

# TAIYO YUDEN Group's Research and Development Activities

## The Foundation of Our Research and Development Activities

Hikohachi Sato, the founder of TAIYO YUDEN, was a researcher in ceramic materials. Since its establishment, TAIYO YUDEN has believed that product commercialization should start from the development of materials. This has been one of the strengths of TAIYO YUDEN, and has resulted in us creating many products that have been "world firsts."

The TAIYO YUDEN Group's research and development activities are aimed at further honing the many elemental technologies it has so far developed to create products that are highly rated by its customers. In particular, the Group is focusing on the development of super high-end products and high reliability products, as well as on creating new businesses by proposing solutions.

## Research and Development Principles

### "Innovative advance"

#### Technology precedence

Promote leading edge technological development as the precursor to innovative product development and become a global leader in technology

#### Reproducibility

Logically verify the reproducibility of the technology we develop

#### Technological applicability

Develop technologies that are feasible and applicable economically to our manufacturing process and that meet critical environmental standards

#### Environmental consideration

Devise technologies which can be applied not only to specific products but also to other areas useful to the markets we serve

## Achievement of Our Vision through Development of Smart Products

The TAIYO YUDEN Group aims to manufacture "smart products" and is actively working to develop and supply steadily such products.

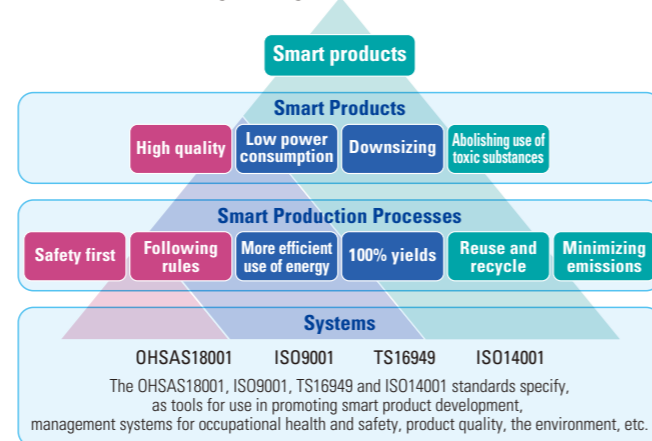
We develop smart products to eliminate the three M's—muda (wastefulness), mura (inconsistency) and muri (overburden)—over their entire life cycle from design through production, sales, and incorporation into the final product right up to final disposal, to add value for customers and local communities we serve as well as our employees.

Combining our "smart processes," which utilized as development and promotional tools management systems for occupational health and safety, quality and the environment and other aspects, with our initiatives towards "smart products" that take usage and final disposal into consideration to reduce environmental impact, we strive to develop smart products.

We believe that our research and development activities aimed at creating a higher standard of smart products will enable us to realize our vision of "becoming an excellent company that enjoys the trust and highest regard from our customers."

## — TAIYO YUDEN Vision —

To be an excellent company that enjoys the trust and highest regard from our customers

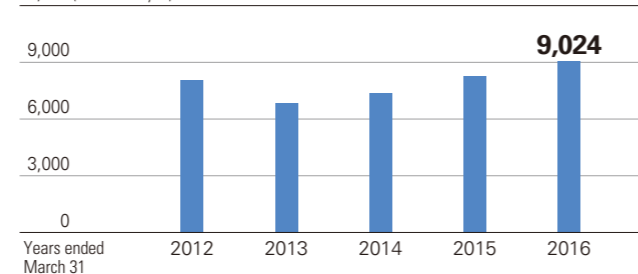


## R&D Expenses

We recognize that continuing innovations and advancement in our technologies through R&D is the foundation for the Group to create the future. With this belief, we will continue to invest in R&D activities and the future development of our products.

### R&D expenses

12,000 (Millions of yen)



## R&D Center, TAIYO YUDEN's Research Facility (Takasaki City, Gunma Prefecture)

As we were committed to continuing to create the world's best products and uphold our claim to be "the TAIYO YUDEN of technology and the TAIYO YUDEN of development," we opened the R&D Center in 1998. In 2003, we established an Anechoic Chamber Test Facility in the same complex, and accelerated our proactive R&D activities in the field of radio communication. Currently, the R&D Center of the TAIYO YUDEN Group drives development and technological progress and takes a role of a foundation of creativity focusing on the future.



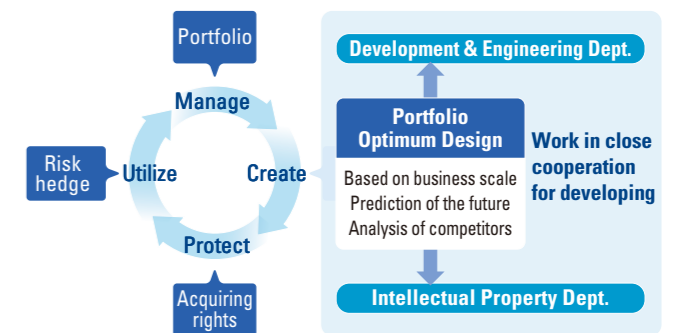
## Activities on Intellectual Property Rights

### Basic Policy

We, the TAIYO YUDEN Group, endeavor to obtain, maintain and protect intellectual property rights for proper use, and also to respect the intellectual property rights of third parties, in accordance with our CSR Code of Conduct.

## Protection of Intellectual Property Rights

At TAIYO YUDEN, the Intellectual Property Department and the Development and Engineering Department work in close cooperation with each other from the early stages of developing new technologies and obtaining intellectual property rights. We have our own management system to create, protect and utilize the intellectual property rights that are suitable for each of our businesses.



## Interview with Top Management of Research and Development

## Speeding up Advancement and Enhancement of Manufacturing by Harnessing IoT Technologies

For the TAIYO YUDEN Group, the foundation of our future lies in research and our development activities.

In the business domains where we operate, materials technologies, particularly those for synthesizing uniform materials, are especially important, and we believe our capabilities in this field are second to none. In recent years, however, it is no longer enough to simply use quality materials to develop quality electronic components; rather, in an increasing number of cases, we must go as far as proposing potential applications based on them. This, in turn, means research and development must cover a broader range of areas from upstream to downstream.

To survive the competition in the electronic components sector, which is evolving at a staggering pace, we must create new products at a speed that exceeds customer expectations. Moreover, the rapid spread of the Internet of Things (IoT) driven by advances in sensor technology and computing capabilities is bringing about significant changes in manufacturing spheres.

Along with developing electronic components that support this innovative advance in technologies, we are strengthening initiatives towards IoT applications in our research and development activities and at frontlines of manufacturing. We will aggregate vast, diversifying data and analyze such collected big data to clarify the mechanisms of manufacturing and provide feedback to research and development activities, and strive to achieve both faster development and high-quality of products.



**Hiroshi Kishi**

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