

# Research and Development

Minebea has established four R&D bases worldwide to, respectively, promote the development of intellectual assets—a key to competitiveness; facilitate the sharing and use of these assets within the Group; enable a smooth transition from development to mass production; and conduct forward-looking R&D. Recently, Minebea absorbed its R&D Headquarters into the newly established Engineering Headquarters, a step that will reinforce technology sharing among Minebea Group companies, encourage forward-looking R&D—contributing to the cultivation of new core competencies—and strengthen coordination between R&D and production groups.



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## Bearing-Related Products, Small Motors

### Precision Motors Deutsche Minebea GmbH (Germany)

HDD spindle motors and other small motors

- Product development
- Engineering
- Production of prototypes
- Quality evaluation



### R&D Centers (Thailand and Singapore)

Ball bearings, fluid dynamic bearings, pivot assemblies, HDD spindle motors, hybrid-type stepping motors, fan motors and other products

- Quality evaluation
- Cleanliness evaluation/management
- Development, production and evaluation/management of lubricants



### Karuizawa Manufacturing Unit (Japan)

Ball bearings, FDBs, rod-end and spherical bearings, pivot assemblies, HDD spindle motors, hybrid-type stepping motors, fan motors and other products

- Product development
- Engineering
- Development of production technologies (mass production)
- Production of prototypes
- Quality evaluation



### NMB Technologies Corporation Technical Center (U.S.A.)

Ball bearings, motors and other products

- Quality evaluation for automotive components



### New Hampshire Ball Bearings, Inc. (U.S.A.)

Rod-end and spherical bearings

- Product development
- Engineering
- Quality evaluation



### NMB-Minebea UK Ltd. (United Kingdom)

Rod-end and spherical bearings

- Product development
- Engineering
- Quality evaluation



## Electronic Components

### Hamamatsu Manufacturing Unit (Japan)

PM stepping motors, DC brushless motors, DC spindle motors, MOD drive subassemblies, magnetic heads for FDDs, lighting devices

- Product development
- Development of magnets and other materials
- Engineering
- Development of production technologies (production of prototypes)



## PC Keyboards

### NMB Technologies Corporation (U.S.A.)

PC keyboards

- Quality evaluation



### Mechatronics Division (Japan)

PC keyboards

- Product development
- Engineering
- Quality evaluation



## Development of Electronics Technologies and Related Products

### Electronics Engineering Center Europe (Germany)



## Speakers

### Minebea Technologies Taiwan Co., Ltd. (Taiwan, China)

Speaker boxes

- Engineering
- Production of prototypes



### Speaker Division (Japan)

Speakers

- Product development
- Engineering
- Quality evaluation



## Measuring Components

### Measuring Components Division (Japan)

Strain gauges, load cells and other measuring components

- Product development
- Engineering
- Production of prototypes
- Quality evaluation



## Fasteners

### Fujisawa Manufacturing Unit (Japan)

Fasteners

- Product development
- Engineering
- Quality evaluation



## Defense-Related Special Parts

### Omori Manufacturing Unit (Japan)

Defense-related special parts

- Product development
- Engineering
- Quality evaluation

