Headquartered in Carrollton, Texas, STMicroelectronics, Inc.—Region Americas (ST) ranks among the world's top manufacturers of semiconductor integrated circuits, supplying consumer-electronics, automotive, medical, telecommunications, and computer-equipment markets. Examples are integrated circuits for smart cards, digital set-top boxes for TVs, disk drives, compact disks, and specialized automotive applications.

ST's three manufacturing facilities are located in Carrollton, Phoenix, and San Diego. Nearly three-fourths of ST's 3,200 employees are based at these sites. The remainder are distributed among three design centers and about 30 sales, marketing, and service centers.

A wholly owned subsidiary of STMicroelectronics, N.V., based in St. Genis, France, ST generates almost 40 percent, including transnational sales, of its parent company revenues. In 1998, U.S. sales totaled $937 million. Sales to foreign customers generated an additional $707 million in revenue. Reflecting the company's strong emphasis on cultivating customer loyalty, about 25 high-volume semiconductor users account for most of ST's sales. ST competes against about 20 semiconductor manufacturers with broad product lines as well as hundreds of smaller rivals that serve niche markets.

### Highlights

- The company president devotes 30-35 weeks a year to visiting customers.
- Supplier-management program earned "best in class" rating in an independent evaluation of performance in 19 benchmark areas.
- Employee satisfaction levels in 1999 exceeded the industry composite in 8 of 10 categories; "lost day injuries" have declined from 1.01 injuries per 100 workers in 1996 to 0.65—74 percent below the industry average.

### Improvement Gets 'Top Page' Attention

Everybody at ST, from top managers to manufacturing teams to customer service personnel, works from the same page—the "top page." Akin to executive summaries customized to individual audiences, top pages are chief elements of ST's integrated system for deploying improvement objectives throughout the company. They achieve practical specificity at the operational level, but within the context of performance goals for the entire organization.

During ST's "top-down, bottom-up" strategic planning process, which is initiated at the corporate level, every unit and sub-unit prepares top pages. These display vital targets and performance indicators that are established during the iterative, company-wide review of the plan. Lowest-level top pages roll up to support each successively higher level. The bottom-up cascade culminates with the "Region of Americas Top Page," a concise, integrated summary of the entire company's progress toward goals in three major categories: financial, growth, and social.

In the fast-paced semiconductor industry, missteps in planning and execution quickly translate into competitive disadvantages. At the planning end, ST takes its cues from its customers. It assiduously cultivates long-term relationships that enable it to acquire detailed knowledge of customers' technology and service requirements. This information is gathered systematically through a...
variety of mechanisms, including face-to-face surveys, customer-issued audits, joint planning sessions, and frequent, regular visits to customer facilities.

Intimate familiarity with customers’ future requirements is fundamental to ST’s strategy for success. In the semiconductor industry, competitive pricing and ever improving product quality and reliability are the norm. ST aims to distinguish itself through advances in technological innovation, increases in the breadth of its product and service offerings, and continuous improvement in just-in-time delivery, fast prototyping, rapid problem resolution, and other areas responsive to customers’ high-priority requirements.

The company’s nine-step planning process also gathers complementary information on market and technology trends as well as competitor performance. At the operational level, continuous improvement goals are set to meet or exceed “best in class” benchmarks. The corporate Worldwide Standard System, for example, benchmarks key processing parameters at 14 semiconductor-manufacturing plants worldwide to establish best-known levels of industry performance in service, quality, and manufacturing. ST views its suppliers as “seamless extensions” of the company. It develops an annual “Supplier Quality & Service Plan,” which not only sets goals for suppliers but also specifies how ST will review performance, share data, and carry out other responsibilities in the relationship. A key tool is a five-year technology roadmap that is updated every six months. The roadmap effectively integrates anticipated customer requirements, ST’s long-term innovation goals, and expectations for suppliers.

**Gung Ho on Teams**

Employee empowerment is pervasive at ST. Teams and entrepreneurship at all levels of the company are fundamental to the company’s efforts to distinguish itself by “learning faster than its competitors.” This strategy has been enabled by a flattened organizational structure, a strong commitment to soliciting and acting on employee suggestions, and a major emphasis on training. Over the past four years, employees have participated, on average, in more than 62 hours of training annually, better than the ST benchmark of 40 to 45 hours for companies of similar size.

In 1998, ST initiated a “gung ho” program to promote teaming and employee empowerment, resulting in the redesign of manufacturing work systems and jobs—all with the aim of encouraging and enabling employees to take control of their work. Backed up by extensive training in teaming and problem-solving methods for manufacturing workers and “supervisor as coach” training for managers, the program was implemented rapidly and the transformation is nearly complete at all manufacturing sites.

Teams determine workflow, assignments, and break and vacation schedules. They also set up and monitor their training and development plans, and they conduct peer reviews that are factored into formal performance reviews and merit increases. Compensation systems are designed to reward cross training and achievement of skill development objectives, while a variable incentive plan provides monthly bonuses to teams and individuals who meet production goals. More than 72 percent of direct manufacturing workers are certified to perform four job functions.

ST’s performance measurement system is supported by a state-of-the-art information and communication network, which permits team-level analysis of progress toward operational targets and helps to ensure fact-based decision-making at all levels of the organization. Between 1993 and 1998, ST’s annual investment in expanding and increasing the utility of its information technology—from enterprise resource planning software to document control systems—has increased more than 200 percent.

**Environmental Pledge**

ST is tightly aligned with its parent corporation’s quest to become the world leader in environmental compliance. The company’s “Ten Environmental Commandments” commit ST to meeting or exceeding the most rigid requirements set in any of the locations where ST or its parent corporation operate. For example, ST’s U.S. manufacturing sites meet noise-level requirements set by France and Italy—among the most stringent in the world.

Also, ST and its employees participate in a World Wildlife Fund program to preserve rain forest to compensate for carbon dioxide released into the air by manufacturing plants.

The company believes that setting demanding environmental standards helps it improve operational and financial performance. This is illustrated by the nearly 20 percent decline since 1997 in energy used to manufacture silicon wafers, helping the company meet its goal of continuous cost reduction.

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