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Development of the “GXH-3” High-Speed Modular Mounter

-Throughput among best in industry, processing 95,000 chips per hour-

In October 2007, Hitachi High-Technologies Corporation (President: Hidehito Obayashi) launched sale of the newly developed “GXH-3” a high-speed modular mouter for electronic components that achieves a roughly 20% improvement in throughput compared to previous mounters.

The spread of digital home appliances, as well as portable information terminals, notebook PCs, and other compact devices with sophisticated functions, is driving the demand for faster, more precise and higher quality electronic component mounters. In recent years, the size of resistors, capacitors, and other electronic parts has generally fallen from 0402 (1.0mm X 0.5mm) to 0201 (0.6mm X 0.3mm), with the need to cope with size 01005 parts (0.4mm X 0.2mm) on the horizon. Moreover, as products grow more diverse and production lots get smaller due to shorter life cycles, production that can vary in terms of both product type and volume is fast becoming the norm. Production systems must now accommodate large volumes as well as different types of products in smaller volumes.

The “GXH-3” high-speed modular mouter developed by Hitachi High-Technologies incorporates the best features of the earlier “GXH-1S” model, including one-by-one pickup thanks to a direct drive head, adoption of a linear motor for the XY beams, and the ability to recognize 12 parts at once. However, by rethinking head motion and structure, Hitachi High-Technologies developed a high-speed direct drive head that enables the GXH-3 to mount 95,000 chips per hour, for one of the best throughputs in the industry. (Improvement compared to the previous mouter: Roughly 20%)

In another innovation, Hitachi High-Technologies developed both a function that provides feedback as mounting takes place by measuring board warp, as well as the profile and thickness of the part, and a “soft mounting nozzle,” which minimizes impact force when mounting parts. Ultimately, the goal is to radically reduce mounting defects by providing cutting-edge, high-quality mounting solutions.

The four head components consist of a high-speed head (12 nozzles) and a multifunctional head (3 nozzles), which can be reconfigured at will. This adaptability enables compatibility with a wide range of components. As a result, heads and feeders can be chosen as needed for each unit, allowing equipment specs to be tailored to the particular production setup. The heads are compatible with up to 200 different types of installable parts for components.

Each head also has a part recognition camera and board recognition camera assigned to it. These devices simultaneously allow optimal positioning adjustment based on the Y-position of the board with respect to board size and the number of parts for mounting. Adding these cameras as a standard feature has made mounting with greater precision and speed a reality.

Hitachi High-Technologies has also developed and launched the “GXH-3J” which has half the number of stages compared with the “GXH-3” and a throughput of 47,500 chips per hour.

The development and manufacture of these systems was carried out by wholly owned subsidiary Hitachi High-Tech Instruments Co., Ltd. (Oizumi-machi, Gunma Prefecture; President: Masumi Nukumi), with sales to be conducted on a worldwide basis by Hitachi High-Technologies.

Hitachi High-Technologies’ launch of sales of the newly developed “GXH-3” high-speed modular mounter is coinciding with the construction of new plants, the upgrade and expansion of service bases overseas, the training of service staff, and other tasks to enhance the competitiveness of chip mounter operations. In doing so, the goal is to capture a 20% share of the global market for these products by fiscal 2008.

[Main Features]

- 1) High-speed direct drive head for a throughput of 95,000 chips per hour
(Throughput of 47,500 chips per hour for the “GXH-3J”)
- 2) Feedback function for measuring board height (optional)
- 3) High-precision line sensor (feedback function that measures part profile and thickness)
- 4) Soft mounting nozzle (optional)
- 5) Compatibility with a wide range of parts (from 01005 to odd-shaped parts)

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