

# NEC TOKIN, Bringing You Material Technology-driven Products and Solution Strategies

In this special issue, NEC TOKIN will introduce the solution strategy that positions our company as a “Device Creation Company Originating from Innovative Materials” and the current state of our product development.

Among the cutting-edge products of NEC TOKIN, we will introduce our Proadlizer, tantalum capacitor, Supercapacitor (electric double-layer capacitor), large-capacity rechargeable battery, Magnetic materials for low-loss inductor and UHF-band reader/writer and antenna technologies. Through our development and commercialization of cutting-edge devices based on our material technologies, NEC TOKIN is steadily realizing its vision to be a company that proposes device solutions that not only satisfy current requirements but anticipate future needs ranging from energy to the environment - always with an eye on the broad social landscape and its expectations.

Associate Senior Vice President  
NEC TOKIN Corporation  
KUBO Yoshimi

## 1 NEC TOKIN – Our Solution Strategy

With material technology positioned as our core technology, NEC TOKIN aims at becoming a “Device Creation Company Originating from Innovative Materials” that offers

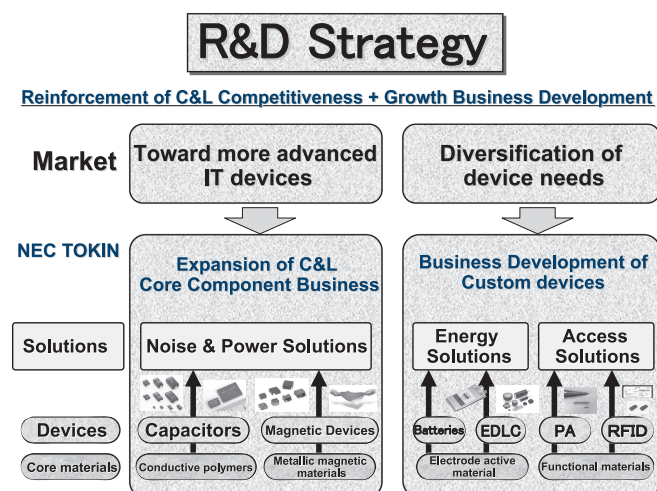


Fig. NEC TOKIN Research & Development Strategy.

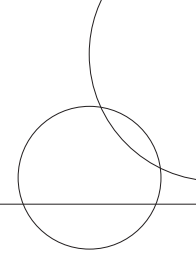
customers the fruit of its development of cutting-edge devices featuring increasingly compact form and sophisticated functionality. By offering solutions to the three primary concerns of customers: “Energy,” “Noise & Power” and “Access” - solutions that exploit the performance of these state-of-the-art devices, we have built our business.

Amid a market environment that is evolving at dizzying speed and against the background of ever higher performance and higher functionality as exemplified by IT devices, devices that are embedded in such products are expected to deliver greater multi-functionality and higher performance in step with the diversification of market needs.

For this reason, a look at future business development will be included within the scope of this overview, which will describe the basic R&D strategy of NEC TOKIN (see Fig. ) founded on the unique characteristics of our product lineup, our core technologies and the state of development of new products.

## 2 Basic R&D Strategy

In the markets served by NEC TOKIN, we are witnessing a rapid leap in both sophistication and functionality of mobile phones, personal computers, thin TVs and other IT equipment. At the same time, the needs of the market in general and the



demands of individual customers are diversifying. While these circumstances demand that the devices incorporated in these electronic products deliver more advanced functionality and diverse performance, the necessity to meet needs that are in conflict with such requirements has also arisen.

General-use products such as capacitors and inductors that comprise the core of NEC TOKIN's business are expected to offer new answers to the needs of the market while satisfying the demand for more compact design and more advanced functions and a continuous reduction in prices. On the other hand, in the case of "custom" products such as batteries, piezoelectric devices and RFID, it is necessary to work hand in hand with customers and pioneer new markets by further exploiting the essential functionality of each device while proposing new solutions that respond to the needs of customers and the increasing diversification and advanced functionality demanded by their cutting-edge products.

For this reason, our future R&D strategy, as explained in the following sections, is divided into two main directions: a strategy for our more "general-purpose" products (C&L products) such as all-purpose type capacitors and magnetic devices, and another strategy for "custom" products such as batteries, piezoelectric devices and RFID.

## 2.1 C&L Product Development Strategy

[Noise & Power Solutions]

Among the products of NEC TOKIN, tantalum capacitors, Proadlizer, and magnetic devices such as inductors and noise suppression sheets face a constant demand for ever-enhanced models that respond to challenges such as solving the increasingly serious problem of electromagnetic noise and need for power supply that is more compact and delivers higher efficiency. By developing and making these state-of-the-art products available to customers ahead of our competition, NEC TOKIN is able to offer our clientele effective "Noise & Power Solutions."

In the markets where these products are used, the competition among suppliers continues to be a battle focused on winning share. Consequently, the source of competitiveness strength lies in the capability to continuously launch more compact/thinner products and respond to the demand for lower cost. For this reason, R&D activities for this category of products is focused on establishing technologies that enable the manufacturer of more compact and thinner devices while practically applying our unique edge in materials such as conductive polymers and low-loss magnetic materials and constantly driving costs down.

In this special issue, we will introduce our development of compact large-capacity tantalum capacitors, Proadlizer lineup

for digital appliances and telecommunications devices and the next-generation of inductors featuring the use of low-loss magnetic material.

## 2.2 Custom Product Development Strategy

[Energy Solutions and Access Solutions]

In response to energy and environmental issues, technologies for the safe charging and discharging of large-capacity electrical energy and large-capacity rechargeable batteries are demanded. Also to make the electric-powered car a practical reality, electrical storage devices that optimally respond to variable loads are needed. In order to meet this applications, NEC TOKIN is building a lineup of products that conform to a wide variety of uses, ranging from large-capacity rechargeable batteries to electrical double-layer capacitors and lithium-ion capacitors. Through our commercialization of leading-edge devices that exploit our originally developed materials that are constantly enhanced through tireless R&D activities, NEC TOKIN is offering optimized "energy solutions" that deliver high quality, safety, large capacity and low cost.

Also for the manufacture and construction of advanced wireless telecommunications networks, manufacturing management in logistics, and inventory management, there is growing demand for high-functionality, high-performance devices that incorporate the core technologies of wireless technology and antenna technology. To meet these needs, NEC TOKIN is working in close collaboration with the NEC Group on the development and commercialization of UHF-band RFID reader/writers, IC tags incorporating various types of sensors and other "access solutions" for our customers.

Unlike the C&L products, the lineup of products described here are specialized to a degree that could be described as "custom." Consequently, for the development of product proposals and their commercialization, it is necessary to fine tune to meet customer specifications and constantly feedback refinements in the device design. To achieve this, NEC TOKIN R&D engages in the development of sample activities to confirm the needs of customers and constantly reviews R&D themes to ensure that they are in synch with the needs of the market while moving forward with activities that lead to the proposal of optimum solutions for customers.

In this special issue, we will introduce our large-capacity, high-output lithium-ion rechargeable battery, electrical double-layer capacitor designed for the variable load of mobile devices, and UHF-band RFID portable reader/writer for use in manufacturing and logistics processes.

### **3 Paving the Way for the Future with R&D**

For the development of the cutting-edge devices described above and the next-generation of advanced functional materials, NEC TOKIN is pressing forward with research and development activities - not only planting the seeds of future technologies, but also building various technological alliances.

In the area of material development and manufacturing process development, we have organized a formal alliance with Tohoku University, which is globally leading institution in the field of material development. Also while fully exploiting our edge as a member of the NEC Group, working in close collaboration with NEC Central Research Laboratories and NEC operation divisions for the development and commercialization of cutting-edge products, we solve technological problems, offer effective solutions to our customers, and systematically open new markets.

Pressing forward with the pursuit of R&D that is keyed on our upstream strength in material development, NEC TOKIN pursues and provides innovative solutions that answer environmental concerns ranging from energy and the environment to resource conservation. We look forward to hearing your frank feedback regarding the R&D activities of NEC TOKIN introduced in this special issue.