V-ROD Engineering Process
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The need that was present in this short film was to create a motorcycle that was not only fast, but still kept the look of a Harley Davidson. There started to be a decrease in demand for Harley bikes and the company knew that had to make a change. The public showed a demand for a faster model, but Harley Davidson knew it would not sell if it did not have the same appearance. In addition to these constraints, they also wanted to incorporate a new VR 1000 engine. However, the new engine did not fit the standard Harley frame, so the designers had to start building the bike from scratch.

First, the engineers had the idea to hold the engine with two straight pipes. This model was ideal since straight frames are the strongest and easiest for engineers to create, but the engine would not hold up in a frame of this sort. Then they came up with the idea to create a curved frame, but bending the pipes to their desired shape is a difficult task. But they came across the process of hydroforming, which allows you to bend metal pipes with high pressure water in order to decrease the use of welding. Removing the process of welding allows for a stronger frame and is much more cost-effective.

Throughout this process, the engineers were not designing this motorcycle alone. Along with the engineering team, there was a Harley Davidson style team and an engine design team working with them through Porsche. The three teams gathered information about the bike by testing it together and testing individual parts on their own. Each team could find the problems within their own portions and work towards solving their problems before sending design plans to the other teams. Even Willy Davidson himself took a test run of a first stages prototype and
ended up breaking the bike, but it was test runs like these that pushed them towards solving the issues with the design.

After successfully constructing the frame and building prototypes, then came the task of analyzing the meticulous details of the bike. One obstacle they faced was that the front tire was blocking the vents, causing the bike’s radiator to overheat. Through the process of numerous tests of the prototype, they found that the best way to keep the bike from overheating was to create scoop vents on the sides that drew extra air into the bike. Then they came across the dilemma that a 3 gallon gas tank might not fit into the sleek model. Through brainstorming between the style and engineering team, the decided to move the gas tank to the back of the bike, which was a new design feature. This new gas tank was also made out of heat resistant plastic that could be molded into any shape they wanted. The new plastic also gave the engineers the ability to create a tank that held over four gallons of gas, more than they ever anticipated.

Once they finally had a final prototype, they had to put it through a series of rigorous testing. First the bike had to experience a radio test where they put it into a room and shot radio waves at it, then it was sprayed with high pressure water for a 24 hours. It also had to go through a bumpy road test for 5 days where the bike underwent a series of rough terrain obstacles and a sound test to make sure the bike does not violate sound regulates but also has the signature Harley Davidson sound. These tests were all necessary to conclude that the Harley was ready for the market.

In order to make the new Harley bike appealing to the public, they needed to give it the perfect name. Over the course of a year, Willy Davidson and his team went through a long list of names to find the right one. This name needed to convey the sleek new design and feel and
make people want to buy it. In the end, they chose the name V-ROD because of the VR 1000 engine and the hot rod feel.

So, after six LONG years of designing, testing and manufacturing the V-ROD, it was finally introduced in Las Vegas, Nevada and put onto the market. During the process of designing the bike, the engineers and design team went through the stages of engineering design over and over again. This goes to show that no matter the size of a project, there must be a series of steps to follow in order to achieve success.