Eissa Alhammadi
Abdulrahman Aljohani
Jun Hwang
Julia Richter
David Leedy

Harley Davidson Video

1. Recognize the need

Willie G. decided that he wanted to produce a Harley Davidson that was iconic, yet had racing qualities that allowed it to reach maximum speeds. In years past Harley Davidson had been known for bigger framed bikes that were meant for cruising bikes. While they had some speed, they were nothing compared to the new style sports bike that were more specifically designed for speed. As the two types of bikes continued to grow apart in the market, Harley Davidson knew something had to be done. They had to make a new motorcycle that met the wants of the market.

   a. Market pull and technology push

People who rode Harleys wanted a fast, racing style bike instead of just a cruiser. The performance based bikes had more multifaceted engines that allowed them to go faster. These engines were very dissimilar from the road bike engines and required different bike designs. Additionally, the Harley Davidson team wanted to incorporate the new technology of the liquid cooled engine and new lightweight into their design. All of these changes they wanted to accomplish while still maintaining the traditional design of the Harley.

2. Define the problem

The problem with putting such a powerful engine in a bike is that the frame must be sturdy enough to hold it. Harley had been doing well on the racing platform so making a faster bike would be easy. What wasn’t easy was trying to fit all of the new components into a frame that maintained the sleek, yet fast,
look of a traditional Harley. There were many problems that arose during this process. For example, the size of the engine proved to be difficult to manage and the elegance of the radiator was also a problem. The size of the fuel tank was also a problem because it was too small. Finally, the exhaust pipe was too large to be a single pipe.

3. Gather information

The designers and engineers turned to Porsche to gather information about their engines. The knowledge that they gained from Porsche turned out to be very helpful. For example, the engineers at Harley Davidson learned that aluminum was lighter metal and therefore built the frame with aluminum instead. They also turned to the Harley Davidson racing team to get the idea of a liquid cooled engine.

4. Generate conceptual ideas

   a. Brainstorming

The design team knew that they wanted to produce a bike that both looked and performed like a Harley Davidson. The bike was said to be a low rider, yet was still able to be customizable.

5. Compare, combine, and select ideas

The design team took it upon themselves to sketch out ideas and the chose a single design. The engineers came up with the idea to have a double rail frame instead of a single rail so that the engine could be supported. They also came up with several ideas about what to do with the radiator. The engineers came up with the idea to put the fuel tank under the seat of the bike and changed the exhaust so that it was two pipes instead of one.

6. Analyze and design

At this point, the design team took their plans to the engineers to see if in fact the design was possible. They formed what they wanted the bike to look like from clay molds taking the time to plan out every miniscule detail. The clay allowed the design team to change anything without having to start all over again. They wanted something that was a classic Harley and aesthetically pleasing.
7. Fabricate and test prototypes

Once the first prototype was built, the team at Harley Davidson took it to ride at someone’s house. Afterwards, the team did a series of tests with the bike to see if it would withhold the test of time. For example, they rode the bike in extreme heat to see if it would last. Then, they put it in a hot box to see if the engine would give out. Then the team test the sound of the bike to see if it was too loud. Other tests included spraying a hard stream of water at the bike to see if it could stand extreme weather conditions. All of the individual parts of the bike were also taken out and tested to see if they were strong enough.

8. Communicate the design

   a. Verbally, graphically, and written

Harley Davidson kept the bike a secret for an extensive period of time until they finally unveiled the bike to the public. At this point, they needed a name for the bike. After months of testing, the name needed to live up to Harley Davidson standards and they finally settled on the V-Rod. Also, the design team communicated with the engineering team about the bike’s fabrication. The wrote up blue prints and created several models to finally produce the bike they had always wanted.