In the simplest sense, to define production technology would be to include any machinery that makes creating a tangible physical product possible for a business. To the small business, this means a workshop at the very least, with more elaborate operations making use of machines and assembly lines. Choosing a production scale model within a company's capital means is important; simpler workshops tend to lead to lower production volume but cost less to assemble, while higher output operations require more complex and costly machines, which are sometimes cost prohibitive.

The Modern Artisan Workshop

The artisan workshop represents the basic minimum effective level of modern production technology. An artisan workshop builds upon the traditional workshops of craftsmen from before the industrial revolution and replaces most of the simple hand tools used with time-saving electrically driven tools. These tools offer the skilled tradesperson the advantage he needs in order to more quickly produce goods to the same level of quality he would otherwise make with hand tools. The table saw, drill press and belt sander are all examples of modern variations on simple hand tools used to save the modern craftsman time. Artisan workshops focus on low or medium output of higher than average quality goods to maintain a competitive advantage over large-scale factory-produced items of similar type.

CNC Machining and Extending the Artisan Workshop

A computer number-controlled or CNC machine – also referred to as computer-aided manufacturing – further extends the capability of an artisan workshop, allowing the skilled craftsman to program the device to perform highly detailed repetitive tasks such as router and drill operation. CNC machines are expensive investments; however, when used to address the more time-consuming steps of producing an item in the standard artisan workshop, they can significantly improve the overall profitability of that manufacturing business. Because of their high initial cost when compared to manually operated shop tools, CNC machines are generally unavailable to all but the most successful small business. Investing in production engineering equipment like CNC machine is a pivotal decision for a small business and should be done with careful consideration of how much the machine will actually boost profits when compared to continuing with the manual method.

Automated Assembly Line-Style Mass Production

Automated assembly-line mass production represents the apex of modern industrial production, and is the driving force behind industrial titans such as automobile manufacturers and the makers of household appliances. The higher the degree of mechanization and use of robotics in the assembly line process, the fewer human workers are required to produce a product; however, in replacing human laborers with robots, the initial investment cost rises dramatically. The extremely high initial cost of automated assembly line mass production places such production methods far beyond the grasp of small business owners as far as practicality is concerned. Maintaining advanced automated assembly lines also requires the

professional services of highly skilled robotics technicians, again making practical implementation difficult for the small business owner.

Practicality Considerations for Small Business

When it comes to investing in production technology, a small business's focus should be on generating the best dollar return on capital investment within the confines of the company's reasonable budget. The IRS states that small businesses are a success when they generate profit at least three out of every five years. This general rule means that for the small business person, if it takes more than two years to pay off the initial capital investment in production technology, the businesses likely exceeded its ideal maximum production technology budget. This doesn't mean that smaller to medium businesses have to abandon advanced production methods entirely; instead, they can adapt some practices from larger-scale industry that suit their own needs and capabilities. For example, small and medium businesses looking to capitalize upon the mass production method of industrial manufacturing can take a page out of Henry Ford's book and use a simple conveyor belt line along with labor division to simplify and speed up the production process while still using artisan shop-style manually operated tools.

Abrasion Resistance: The ability of a material to withstand mechanical actions such as rubbing, scraping, or erosion, that tend progressively to remove material from its surface. Acceptable runner/cavity ratio: runner systems designed for high pressure drops to minimize material usage and increase frictional heating in the runner. Additive: A substance compounded into a resin to enhance or improve certain characteristics. Adhesive Assembly: The process of joining two or more plastic parts by means of an adhesive. Aging: The process of, or the results of, exposure of plastics to natural or artificial environmental conditions for a prolonged period of time. Air Burn: A patch or streak of brown or black material on the component caused by air or gases that have not been properly vented from the mold and have caused the material to overheat and burn. Alloy: A term used in the plastics industry to denote blends of polymers or copolymers with other polymers or elastomers. - i.e. ABS/Polycarbonate. Ambient Temperature: The temperature of a medium surrounding an object. The term is often used to denote prevailing room temperature. Amorphous: Devoid of crystallinity or stratification. Most plastics are amorphous at processing temperatures. Material assumes more random molecular structure when cooling. Anisotropy: The tendency of a material to react differently to stresses applied in different directions. Annealing: The process of relieving internal stresses of molded plastic articles by heating to a predetermined temperature, maintaining this temperature for a predetermined length of time, and slowly cooling the articles. ANSI: Abbreviation for American National Standards Institute. Antioxidant: Additive used to reduce degradation from oxygen attack at normal or elevated temperatures. Sources such as heat, age, chemicals, and/or stress may accelerate oxygen attack. Antiozonants: These additives are used to prevent the negative effects of ozone on the resin materials. Antistatic Agent: Additive used to improve the electrical conductivity of the plastic part so that any charge can readily go to ground and not remain in the part. Application: The act of applying or putting to use. What the molded plastic article will be in its final form