

The Forgotten Father of Technology

Nikola Tesla



Imagine this: You're twenty-eight years old, and you have just arrived in the United States with four cents in your pocket. Thanks to a strong letter of recommendation by a close friend of Thomas Edison, you're being interviewed by Edison himself at his Menlo Park research laboratory in New Jersey. But when you try to explain your invention of the induction motor which uses alternating current (AC) to Mr. Edison, he calls it "nonsense" and "dangerous." He tells you that he and all Americans are quite satisfied with direct current (DC) and plan to use no other system. Mr. Edison hires you, but he wants to hear no more nonsense about alternating current.



"Science is but a perversion of itself unless it has as its ultimate goal the betterment of humanity."

—Nikola Tesla
(1856–1943)



They Stood Alone!

Your name is Nikola Tesla, and this is the situation you face when you arrive in the United States in 1884. Although you are hired by Edison, the differences in your beliefs persist, and you leave your job after a year. What follows is a titanic power struggle between Edison's direct-current systems and the Tesla-Westinghouse approach. You are destined to become one of the greatest scientists and inventors of the twentieth century, and during your lifetime you hold over seven hundred patents.

Tesla was born at midnight on July 10, 1856, in Smiljan, a small village in Croatia. The night of his birth was marked by a fierce thunderstorm and, and at the precise moment of his birth, the sky lit up with a huge bolt of lightning.

The midwife who had just delivered the new baby turned to Tesla's mother and said, "Your new son is a child of the storm." His mother responded by saying, "No, he is a child of the light."

He proved his mother right as he began to make original inventions as a young child. At age five, he built a small water-wheel quite unlike those he had seen in the countryside. It was smooth and without paddles, yet it spun evenly in the current.

And once he perched on the roof of the barn, clutching the family umbrella and hyperventilating until his body felt light and the dizziness in his head convinced him that he could fly. Plunging to earth, he lay unconscious and was carried off to bed by his mother.

Later Tesla attributed all of his inventive instincts to his mother who came from a family of inventors and who herself invented household appliances to help her with her home and farm responsibilities.

Even as a teenager, Tesla was very aware of the tremendous power of nature and hoped to some day harness this power for the good of humanity.

After completing his higher education at the University of Prague, he worked for the Edison Company in Paris before emigrating to the United States in 1884 with only four cents in his pocket.

He found employment with Thomas Edison at Edison's Menlo Park research laboratory in New Jersey, but differences in beliefs between the two men led to their separation a year later.

Tesla believed that alternating current was vastly superior to Edison's direct current because it could be altered or converted to suit a variety of situations.

In 1885 George Westinghouse, founder of the Westinghouse Electric Company, bought the patent rights to Tesla's system of alternating-current dynamos, transformers, and motors.

What ensued was a titanic power struggle between Edison's direct-current systems and the Tesla-Westinghouse alternating-current approach.

Tesla soon established his own laboratory where he gave dramatic demonstrations. Hoping to allay fears about alternating current, he lighted lamps without wires by allowing electricity to flow through his body.

By the time he became a United States citizen in 1891, he was at the peak of his creative powers. He had developed the induction motor, new types of generators and transformers, a system of alternating-current power transmission, fluorescent lights, and a new type of steam turbine.

Although his inventions received many awards, he always considered his United States citizenship more important than any of the scientific awards he received.

Around this time, Tesla developed a close and lasting friendship with the author Samuel Clemens (Mark Twain), and they spent a lot of time together in Tesla's lab.

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Tesla later told Clemens how his books had saved his life when he was a boy of twelve struck down with a potentially fatal case of malaria. Clemens was so moved by Tesla's story that tears came to his eyes.²⁴

Tesla drove himself so tirelessly that his friends worried about his health, but nothing and no one could slow him down. He continued to invite his friends to his laboratory to witness his experiments and Samuel Clemens was one of his most frequent guests.

The Tesla coil, invented in 1891, was one of his most famous inventions. Tesla coils are unique in the fact that they create extremely powerful electrical fields, and they're widely used today in radio and television sets and other electronic equipment.

The advantages of alternating current over Edison's system of direct current became apparent when Westinghouse successfully used Tesla's system to light the World Columbian Exposition at Chicago in 1893.

His success there led to a contract to install the first power machinery at Niagara Falls. By building generators that used Tesla's alternating-current system to harness the power of Niagara Falls, Westinghouse demonstrated that not only could Tesla's discoveries be put to practical use but also that alternating current was one of the greatest discoveries of all time.

Tesla had a photographic memory as well as a vivid imagination, and he had a most unusual and intuitive way of developing his scientific hypotheses. Throughout his life, he maintained the uncanny ability to design, build, and test an invention in his head before actually putting it on paper or building it in the lab.

He once said that it didn't matter whether he devised his inventions in his head or in the laboratory because they worked just as well either way. And they did!

Tesla was responsible for a great many other inventions and devices that we take for granted today. He claimed the ability to locate objects in the air or on the ground by using radio waves which today we call *radar*. These waves can also be used to examine the inside of the human body by what we now call an MRI (Magnetic Resonance Imaging).

With his theory of alternating current, he had focused on a fundamental force of nature and discovered the key to the safe and economical industrial application of electricity.

Unfortunately, he did not always receive recognition for his efforts. Even today, many still credit Guglielmo Marconi with the invention of the radio despite the 1943 Supreme Court decision that overruled the Marconi patent and awarded it to Tesla.²⁵

Although it was Tesla who harnessed the alternating electrical current we use today and fundamentally changed the world, he is frequently included only as a footnote to the stories of the more renowned inventors and industrialists of his day such as Thomas Edison and George Westinghouse.

He was a visionary genius whose discoveries ushered in the modern industrial age, but he was in large part also the Forgotten Father of Technology.

Nikola Tesla was one of the twentieth century's greatest scientists and inventors. He not only discovered the rotating magnetic field, the basis of most alternating-current machinery, but he also introduced us to the fundamentals of robotics, remote control, radar, computer science, and missile science and expanded our knowledge of ballistics, nuclear physics, and theoretical physics.

Even though at the time of his death in 1943, he held over seven hundred patents, he died nearly penniless because of serious financial setbacks.

When he died in New York City on January 7, 1943, at age

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eighty-six, two thousand admirers attended his funeral services to mourn the loss of a great genius.

Inventor, mechanical engineer, and electrical engineer, Tesla was a true visionary far ahead of his contemporaries in the field of scientific development.