

# Five-fold core competence for creating cutting-edge electronic components

Ever since its beginnings rooted in the magnetic material ferrite, TDK has strengthened its base by moving forward, exploring multilayering and thin-film techniques. Now, we are researching spintronics technologies for future applications. In the quest to further expand the potential of magnetism on the nanometer level, TDK is harnessing the five core technologies outlined here.

## 5 CORE TECHNOLOGIES

### Process

**“Process technology” realizes control on the nanometer level**

Process technology is the science of getting the best out of the characteristics of the material. Thin-film technology and spintronics are just two examples where manipulation on the order of nanometers is employed to create state-of-the-art electronic components. For example, thin-film technology is applied for the formation of electrodes, coils, and head elements on wafers to produce HDD heads, sensors, actuators, and similar products.

### Analysis & Simulation

**“Analysis & simulation technology” is applied to accurately analyze ultra-fine aspects of a process.**

Even the most advanced materials and process technology would not lead to successful product development without accurate and trustworthy analysis and simulation techniques. Starting from material analysis, TDK evaluation and simulation technology is widely applied to assess structural and thermal aspects, analyze electromagnetic field properties, and perform noise measurement and design noise countermeasures using an anechoic chamber.

### Production

**“Production technology” : Outstanding facilities developed and manufactured in-house**

Excellent products can only come from excellent manufacturing facilities. TDK not only develops innovative manufacturing techniques but realizes these by building much of the required equipment in-house. This comprehensive approach is the key to superior Monozukuri craftsmanship. We supply services meeting market needs by better quality, lower cost, shorter lead times and promoting integrated production from materials to finished products.

### Product Design

**Product design technology combines expertise with innovation to create new ideas**

Product design uses insight into how our products are used, integrating materials and electronic components from our many product lines, to create electronic devices and modules with safe, optimal configurations. It also encompasses software design that harnesses the full features of those devices and modules. Additionally, TDK supplies energy devices which combine power conversion, storage, and energy control functions. These integrated solutions have quickly become crucial for life in a sustainable society.

### Material

**The culmination of over 80 years of experience and know-how: “Materials technology”**

Advanced materials technology pursues the characteristics of the source material from the atom level on up, to meet highly sophisticated needs. Control of main raw material composition as well as microadditives is an effective approach for achieving specific targeted properties. In over 80 years of operation, TDK has accumulated an enormous wealth of experience and knowledge that leaves competitors far behind.