Harley Davidson V-Rod Design Process
Michael Aronckes
Carolina Carlton
Steven Gia
Gina Sirianni

In 1995 the market for motorcycles was changing to the need for speed. Harley Davidson wanted to build a unique motorcycle with power and speed, while still keeping the classic Harley style. However, they needed to create new technologies in order to combine that high level speed with the style.

Once the idea was created, some problems started to arise. One of the biggest problems they had to keep coming back to was that they wanted the bike to still look like a Harley, with all the new design features. The first problem was they needed a large, powerful engine that could handle high speeds. Other problems the engineers faced were increasing airflow to the radiator to liquid cool it. They originally were using steel for the frame, but needed to switch it to aluminum in order to bend it in the ways they wanted. The original fuel tank could only hold one gallon and they wanted more, so they had to change the materials of the tank in order to mold it more to fit 3.5 gallons. They had to reshape the body structure of the motorcycle to accommodate the new technologies and the consumers. Lastly, the engine noise needed to sound like the legendary “Harley” noise.

They analyzed the “speedster” motorcycles and incorporated the design into the Harley Davidson. To create a new engine, Harley took their ideas from the VR 1000 engine to Porsche for them to help design the engine. Porsche’s best engineers determined the design and materials needed for the engine.

For the radiator, they created wings to catch the air that was diverted from the front tire to maximize the air to flow to and cool the engine. Ideas for the frame combined the design team’s vision for a curved sleek look, and the engineer’s idea to use malleable aluminum. The original fuel tank under the seat could only hold one gallon, so they decided on to make it out of plastic and mold it into the frame and hold 3.5 gallons. To fix the noise they had to increase the air capacity in the muffler to make the classic Harley sound. The first time they tested the noise, it was “ugly and mammoth” and it needed to be “sexy,” because it needed to abide by the sound laws and accommodate the consumers.

Throughout the design process, Harley created many different versions of the motorcycle which included clay model, 3D design and eventually the real prototype. While testing the different prototypes they were able to redesign different aspects of the motorcycle that were not satisfactory, and compromise between the engineers and design team.

When the project was completed a team spent many hours choosing a name for the motorcycle that highlighted and distinguished the design of the motorcycle, which was V-Rod. They unveiled the final product at the biggest motorcycle convention in the country. They communicated the new features to the consumers who were very excited and impressed with the new bike.