

Nikola Tesla:

Electrifying the Future

Sam Kelm

Historical Paper

Junior Division

Paper Words: 1,618

Nikola Tesla, an exceptional inventor who was also very controversial, encountered and overcame significant challenges to invent the induction motor in the 1880's. Tesla encountered and overcame significant challenges. He also exchanged his ideas with other scientists which would give him ideas for other inventions. The motor would later lead to the invention of the automobile and would change the industrial corporation by making work easier and faster which ultimately means more money for businesses.

Nikola Tesla was born July 10th, 1856 in Smiljan, Croatia. His father, Milutin Tesla, was a priest at the Serbian Orthodox Church and his mother, Djuka Tesla, ran the family farm. Tesla was fortunate enough to attend college. Tesla studied math and physics at the Technical University of Graz and philosophy at the University of Prague. When Tesla was out of school, he got a job and started saving up to move to the United States. At the age of 28, Tesla moved to the United States hoping for more opportunities to be successful.

When Tesla arrived he started his work. When Tesla gained attention, Thomas Edison became interested. Thomas Edison was also an inventor which would change human life as we know it, such as the carbon microphone, movie camera, phonograph, and most importantly, the incandescent light bulb. If you think about it, we use these everyday. The light bulb is an air tight glass enclosure with a filament of tungsten wire through which an electric current is passed". The light bulb was one of the most successful inventions ever created. When Tesla moved to the United States, he was looking for someone to exchange his ideas with and found that person in Edison. When

Edison hired Tesla, the two started making improvements on Edison's inventions. Edison told Tesla he would pay \$50,000 for an improved design for his DC dynamos. But after several months working beside each other, they quit after a "War of Currents". They had a conflict on who could power the world at the Chicago World's Fair of 1893 or also known as World's Columbian Exposition. Tesla used alternating current while Edison used a direct current. Edison ended up losing the battle or war to Tesla and Westinghouse. They won the contract to supply electricity to the 1893 World's Fair in Chicago beating out rival General Electric, which was formed in 1892 involving Edison's company. The expo became a showcase for Tesla's AC system. Edison later fired Tesla for the conflict. Tesla lost all of his income and had to make money somehow. So Tesla created the Tesla Electric Company. From there on, he sold his products to the public. Companies could buy the products and use them in an industrial use. His company was not so successful when he began. He made at most two dollars. Tesla had to find investors to help him. That person would be George Westinghouse. Westinghouse was the inventor who successfully launched the first AC power system near Boston. In 1887 and 1888, he was granted 30 patents. After that, it was the number one company to buy motors.

Nikola Tesla's work was inspired by his mother, Djuka Tesla, who invented small household appliances. Tesla had many great inventions including the induction motor, wireless telegraphy, neon lamp, and the Tesla coil. I feel that induction motor had a strong impact in the industrial and building world during the second industrial revolution. The way the motor works is that it uses electromagnetic induction to produce torque or

electricity. The motor could power pumps, fans, compressors, elevators, and machinery of many types. Companies could automate machines which would make work easier and save money which the company could put back into the community. The automobile also used the induction motor to power the automobile. The first automobile that came from this motor was the Model T. It would change the lives of people by making it easier and faster to get around. The inventor behind this idea was Henry Ford. Ford wanted a better way to get around quicker and faster. When he successfully did so, he created the Ford Company. The demand for these automobiles was so high; he pioneered the assembly line method of manufacturing. One person had one job which made work faster. This method was so productive, it is still being used today by many more companies. Ford is the number one leader in the automobile industry today because of the induction motor. This year is the 103rd year anniversary of the assembly line. Ford is expanding its advanced manufacturing capabilities and introducing brand new technologies that could revolutionize mass production for years to come.

With every great invention come side effects. Now that businesses could produce products faster, smoke became greater and greater. Air quality dramatically decreased and people got sick. Automobile exhausts also contributed to this. By the middle of the 20th century, the effects were getting to other countries. The Clean Air Act of 1970 and Clean Water Act of 1972 came out of this. Water and air have been polluted so much that it is getting to an unsafe level. Another effect would be the Great Depression. During the great depression, consumer spending and investment dropped, causing steep declines in industrial output and rising levels of unemployment. Failing companies

laid off workers. Companies have made too much, so the consumers had no use for them. The company would end up losing money because people were not buying their products. Investors in those companies would also lose money because they made money off of the company's income. The Great Depression was the worst financial crisis in United States history that lasted from 1929 to 1939. People set up "Hooverilles". These were shantytowns built by unemployed and deprived people during the Depression. These towns were made up of cardboard boxes, paper, or anything they could find. 13-15 million people were unemployed and over half the banks in the United States were either bankrupt or closing down due to financial crises. Even though President Herbert Hoover assured the public that it would end on its own, that would later be proved wrong. By 1930, more than three million citizens were unemployed. That number would later rise to six million. While all of this was going on, the industry production went down by 50%. Bread and soup lines formed and people would wait in line for hours on end waiting to get a bowl of soup or a loaf of bread for their families. Farmers couldn't sell their crops and didn't have enough money to harvest the crops. Fields rotted in days. Franklin Roosevelt, the president after Hoover, had a huge weight on his shoulders. That job was to rid of the Great Depression. Franklin famously said, "The only thing we have to fear is fear itself." He made sure this time that the people would get through this. First, he made a Four Day Bank Policy. That prevented people from withdrawing money from the banks. Second, he asked people to put their savings into the bank. Later that year, more than 75% of the banks re-opened. Then, he had to end prohibition. He made it legal again to buy and sell beer. Lastly, he

passed the National Industrial Recovery Act guaranteed that workers would have the right to unionize and bargain for higher wages and better working conditions. It also funded Public Works Administration. Roosevelt also passed 12 other major laws, including the Glass-Steagall Banking Act also known as the Bank Act and the Home Owners' Loan Act. The Banking Act prevented banks from investing in businesses. The Home Owners' Loan Act refinanced all houses from preventing them from going in foreclosure. He did this all within his first 100 days in office.

In 1895, Tesla's lab burned down destroying many of his prototypes, products, sketches, and notes. Shortly after significant challenge, Nikola Tesla set to work on his biggest project yet. That goal was to build a global, wireless communication system that could be transmitted through a large electrical tower for sharing information and providing free electricity throughout the world. With funding from J. P. Morgan, in 1901 Tesla began work on the project. He designed and built a lab with a power plant and a massive transmission tower on Long Island, New York, that became known as Wardenclyffe. The first use of the wireless telegraphy was used in the Anglo-Boer War during 1899-1902. It was used for communication between naval vessels in Delagoa Bay. In the 1890's, Tesla invented the electrical oscillators, meters, improved lights, and the Tesla Coil. He also studied and gave demonstrations of radio communication.

Tesla worked on a few last inventions in a New York hotel room as his health and mental healthiness was decreasing. He spent his final years feeding and supposedly "talking to pigeons". Tesla Later died in his hotel room on January 7, 1943. The AC

power system improved and made work easier for people everywhere and is still remains the standard for power transmission.

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