Engineering the V-Rod

Harley Davidson wanted to combine the traditional style of the famous Harley motorcycle line with the speed of a dragster. They recognized that customers demanded the style, but craved the speed that another Harley bike could not offer. To appease their customers, Harley decided to design a whole new bike. They used an untraditional plastic gas tank, added a radiator, and of course, designed a new engine. From these additions arose problems that the engineers had to figure out how to solve. It was difficult to design a speed bike around the traditional Harley Davidson style.

The engineers began by gathering information from other bikes and companies. They partnered with Porsche to incorporate the speed that only a Porsche engine could obtain. During the problem solving stage, they tried to use a traditional bike frame but it could not handle the speed accompanied by the new engine. With this information they gathered, they encountered a whole new set of problems. While brainstorming, they realized an entirely different frame would have to be built.

To incorporate the speed of a dragster while holding onto the Harley style, the team set out to design the most iconic bike of Harley history. With their new frame in place, the engineers had to fit the radiator, large exhaust, liquid cool system, gas tank, and of course, the larger than
normal engine. Many of the initial plans were failures. The initial plan for the radiator did not get sufficient air flow to do its job. The exhaust had to be big but they wanted it to look small to match other bikes. The gas tank was going to be difficult to incorporate into the different frame because the large engine took up so much space. From these issues arose much better ideas. A plastic gas tank was used for the first time that would hold more gas than any other bike while still being practical. They designed a dual exhaust to keep the bike running smoothly while still maintaining the look of a Harley. With all other aspects fitting nicely, the engine fit perfectly in place. The designers also made the bike slightly personal. Customers could choose their windshield type along with many other customizable features.

Although a design may look good on paper, conceptual designs do not always work in the real world. The CAD drawings, clay model, and initial prototypes allowed the team to graphically view the design of the bike. The team designed and tested many prototypes to make sure all aspects of the bike fit together and set out to test how the bike withheld standard conditions. To design the final product, computer aided welding was used to fabricate the difficult frame. The bikes were tested for more than 400 hours straight and were put through various tests over the course of two years. The bikes had to be able to withstand long rides, heat, fall within the legal noise limit, and had to withstand parade duty.

To communicate this out of the ordinary Harley design, the bike was dubbed the V-Rod. The team finally revealed the secretive plan at a bike convention, where the V-Rod undoubtedly gained its publicity and earned the love of Harley owners across the nation.