

## 36. Manufacturing

Manufacturing has long been a cornerstone of economic growth, but as globalization surged in the 1980s and 1990s, American corporations prioritized cost-cutting by moving production overseas. Between 2000 and 2010, this strategy led to a staggering decline in domestic manufacturing jobs, with nearly a third of the workforce displaced due to outsourcing and automation. While most companies accepted this as an inevitable consequence of free trade and technological progress, Elon Musk took a different approach when leading Tesla, advocating for a vertically integrated manufacturing process that would allow for complete control over production.

Musk believed that in order to build a truly innovative company, manufacturing had to be as groundbreaking as the product itself. He frequently stated that the factory should be “the machine that builds the machine,” emphasizing that production efficiency and quality control were just as crucial as the design of Tesla’s vehicles. Unlike traditional automakers that relied on third-party suppliers for key components, Tesla sought to build most of its parts in-house, reducing dependence on external partners and enabling rapid iteration in both engineering and production.

One of the key differentiators between Musk and other tech visionaries, such as Steve Jobs, was his hands-on approach to manufacturing. While Jobs focused on design and software, outsourcing Apple’s production to Chinese firms like Foxconn, Musk embedded himself directly into Tesla’s assembly lines. He often spent nights at the factory, personally overseeing the production process and demanding constant improvements, a leadership style that was grueling but ultimately essential in refining Tesla’s efficiency.

Musk’s commitment to revitalizing American manufacturing was evident in 2010 when he seized the opportunity to acquire a struggling Fremont, California-based automobile

plant from Toyota for just \$42 million. The facility had once been home to NUMMI, a joint venture between General Motors and Toyota, but had been shuttered during the economic downturn. Musk saw potential in the plant and repurposed it into the headquarters for Tesla's vehicle production, implementing a new model where engineers and factory workers worked closely together to accelerate improvements in real-time.

As Tesla ramped up production, Musk quickly realized that scaling up an automotive business was fraught with challenges. The early production of the Model S faced significant bottlenecks, leading to delays and quality control issues that frustrated both Musk and consumers. However, his obsessive focus on efficiency and problem-solving led Tesla to refine its processes, culminating in the Model S winning Motor Trend's "Car of the Year" award in 2012—the first time an electric vehicle had earned that honor.

Beyond automobiles, Musk identified a critical bottleneck that threatened Tesla's long-term growth: battery production. Recognizing that the supply chain for lithium-ion batteries was limited, he devised a plan to address the issue by building the Nevada Gigafactory, a facility dedicated to mass-producing batteries at an unprecedented scale. Announced in 2013, the Gigafactory was designed to manufacture more battery capacity than the rest of the world combined, ensuring Tesla's ability to scale up production while also reducing costs through economies of scale.

Despite initial skepticism from industry analysts, Musk secured a partnership with Panasonic to co-finance the \$5 billion facility, underscoring his ability to attract investment even in high-risk ventures. The Gigafactory was not just a means to produce batteries for Tesla's vehicles—it was also a step toward Musk's broader goal of making renewable energy more viable. By integrating battery production with Tesla's push for solar energy, the company aimed to create a seamless ecosystem for sustainable energy storage and consumption.

Musk's approach to manufacturing was not without its challenges. His relentless demands often led to burnout among employees, and Tesla's aggressive production goals frequently pushed the limits of what was feasible. However, his ability to rethink

traditional manufacturing practices, combined with a willingness to take on seemingly insurmountable challenges, positioned Tesla as a leader in both automotive and energy innovation. In an industry where outsourcing and cost-cutting had become the norm, Musk proved that an American company could still achieve global success by prioritizing in-house manufacturing and engineering excellence.

