Harley Davidson recognized the market’s need for a new and improved bike. They saw that people wanted a faster, stronger bike with the newest technology. They wanted to create a new and improved bike that had a VR 1000 engine, Harley’s racing bike, but also still had the classic “Harley” look. They knew to keep their “Harley-loyal” customers, they needed to combine the new with the old.

Harley Davidson bikes all had a particular look that said “Harley.” The problem was that the new engine they were thinking about using, would not fit in the old frame. The old frame would also not withstand the power of the race engine. They needed to come up with a completely new design for a bike to keep consumers interested, while keeping with their tradition.

First, they had to look at their old frame and see what it could handle and what they needed to change. They also took the VR 1000 engine, and took it to Porsche so they could improve the engine to what they were looking for. They also looked at the competing bikes to see the new technology out there. They looked at the old designs and saw what they could take away and what they could improve. They also looked at racing bikes and tried to see how they could make a racing bike that could be an everyday Harley. They also had to gather the information about what highway and safety standards they had to meet with their new bike. They needed to combine new designs to be able to go with their “Harley” look. But, this did not always come easy.

The engineering teams and design teams went back and forth on key design elements. The one thing they concluded was that the bike design had to be minimalistic but also aggressive. The teams would sit down and design a brand new bike, go to Willy G, the Harley executive, and he would say go back and try again. The teams brainstormed multiple ideas of what the frame would look like, what the exhaust would look like, what the frame would be made out of, how the engine sat in the bike, etc. Even after going to the prototype stage, they would sometimes have to come back to this point and rethink the design.

All the teams had to make decisions together that would work both mechanically and aesthetically. One of the main decisions made by the team was to use aluminum for the frame and for the sheet metal of the bike. The metal would be light, durable, and formable. The teams also decided to go with a plastic gas tank instead of the typical metal gas tank. They knew they wanted to make the new gas tank bigger, and using plastic allowed them to triple the amount of gas. They had to compromise the design of the exhaust pipe in order to meet standards and appeal.

With a brand new bike, they needed to be able to change the design easily and be able to analyze the design easily. So Frank Savage, the lead designer, took clay and started to create a clay prototype of the new bike. They would look at different aspects, and need to change or for appeal, standards, or both. The exhaust pipes are an example of this. The new pipes needed to be larger than normal in order for the new engine. The designers told the engineers that the size and look of it needed to change. So Savage went to the clay and started to curve the pipes. This solved all the problems. The actual frame of the bike is also an example of this. The frame around the engine needed to be altered in order to accommodate for the new engine. The frame included two new curved pipes instead of the normal one straight pipe. They eventually came up with a final design and created an actual prototype.

With all the new design features, the needed to use new methods and many tests on the prototype. In order for the frame to follow the design and have it strong enough, they used the method of hydroforming to weld the frame; this decreased the number of wells from 17 to 7. They created and
tested many prototypes throughout the design process. Once they finally reached the final design, they needed to make sure it could withstand everyday use and many other factors. They tested real life use including: weather, heat, acid rain, sound, standards, road conditions, etc. They even took all of the parts apart and sat some in the desert sun to make sure they could handle it. The also tested the prototype with the Dusseldorf test; having the bike go through Autobahn conditions for 500 hours. To get the final approval, the also had the bike tested by the boss, Willy G. After the approval, they made multiple bikes, and spray painted them black for some test bikers to use in an everyday life-style. They painted it black to conceal their top-secret bike.

Finally, after 6 years of conflict of engineering and design, the bike was finally ready for the consumer. Harley took the new bike to Los Angeles for their bike convention. They revealed their brand new bike to the public. The continued to release the bike around the world and informed everyone about the completely new but still “Harley” bike. People wrote reports, did interviews, did conventions, and many other means of communication for their new bike to have the spotlight. After 6 years of going back and forth in the engineering process, the hard work of teams paid off.