

**Maximizing Basic Technologies to Cultivate New Markets**



**VERTICALLY INTEGRATED MANUFACTURING SYSTEM**

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To enhance the quality of mass-produced ball bearings, small motors and other mainstay products, Minebea strives constantly to improve the precision of the parts it uses and its ability to supply these parts to its production facilities worldwide. The success of the Company's efforts reflects its vertically integrated manufacturing system. This system encompasses all processes, from production and maintenance of dies and molds, to production of pressed, injection-molded and die-cast parts, machined parts such as shafts and gears, and magnets, final assembly and testing. Each process is monitored by a specialist based at either the Karuizawa or Hamamatsu manufacturing unit.



T O P I C

**Reflective Color LCD Front Light Unit**

One of Minebea's new products is an exclusive front light unit for reflective color liquid crystal displays (LCDs). Developed in-house using the Company's exclusive design and simulation software and advanced injection-molding technologies, this new front light unit comprises a light-conducting, transparent polymethyl methacrylate (PMMA) panel made from a number of fine prisms and white light-emitting diode (LED) chips. When attached on a reflective color LCD, the front light unit significantly improves the brightness and readability of the display in dark environments. This product consumes less power, has a lower-profile structure, is lighter in weight and more compact than conventional LCD front lights, making it particularly suitable for mobile applications. As a consequence, Minebea anticipates rapid growth in demand.

**Expanding Markets for Minebea's Products**

This synergistic combination of precision machining technologies—which facilitate internal sourcing of most of the parts used in its finished products—mass-production technologies and advanced R&D allows Minebea to keep abreast of the growing popularity and sophistication of information and telecommunication equipment and household electric appliances by supplying a wide range of advanced components.

With technological progress, notably digitization and the increasingly information-oriented nature of household electrical appliances, the rapid growth of mobile telephones and personal digital assistants (PDAs) and the improved performance of electronic products for automobiles, demand for superior-quality components is rising. Accordingly, Minebea expects to see its share of these and other key new markets expand.

**Key Uses for Minebea's Bearings and Components**

Desktop PCs	Notebook PCs	Facsimile machines	Laser printers
Copy machines	Electronic music and game devices	Air conditioners	Audio components
Televisions	VCRs	Interphones	Portable cassette players
Video cameras	Telephones	Sliding bookshelves	Microwave ovens
Sewing machines	Micro-computerized wash/dry toilets	Oil fan heaters	Window shutters
Dehumidifiers	Rice cookers	Blenders	Vacuum cleaners
Air sanitizers	Refrigerators	In-line roller skates	Low tables with built-in heaters
Weight scales	Alarm clocks	Oil and gas water heaters	Fishing reels
Remote-control devices	Electric power tools	Ball bearings Fan motors Hybrid-type stepping motors PM-type stepping motors Spindle motors for HDDs Spindle motors for FDDs Induction motors	Keyboards Speakers Transformers FDD subassemblies Head carriage assemblies Magnetic heads Switching power supplies Inductors Investors for backlighting units Strain gauges Load cells Pivot assemblies Tape guides

