

## Message from the President



# Unique ceramic technology for a future of coexistence between environment and humanity

My heart goes out to all those affected by COVID-19. I would also like to express my sincere respect and gratitude to medical professionals and all the other people who are supporting our society. The current spread of the novel coronavirus has caused an abrupt slowdown in the global economy, having a significant impact on the NGK Group's business performance. Nevertheless, we must not halt our progress. We strive to ensure the safety of employees and their families and prevent the spread of infection. With this as our top priority, we will take advantage of our unique ceramic technology to provide products that exceed society's expectations and continue growing to create a sustainable future.

NGK Insulators, Ltd.  
President



Commemorating 101 years in business

## Look into the future and set a goal to realize the NGK Group Philosophy

Last year, on the occasion of its 100th anniversary, the NGK Group took a new look at its philosophical framework and established the NGK Group Philosophy. In the 101st year, we would like to define the Group's goals and work on formulating a new business vision.

Large-scale investments we had carried out over the past four years have been mostly completed. The path for the business expansion of existing products has been laid out, and new products with good prospects are beginning to emerge in each business. We already know what needs to be done in the 2020s. Now, the NGK Group must develop a vision looking into the future beyond that.

The new vision will focus on the ways we can achieve coexistence between environment and humanity, based on which we aim to resolve diverse social issues through the effective use of our technologies and create new value.

The reduction of CO<sub>2</sub> emissions is an important global challenge, and investors consider ESG initiatives as part of corporate responsibility. Society 5.0, an initiative promoted by

the Japanese government, advocates a people-centered society and encourages companies to drive reforms. The concept of achieving coexistence between environment and humanity took shape as we examined the ideal state as a company based on this trend.

Nonetheless, coexistence between environment and humanity is no easy feat. In order to create a future where people coexist with the rich natural environment, we must further improve ceramic technology as our strength and resolve diverse social issues through innovative solutions. To this end, we need to drive transformation and growth through the Group's collective efforts.

Therefore, since the end of 2019, we have been holding discussions with the management team, outside directors, and younger employees to formulate a new vision. I constantly think about contributions we can make to society by believing in the future of ceramics and further evolving our unique technology.

## Message from the President

COVID-19

### Sustaining business activities while prioritizing human life

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Meanwhile, when I look at the current global situation, COVID-19 remains rampant. I am afraid that a great number of people are now living with fear in their hearts.

The NGK Group has positioned preventing the spread of COVID-19 as an important crisis management issue and launched the Business Continuity Plan (BCP) Countermeasures Headquarters to gather information. Under the three policies, namely priority on human life, cooperation with the government and collaboration with local communities, and the achievement of sustainable business activities, we are looking into various measures for business continuity while placing utmost priority on ensuring safety and preventing the spread of the virus.

Specifically, in back-office departments, employees are encouraged to switch over to staggered commuting and telecommuting to the greatest extent possible, while in production lines, measures are taken to reduce

people-to-people contact such as by installing vinyl curtains and using face shields in some sections. The shift to telecommuting proceeded relatively smoothly as we had been working to establish a network environment such as by introducing new software. There are more departments now taking this opportunity to review conventional work patterns to improve operational efficiency.

COVID-19 has also had an impact on the Group's respective businesses, forcing some production sites in Europe, North and Central America, and Asia to suspend operations or reduce factory utilization. A number of major markets have been affected in terms of demand. Nonetheless, we anticipate a recovery in demand from a medium- to long-term perspective. Therefore, we will focus on the creation of new products for the future while flexibly addressing the immediate drop in demand.

Business risks

### Strengthening the management system for diversified business risks

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We categorize business risks that are considered significant from a management perspective, including COVID-19, into those related to the business environment, strategies, and internal factors respectively and review them on a continual basis.

In the automotive-related business, changes in demand may be anticipated in the future due to internal combustion engine vehicles (ICEVs) gradually being replaced with non-ICEVs such as electric vehicles (EVs) and fuel-cell vehicles (FCVs). However, for the time being, the ICEV market is expected to further expand with tightened exhaust regulations, and therefore, we are anticipating business growth through an

increase in new and high-performance products. In the Chinese market, which is growing in importance, although Chinese competitors are expected to become more active, we will continue to strengthen our competitive edge with capabilities to provide technologies that preemptively address environmental regulations and through a steady supply of products.

As global business expansion proceeds, in order to minimize the impact of diversified business risks, the NGK Group is working to strengthen risk management. We will improve the risk management system to further reinforce our management base.

Business overview

### Production capacity up to 2023 has been secured; focusing on the dissemination of new products

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Now, I would like to give an overview of the NGK Group's respective businesses.

In the automotive-related business, fiscal 2019 results were affected by a number of factors. In China, an economic slowdown began in the automotive market from late 2018 and the introduction of environmental regulations for large vehicles was later than anticipated. In Europe, diesel vehicle sales dropped further and resulted in lower-than-anticipated demand. However, the prospect that the number of ICEVs will continue to increase until 2030 remains the same. We are

proceeding with the development of high-performance products that can address new exhaust regulations.

Due to large-scale capital investments that we have been carrying out since fiscal 2016, production capacity up to fiscal 2023 has been secured. Although there are factors such as recent depreciation cutting into profits, we hope that success in our other businesses can offset a drop in demand in the automotive market.

In the semiconductor-related business, investments for the Internet of things (IoT), artificial intelligence (AI), and the 5G next-generation communication standard show a trend of expansion, based on which we are assuming that they will continue to increase. We will maximize the use of a new factory in Tajimi City, Japan, which began operation in October 2019, to raise production efficiency and increase our earning capacity. Moreover, we will work on the development of next-generation products for higher-performance semiconductor manufacturing equipment.

With regard to the power-related business, the Power Business was renamed the Energy Infrastructure Business in 2020. In addition to existing power system insulators and NAS® batteries, zinc rechargeable batteries for utility customers have been added to the product lineup. In comparison to lithium-ion batteries, zinc rechargeable batteries provide greater safety, which allowed them to eventually acquire the world's first UL verification mark\* in the storage battery field. We will continue with their development and sales expansion. In order to ensure access to low-cost, reliable energy for everyone, we will not only support the stable supply of electricity, but also expand the possibility of its efficient use, thereby establishing a business that can contribute to social infrastructure.

In the electronics-related business, samples of EnerCera® lithium-ion rechargeable batteries have been shipped to more than 200 companies inside and outside of Japan. These batteries were commercialized in fiscal 2019. We are promoting the assessment of these products for use in IoT devices including smart cards and smart keys for automobiles. We are also strengthening our marketing forces and working on cost reduction in an attempt to promptly generate sales and profits.

In fiscal 2019, the Advanced Device Components Division was launched under the Electronics Business to handle all promising new products such as the EnerCera battery, bonded wafers, and gallium nitride (GaN) wafers. Bonded wafers are

used as substrates for electronic devices, which are incorporated in products like smartphones. Against the backdrop of the spread of mobile communication speed enhancement technology, they are expected to achieve reliable growth in the future. GaN wafers are high-performance wafers that will improve an LED's luminous efficacy and enable the higher output of semiconductor lasers. In anticipation of their application to power semiconductors, which constitute a large market, we have also established technology to create bigger 6-inch types.

All these products were developed based on our own technologies, such as crystalline orientation control, ultra-high-precision polishing, wafer bonding, and liquid-phase crystal growth and deliver unrivaled high performance. These businesses have a promising future in that customers approach us with potential new applications or we discover application needs that we have never thought of.

\* The UL verification mark signifies a high level of safety, backed up by a rigorous safety testing and evaluation process carried out by Underwriters Laboratories (UL), a third-party safety science organization in the U.S. Valid until the end of October 2020.



## Message from the President

ESG

### Consolidating relevant matters to be discussed by the ESG Committee and promoting them as Group policy

In fiscal 2019, in order to consolidate discussions related to the environment, society, and governance, we launched the ESG Committee, which established a structure for discussing ESG initiatives, including the Fifth Five-Year Environmental Action Plan that will start from fiscal 2021, among senior management and promote them as part of the Group policy.

In the Fourth Five-Year Environmental Action Plan, which will be completed in fiscal 2020, target values have already been achieved in terms of the reduction of discarded materials and recycling. However, the target achievement in terms of CO<sub>2</sub> emission intensity of sales has been difficult due to our expanded scale of production. We are likely to focus on actions to combat climate change in the next plan. In order to achieve targets, we will continue to improve the structure to enable the development and introduction of production technologies that will help reduce the environmental impact and to facilitate the dissemination of products and services.

In February 2020, we endorsed the recommendations made by the Task Force on Climate-related Financial Disclosures (TCFD). We, as a responsible party, will work to realize a sustainable society and strive to disclose and enhance related information.

With respect to the social aspect, we will concentrate primarily on job satisfaction reforms. I have been persistently communicating to our employees the importance of pursuing our essence, because I would like them to spend time on what is truly necessary and perform higher-value-added work. Since

the start of my tenure as president, I have been personally visiting each workplace and asking employees what they are focusing on and what they are doing to solve problems. With each passing year, I have seen positive changes in the attitudes of both department heads and employees. We will also further enhance corporate systems to be a company where each employee can actively engage in work without any worries and deliver higher-quality performance.

The NGK Group has shown respect for employees' diversity and designed our human resource system to meet the needs of the times. In April 2020, we established the HR Committee as an organ for cross-sectoral discussion of corporate activities that respect human rights and human resource issues that should be addressed by the Group as a whole. Concurrently, we also launched the Diversity & Inclusion Department.

With regard to governance and compliance, we will promote honest business activities. In the past, the NGK Group caused problems that must never be repeated, including an anti-trust law violation and a non-conformity in the testing procedures of insulators and related products. It is important to never repeat these problems, and to this end, we must foster a culture where each employee strictly follows routines and rules as they are required. We are currently carrying out initiatives such as holding compliance seminars at Group company sites in an effort to instill this attitude in every employee.

Post-COVID-19

### Be ingenious by adopting new work styles

The global economy has suffered an unprecedented level of damage due to the effects of COVID-19. Looking back on the past, infectious diseases have had a considerable impact on society in the long history of the world. Considering these historical facts, we may have to prepare for the long haul. In the future, I believe that a variety of measures including vaccines will be implemented and new values and technologies suited to the post-COVID-19 era will be developed. The NGK Group will continue to look into various measures while placing utmost priority on ensuring safety and infection control.

The current catastrophe significantly reframed my attitude toward the environment. While keeping in mind a future of coexistence between environment and humanity, we have up to this point viewed the environment with a focus on CO<sub>2</sub> emissions reduction such as in the form of global warming countermeasures, and examined the effective use of the NGK Group's strengths and other initiatives. However, due to the spread of COVID-19, we confronted the reality that we are fighting an invisible threat every day. This reminded me that we

are always living side by side with nature. Thinking about how we should approach lifestyles in harmony with nature will broadly lead us to discuss what the company can do for society in 10, 20, or 100 years into the future. Toward the formulation of a new vision, we will redefine environmental protection in a broader context and clarify the direction to take as the NGK Group.

As we undergo social changes, our work styles have also shifted significantly. New working methods such as telecommuting and web conferencing have become ubiquitous, which I believe provided us with an opportunity to determine how essential each task is by spending time on thinking about contributions that each of us can make to the team and then discussing such ideas with them. Currently, we are internally gathering and summarizing feedback on changes that we have experienced and what we have felt throughout this calamity. We will be holding discussions on new work styles suitable for the NGK Group.

When I think of change, I value the idea of being ingenious. In the world, the word “innovation” is casually mentioned; however, in order to change the world, the accumulation of research activities over an extended period of time and the repetition of the trial and error process to develop ingenuity are crucial. This ingenuity stems from findings and inspirations, based on which we shall work toward materialization. Products are the fruit of these steady efforts, and there is no silver bullet

that allows us to reach a goal in a single bound. Work is meaningful only because we spend time on the process. I believe that the least I can do is to create a pleasant working environment where each employee can exercise their ingenuity.

In order to create a future of coexistence between environment and humanity, we will continue to pursue unrivaled ceramic technology with ingenuity and keep growing as a company capable of contributing to society.

