How the automotive industry gained momentum

When Carl Benz drove his self-designed Patent Motor Car through the streets of Mannheim on July 3, 1886, he could not have known that he was heralding a new age of mobility. For the first time, a car that is equipped with a gasoline engine managed to cover a certain distance with its own power. Only months earlier, in November 1885, Wilhelm Maybach, Gottlieb Daimler's chief designer, had managed the first test drive with a mobile gasoline engine in Cannstatt near Stuttgart - albeit on a two-wheeler.

The dream of a "self-propelled motor vehicle", the automobile, was not new. Time and again, attempts had been made to use a motor to move vehicles. In 1801, the British inventor and engineer Richard Trevithick built a high-pressure steam engine into a street car. Michael Faraday's discovery in 1821 of how continuous rotation could be generated by electromagnetism also fueled the imagination. Beginning in the 1830s, different types of electric motors and battery variants emerged to power vehicles. Finally, in the mid-19th century, the Luxembourg native Étienne Lenoir invented in France the first functional internal combustion engine that did not require a furnace. It was Lenoir who inspired Cologne-based Nicolaus Otto to advance the design into a four-stroke engine at his "Gasmotorenfabrik Deutz AG". The new and more powerful engine, also known as the "Otto engine," was in no small part due to the work of Gottlieb Daimler, who had joined the company as technical director in 1872, taking his close former colleague Wilhelm Maybach with him. But the gasoline engine was still a stationary ton-heavy monster that relied on a gas network. Carl Benz and Gottlieb Daimler were both trained as mechanical engineers, while Daimler's colleague Wilhelm Maybach was skilled as a technical designer and constructor. What they had in common was the search for a suitable power engine for craftsmen and small businesses: a high-performance motor that was small and light enough to be installed just about anywhere. However, the two knew nothing about each other and worked independently on their combustion engines.

In 1871, Carl Benz founded his first mechanical workshop in Mannheim, the "Factory for Machines to Process Sheet Metal". The development work proved so costly that the young engineer's bank demanded the company be converted into a stock corporation in 1882. Just one year later, however, Benz left the company, which now was known as "Gasmotorenfabrik in Mannheim AG", because the newly appointed members of the supervisory board did not share his visions. From 1883 onwards, he again produced his gas engines under his own management in the newly founded "Benz & Cie. Rhenish Gas Engine Factory in Mannheim". It is known that Carl Benz was an enthusiastic cyclist. After the invention of the pedal drive in the 1860s, factories to produce velocipedes sprang up everywhere. These cast-iron vehicles easily weighed 40 to 50 kilograms! Not surprisingly, Carl Benz thought about how to replace the muscular power needed for movement with a motor. As the development of the bicycle continued to make progress, Benz ultimately managed to construct a suitable means of propulsion based on an originally stationary gas engine. He commissioned bicycle manufacturers to produce the necessary parts for his vision of an elegant motor-driven carriage: the tubular steel frame, spoked wheels with solid rubber tires, transmission chains and many more details were technically mature at the time. To give the whole structure stability and to simplify steering, he opted

for a three-wheeled design. As a result, the Benz Patent Motor Car No. 1 combined all the knowledge of mechanical engineering and bicycle technology available at the time in a new vehicle. Now Benz only had to turn it into a commercial success - and that wasn't easy. Although the first relatively long trip that Benz's wife Bertha took from Mannheim to Pforzheim in 1888 attracted some attention, sales continued to be modest.

While Carl Benz aimed to build a motor driven car for the road from the start, Gottlieb Daimler was mainly striving to build an engine that could be used for a variety of purposes. In 1882, after a dispute with Nicolaus Otto, he had left the Deutz works and founded an exploratory workshop in Cannstatt. Wilhelm Maybach once again followed him. The two made their first attempt to use their newly constructed light weight motor by installing it into a rather clumsy wooden two-wheeled vehicle with support wheels. The "Petroleum-Reitwagen" (Riding-Car), which was the first motorcycle in the design still used today, was granted a patent as early as 1885. A year later, shortly after Benz had presented his vehicle to the public, they had a carriage builder produce a customized carriage. In this they installed their engine. As a result, the world's first functioning four-wheeled motor carriage was on the road. Daimler's engine was soon also used in a boat, a motorized trolley, a fire engine, a sawing machine, and numerous other mechanical devices. Like Benz, Daimler had to be able to market his invention. Although his vehicles also sparked interest, the sales figures were poor. Both hoped for a breakthrough at the 1889 World Exposition in Paris. Maybach succeeded in developing a new car concept even before the Exposition, in which the car shape, engine, transmission and chassis formed a single unit. In line with Maybach's ideas, the Neckarsulm "Knitting Machine Works", which became known as NSU in 1892, designed the frame and wheels of the new "quadricycle" or "steel-wheeled car".

Although the public was more interested in the Eiffel Tower at the Paris World Exposition, Daimler's steel-wheeled car attracted a fair amount of attention from French entrepreneurs who were enthusiastic about technology. The owners of Panhard & Levassor, which manufactured woodworking machines, bought the car right at the exhibition and acquired the production licenses. With Daimler's consent, they awarded the right to use Daimler engines for installation in vehicles to the Peugeot tool and bicycle factory. With a copy of Maybach's steel-wheeled car, Peugeot put the first car with an internal combustion engine on France's roads as early as 1890. While demand for motor cars grew rapidly in France, Daimler ran into difficulties in Germany due to insufficient sales. In 1890, Daimler founded the "Daimler Motor Company" (DMG) to restructure the enterprise, in which he and Wilhelm Maybach were joined by other industrialists. At the same time, Carl Benz continued to improve his models significantly. Though he was initially less successful in Paris than his competitor, he managed to export a large number of modular engines to France and put his company on a solid base. In 1899, he converted the "Benz & Cie. Rhenish Gas Engine Factory" into a stock corporation.

The automobile boom in France at the turn of the century was spurred by racing events in which not only the various types of propulsion - steam, gas, gasoline or electricity - for vehicles competed, but where manufacturers could also demonstrate their superiority over the competition. Such contests which featured the "Blitzen-Benz" and Daimler's "Mercedes" captured international interest. Soon, mechanical engineers all over the world were tinkering with new combustion engines, and former employees working for

motor manufacturers set up their own businesses to develop their own ideas further - for example, August Horch, who had been an apprentice under Benz. Carriage builders and bicycle manufacturers switched to chassis construction or started to build their own motor cars. Entire companies that had once been active in the engineering or metalworking industries shifted their activities to the manufacturing of combustion engines and car production. De Dion-Bouton began converting its production of steam engines and vehicles to the new type of drive in the early 1890s. The company was to become the largest automobile manufacturer in the world and the global market leader for combustion engines at the beginning of the 20th century. From France and Germany, the construction of cars with combustion engines rapidly spread throughout Europe. In the USA, where accumulator technology was already well advanced, electric vehicles still dominated. But at the beginning of the 20th century, more and more companies were turning to using gasoline as a fuel. Again, it was the hour of the engineers, inventors and tinkerers: David Dunbar Buick, inventor of the lawn sprinkler, set to work on engines, Ransom Eli Olds initially worked on building automobiles in his leisure time before founding the "Olds Motor Works" (later renamed "Oldsmobile"). It was Henry Ford who was to revolutionize the traditional method of manufacturing: Instead of completing each vehicle individually, he introduced interchangeable and standardized components that were then put together on an assembly line. The start of mass production from in 1913 on made the automobile more affordable for many in the public.

After the World War I, the new method of production also took hold in other regions. However, French, German and US-American companies continued to dominate the world market. They founded subsidiaries in a number of other countries, some of which became independent - such as Darracq in Italy, which would eventually become Alfa Romeo. Even in Japan, today home to some of the world's largest car companies, the automotive industry did not take off until after the World War I. As early as 1914, there was an automobile called "DAT," which later evolved into Datsun (now part of Nissan). Mitsubishi, which was active in the shipping and heavy industries, produced its first vehicle in 1917 based on an Italian FIAT, but production costs were still far too high. Ford and General Motors met the growing demand among the Japanese population by setting up their own production lines in the 1920s. Only when the Japanese government imposed prohibitively high import taxes on finished automobiles and auto parts in 1936 did the time for domestic manufacturers arrive. They were already familiar with the efficient production methods of the Americans and the machine industry was already at a very sophisticated level. Thus, it was no surprise that companies such as the textile machinery manufacturer Toyota and the machine tool manufacturer Mazda embarked on the adventure of building automobiles.

After setbacks during the Great Depression and World War II, the triumph of the automobile took its course in the so-called years of the economic miracle beginning in 1950. Early manufacturers disappeared or merged with other companies, and new ones came along. Every time people thought there was nothing left to improve, new inventions came up. The recent developments show that the history of the automotive industry is far from coming to an end.