diversified issues. Change, furthermore, is certain to grow increasingly fast and fierce. Within such a climate, it is critical to staunchly develop our business on the foundation of sustained growth, remaining keenly aware of market changes as all employees approach their work with a firm understanding of the respective roles and responsibilities. My aspi-





ration is to join with all of you in advancing this Project, beaming out the message and lessons of cutting-edge Monozukuri from Akita to the world.



# Interview

Pursuing the *Arubeki-Sugata* to create the best *Monozukuri* and workplace environment

#### Toshiaki Yamamoto

General Manager of Production Engineering Center in Production Engineering HQ Head of Akita Admin. Dept., Japan Administration Division, Human Resources & Administration HQ TDK Corporation

## Mobilizing the Akita Future Project to reorganize domestic *Monozukuri*

Roughly half of TDK Group sales come from the passive components business. The Akita region undertakes new product and elemental technology development as the location of passive components business mother factories, with those fruits channeled to manufacturing sites worldwide. However, as a regrettable result of the relocation of manufacturing operations overseas and other developments in recent years, the quality of the *Monozukuri* here has declined. In reaction to that impending crisis, and in the interest of competing globally, we reached the conclusion that revamping our factories in the Akita region was crucial. That mindset prompted the launch of the Akita Future Project—a vision based on three core policies.

In practice, we outline the specific *Arubeki-Sugata*, and advance endeavors to achieve that state. This term is difficult to translate into English. In our experience, it has proved more effective to earn the understanding of our colleagues at overseas sites by showing them the actual activities, rather than verbal explanations.

While *Arubeki-Sugata* is sometimes translated as "ideal process," it actually differs from the realm of "ideal." It lies closer, rather, to the idea of "processes possible to adopt and achieve." Specific explanations are provided of the targeted processes, with computation of the technical skills and time needed to realize them. In this way, we identify processes absolutely possible to achieve. To bolster "sustained earning power," the third pillar of the Akita Future Project, it will be indispensable to raise the caliber of our *Monozukuri* and human resources as the two *Arubeki-Sugata* in this area.

#### Teaming up to achieve the Arubeki-Sugata of Monozukuri

One initiative being energetically advanced at *Monozukuri* worksites is zero-defect quality. While quality must naturally be maintained when shipping products, it also needs to be ensured when customers actually incorporate products in their own systems and put them to use. In a word, our *Arubeki-Sugata* must consist of *Monozukuri* promising that products will not grow defective during use. To take that step, it is necessary to advance the rather plain and unrefined task of reassessing the *Monozukuri* advanced over the years by the TDK Group, and by Japan in general. Bringing onboard elemental technology development, process development,

and control technology as well, our key personnel must unite in meticulous pursuit of the essence involved, striving to build up a series of small successes. Only when this is achieved do we reach the realm of zero-defect quality. Simply stated, we mobilize new processes to create new products through the zero-defect quality mindset. This begins by establishing solid and reliable *Monozukuri*, paving the way to the next stage of *Kotozukuri*. At our frontlines, I sense a marked increase in professional awareness compared to what has existed in the past. Our roles and responsibilities lie in bringing this stance to fruition at the earliest possible point in time. The know-how cultivated in this way must also be spread globally, through horizontal deployment, throughout the TDK Group at large.

# The workplace environment and communication *Arubeki-Sugata* for staffers

We also energetically advance endeavors to realize the *Arubeki-Sugata* at the staff level. While the workplaces where we report daily are naturally key sites of *Monozukuri*, we must also devote serious consideration to the proper status of employee cafeterias, restrooms, entrances, etc. These areas also fall under the realm of *Monozukuri*, as well as the pursuit of the essence of our business. My aim, therefore, is to muster the staffers of our personnel, general affairs, facilities, and other administrative divisions as the focus in drafting rules for the *Arubeki-Sugata*, and apply those same tenets throughout the entire Akita region.

What we are after, in short, is the creation of factories that customers will yearn to visit again. In addition to customers, we are equally inspired to build workplace environments where TDK Group employees and staffers from the Akita region itself can relax and focus on performing their jobs. The Akita region spans numerous sites, each with its own distinctive culture. The Akita Future Project vision seeks to integrate the Akita region into an integrated whole. While we have linked the factories there with a focus on elementary technology, the presence of largely invisible walls poses an extremely serious problem. Communication provides a vital tool in surmounting such barriers. My own upbeat impression is that such communication is currently unfolding with substantial energy and momentum. My goal is to also carry and develop these activities overseas, devoting close consideration to the cultures and customs in those regions. Going forward, I am more determined than ever to direct the full thrust of our energies into realizing the ONE TDK ideal.