NSK has relentlessly pursued innovative technologies and focused on improving quality in order to contribute to a safer, smoother society and to protect the global environment, in line with its corporate philosophy. NSK leads the world in the product fields of bearings, automotive components and precision machinery and parts. The foundation that underpins those technologies consists of tribology, materials, numerical simulation and mechatronics, which are NSK’s Four Core Technologies.

Then there is manufacturing engineering, another important technology and strength of NSK that gives shape to our Core Technologies. The technologies and products that have been created based on our Four Core Technologies, with the “plus One” of manufacturing engineering, are contributing both to the development of industry across the world and to people’s abundant lifestyles. NSK will continue to engage in advanced technological development and provide highly functional, high-quality products that meet market needs in the years to come.

Core Technologies and Taking Up the Challenge of Creating New Value

NSK’s Four Core Technologies, and Giving them Shape is Manufacturing Engineering

Tribology
Studying, Clarifying and Controlling Friction

Tribology is the study of friction and wear of contact surfaces in relative motion, such as rotating parts that endure enormous forces with a thin oil film. Severe operating conditions are mitigated through lubrication and surface treatments developed by NSK, resulting in superior performance for applications requiring low friction, high-speed rotation, quiet operation, or enhanced durability.

Materials
Unrelenting Pursuit of Performance Durability and Reliability

Materials research and development affects nearly every aspect of product performance. Through careful selection of material composition, heat treatment, and ceramic materials, NSK enables optimization of application performance. This may result from improvements in function, endurance, or reliability, or through advancements in cost-effectiveness or production efficiency.

Numerical Simulation
Simulated Recreation in Cyberspace to Predict Performance

In the past, accuracy and reliability in product development were achieved with experience-based design and longer testing periods. NSK’s simulation technology allows virtual validation to accelerate design and production. Extreme conditions or innovative designs that defy previous expectations can also be evaluated and analyzed.

Mechatronics
Technology Supports People for a Convenient, Safe and Comfortable Future

Mechatronics integrates machine elements technology with control technology. By combining bearings, ball screws and linear guides, together with motors, sensors and computers, greater mechanical functionality is elicited with computer control. This technology applies new functions and performance to a range of industrial machinery, such as for automobiles and bio-medicine. It also contributes to greater reliability, as well as to convenience and safety in daily life.

Manufacturing Engineering
Giving Shape to Four Core Technologies

Contributing to the environment and heightening safety and security through our Four Core Technologies requires something to breathe life into these technologies. In addition, it is essential to consistently produce with high quality. NSK tackles these issues by applying AI to its equipment, utilizing IoT, and optimizing its overall production framework while it works to realize the creation of smart factories that economize on space, save on energy, and reduce manpower requirements.

Four Core Technologies + 1