Harley-Davidson Motorcycle Company recognized the need to design a new bike to ensure a steady income of current and new customers. They wanted to develop a bike with the same speed as the new sport bikes, while still maintaining the iconic Harley-Davidson style and look. By design, the main purpose of this new bike was to enable them to compete with other top manufacturers in the current markets. The challenge ahead would take 6 years to complete.

The design team immediately began recognizing and defining the problems that needed to be addressed in order to meet the criteria that the Harley-Davidson ownership set forth. The new bike had to incorporate the original Harley-Davidson style and look, but be fast and safe at the same time. This design led to multiple problems, one obvious one being the fact that all previous Harley’s only held one gallon of fuel, and the new bike needed to hold close to three. The next step for both the engineers and designers was to start gathering information in order to start formulating a plan for the structure of the new bike.

The first aspect of the new bike that was addressed was the engine. The research team looked into the VR-1000 engine used in the modern Harley-Davidson sport racing bikes. The issue with this new engine was that it was liquid-cooled, whereas all previous Harley bikes were air cooled, and designing a liquid-cooled street engine was not going to be an easy task. The next stop was researching a double-framed chassis that would be stronger and more stable than a single-framed bike. The body had to be sporty looking and aerodynamic, but still be recognizable as a Harley-Davidson.

Next, the research team turned to drag racing for help. The drag racing bikes had an elongated front to add to the stability, and look sleek in the process. The engineers were now faced with taking the research and turning it into designs to be manufactured. While teaming up with Porsche, many problems with the engine were evaluated and resolved. The new engine would have the
performance of the VR-1000 but be affordable to the average consumer. The new engine however, was too loud for state and federal regulations. This led to numerous designs of exhaust systems. Just like all other aspects of the bike, the exhaust system had to look stylish. One of the biggest challenges the engineers and designers faced was making a radiator that was effective enough to keep the engine cool, but not stick out and be too large. Many different radiators were tested, and finally one was settled on that was small and compact, so it looked good, but used air fins on the side for efficiency. The fuel tank had to be large enough to hold 3 gallons of fuel. To do this, the new fuel tank would be made of plastic. Plastic was both heat-resistant and durable, and could be molded into shapes that traditional metal tanks could not be, allowing for it to fit into the bike with a larger size. Finally, the chassis was made out of aluminum, as it could be bent into different shapes to form the double-frame with less welding joints, to increase the strength.

The initial design for the bike was turned into a clay model, as clay could easily be changed for design flaws. After both the engineers and the designers were happy with the design of the bike and all parts, a first prototype was constructed. This prototype was tested at one of the executive’s house in the country to avoid any outsiders from finding out about the project. After any issues with the performance of the bike were worked out, the final prototype endured multiple tests. These included tests in a heat box to ensure the bike could withstand a parade in hot temperatures while constantly running, and radio wave tests to make sure it would not affect the performance of the bike. After it completed these tests all parts were tested individually and the bike was checked for sound. Finally, it was driven for long periods of time through different weather and road conditions.

Six years after the initial idea was brought upon the initial design team, it was time to unveil the new V-Rod, named after the VR-1000 engine and “hot rod.” This occurred at Harley-Davidson’s annual convention. Two V-Rod’s were driven onto the stage, along with a video displaying the performance of the bikes on the road. The V-Rod was greeted with much appreciation from the crowd, and years later it continues to be a success.