

Flexible Manufacturing Systems Manufacturers have known for a number of years that the old-style, mass-production, and traditional assembly lines used to manufacture products present a number of problems. For example, although traditional assembly lines turn out extremely large numbers of identical products economically, the system requires expensive, time-consuming retooling of equipment whenever a new product is to be manufactured. This type of manufacturing is often referred to as a continuous process. **Continuous process** is a manufacturing process in which a firm produces the same product(s) over a long period of time.

Now it is possible to use flexible manufacturing systems to solve such problems. A **flexible manufacturing system (FMS)** combines electronic machines and a computer integrated manufacturing in a single production system. Instead of having to spend vast amounts of time and effort to retool the traditional mechanical equipment on an assembly line for each new product, an FMS is rearranged simply by reprogramming electronic machines. Because FMSs require less time and expense to reprogram than traditional systems, manufacturers can produce smaller batches of a variety of products without raising the production cost. Flexible manufacturing is sometimes referred to as an intermittent process. An **intermittent process** is a manufacturing process in which a firm's manufacturing machines and equipment are changed to produce different products. When compared with the continuous process (longer production runs), an intermittent process has a shorter production run.

For most manufacturers, the driving force behind FMSs is the customer. In fact, the term *customer-driven production* is often used by operations managers to describe a manufacturing system that is driven by customer needs and what customers want to buy. For example, advanced software and a flexible manufacturing system have enabled Dell Computer to change to a more customer-driven manufacturing process. The process starts when a customer phones a sales representative on a toll-free line or accesses Dell's Web site. Then the representative or the customer enters the specifications for the new product directly into a computer. The order then is sent to a nearby plant. Once the order is received, a team of employees, with the help of a reprogrammable assembly line, can build the product just the way the customer wants it. Products include desktop computers, notebook computers, and other Dell equipment. Although the costs of designing and installing an FMS such as this are high, the electronic equipment is used more frequently and efficiently than the machinery on a traditional assembly line.