Harley Davidson V-Rod Stages of Engineering Design

Harley Davidson recognized the growing market of motorcycle users interested in high-speed bikes. In response to the emerging market trend, Harley Davidson set out to design a motorcycle which embodied both the speed of a top-line racing bike and the aesthetics of the classic Harley design style. The major problem to solve was how to engineer a high-speed performance motorcycle, which at the time of the beginning design stages held notoriously short life-spans, that would last years while still maintaining the classic Harley look.

After setting the goals of the design process, Harley Davidson put together a design team of both engineers and aesthetic designers. The team had developed motorcycles before, but the motorcycle they sought to develop would require the development of non-existent technology which ultimately were invented through trial and error in the pursuit of creating the novel model. While a good deal of work was done involving computer design programs and clay modeling to design the motorcycle, the team would have to create the motorcycle in the physical world. The emergent problems involving the design and technological specifications of the would be V-Rod motorcycle presented themselves in the prototyping process though rigorous testing of the performance. A top priority of the design team was to develop a metal frame that would maintain the classic Harley design and provide adequate space for the large components needed to power a high-speed motorcycle such as the racing-style engine. Harley asked the help of Porsche to meet the need to re-engineer a new engine that would provide high-speed capability and fit within a newly designed classic Harley motorcycle frame with high-speeds in mind. The team also found problems with the
A cooling system of the motorcycle requiring a newly designed incognito radiator unit. A new exhaust system was needed to handle the high-density gases produced by the high performance engine developed by Porsche and Harley. Sound production of the bike produced a setback as well with restrictions on maximum volume output requiring small-scale tinkering to produce a model that met acoustic laws. When the problems involving the performance abilities of the V-Rod were solved the design team set out to make the model customizable for the Harley consumer.

The marketing for the V-Rod motorcycle by Harley Davidson was somewhat unconventional. During the design and production process Harley made a strong effort to keep the project secret until the final model for large scale production was complete. To reveal to V-Rod to the public, Harley Davidson held an expo to show the newly designed motorcycle which served to promote the model for sale.