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V-Rod Creation Through the Steps of Engineering Design

The steps of engineering design are greatly demonstrated through the creation of the V-Rod Harley Davidson Motorcycle. The video portrayal of this event illustrated how it wasn't a step-by-step process but rather a cycle of failing, learning, and attempting once again.

The first step of engineering design is recognizing the need for change. In 1995 Harley Davidson recognized the demand for a motorcycle that emphasized speed along with style. They recognized the problem that style was the company's main focus, however, newer discoveries in other companies led customers to wanting more from Harley Davidson. They needed to combine their stylish designs with speed into a new model. The next step of engineering is gathering information. They were unsure of how they were going to go about making this new model. They did various things to get an idea. They watched multiple drag races to gain knowledge on speedier vehicles in order to base their engines off of. They brainstormed and realized that they needed a faster engine, but this would require a stronger frame to handle the speed. They decided the way to possibly go about this was to put two bars in the frame instead of one to make it sturdier.

They combined with Porsche in order to create a faster engine because of Porsche's reputation for well-made fast engines. Together, they came up with the VR1000 engine. However, they soon ran into a problem in which the fuel tank would not fit into the frame. This

set them back a step into brainstorming new ideas once again. They made the fuel tank plastic in order to mold it to fit into more difficult places and they moved it to fit underneath the seat. They soon tested this new prototype, and although it worked, the engine did not hold up for very long. They were set back once again. They tweaked the prototype until it was able to last for up to 500 hours.

Now that the motorcycle was functionable, the need for style came into play. It was difficult for the engineers and designers to agree for the most practical bikes were not exactly the most stylish. They used a clay 3D model in order to visualize a design and create a workable model. Through much cooperation they made a larger fuel tank and changed the metal the bike was made of. Eventually, a stylish model was formed but there was still the question of whether it would work. One factor that the engineers had to work with is making sure that the bike would function under extreme conditions, such as heat. In order to do this they surrounded the bikes with heat sheds for hours in the desert after riding them. They also had to test the bike under extreme amounts of water. They shot water at all of the different parts of the bikes to test that they would not leak or fall apart. After these tests, they added a consistent liquid-cooling system and a radiator to cool the engine.

The final step of the engineering design process is communicating the design. Once the bike was finished, they had to promote and sell the bike to the public. They had to come up with a stand-out name, in which they chose the V-Rod. They exposed their new creation, along with an expose of all of the individual parts, in Los Angeles, California in 2001, where fans instantly fell in love with the new model. Although this process took longer than expected and included many failures and setbacks, following the steps and not giving up in the end produced a

remarkable model that was a hit to customers. After a lot of hard work the initial goal was attained.