V-rod

As we first look at the evolution of the V-rod we find ourselves at the market pull. The consumer base was wanting a Harley that had a combination of speed and style without losing the iconic features.

As with all new ideas the problems had to be defined. Both prior to starting the process and during. The initial problem was getting the VR1000 engine from their sport bike into a classic frame for a much cheaper and street legal product. The normal Harley air coolers had to be switched out with water cooled systems which needed the introduction of an air intake. The only place for it was behind the front wheel which presented air flow problems. The result was their “Gumby’s coffin” design. The Initial fuel tank only held one gallon so they developed a larger gas tank from plastic to mold into the gaps that metal could not. The exhaust had to be redesigned for a larger exhaust volume and the larger split exhaust design was developed. Normal methods of making the frame could not produce the curves desired by designers so a Hydro-forming method was used.

To get an idea of what was required they noted what information was needed to conceptually design the first prototype. Questions such as space required for the engine. How to design the frame? What will the cost of the new engine be? How do we control emissions and noise levels? How will we obtain air flow for the water-cooled engine? How will we get more volume of exhaust for roughly the same space? What ways can we expand the fuel tank? Eventually they teamed up with Porsche to design the new engine, albeit a slow process.

To further communicate from the artists to the engineers Harley Davidson used 3-D concept designs coupled with clay designs to illustrate what had to be done. Air intake designs were put through virtual simulators and the design of it, the exhaust, front wheel, and frame were digital which allowed for changes to be made prior to production.

Eventually they had to make decisions on what they wanted in the design and did not want. They decided to use a curved frame to allow the new VR1000 to fit. Original gas tank was turned cosmetic to hide the engines twin intake valves. The front wheel and frame were lowered to allow the rider more control and the exhaust was expanded to allow a split design for more flow.

For analysis and design they used clay modelling to bring the 3-D rendering to a more tangible medium and allowed the designers to make alterations quickly and easily. All parts were also brought together in the 3-D program for the whole concept.

Frame was made using new hydro-forming technique and the bike prototype was able to be assembled. The v-rod was tested to last 500 hours straight at normal cruising speed. Also tested for Idling conditions in severe heat. It was also tested for electronic interference and weather resistance.

To communicate their design they did a few things. First of which was to give the product a name to remember, the “V-rod”. They used advertising, both visually and audibly to promote the V-rod. They also used conventions to publically unveil it too.