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V-Rod Design Process – Team #2

1: Recognize the Need

- Customers wanted a faster bike, but it had to keep the Harley look and sound
- Harley wanted to make something completely new
- Wanted to pull in new customers without losing the appeal of their loyal customers

2: Define the Problem

- More people buying street bikes instead of Harleys
- Couldn't use any previous designs that they had
- Engine had to fit into chassis
- Needed a powerful but long lasting engine
- Frame needed bent steel tubing
- Needed a larger exhaust pipe that was mass producible and also looked like other Harley exhaust pipes
- Needed a bigger gas tank that would fit into the bike
- Needed a way to package a nice looking radiator into the chassis
- Needed bike parts that could be customized to the customers liking

3: Gather Information

- Found inspiration for speed in dragsters
- Looked at the types of bikes that appealed to people at the time
- Looked at Porsche engines for long lasting, durable engines
- Studied different ways to bend steel tubing

4: Generating conceptual ideas

- Started generating new designs for the bike
- Generated concepts for each part of the bike

5: Compare Combine and select ideas

- Collaborated with Porsche on the engine design
- Had multiple teams of engineers and designers working together
- Came up with multiple ideas for each part before deciding what would work best
- Decided to use a double exhaust pipe
- Selected the v-twin engine
- Added fins to the radiator to collect more air
- Decided on plastic for the gas tank so it could fit the bike exactly
- Decided on hydroforming for the steel tubing to bend it

6: Analyze and Design:

- Designed multiple frames to find one with least amount of welding
- Had to incorporate a powerful engine that was also stylish
- Came up with designs that looked like a Harley, but could withstand the high speeds

7: Fabricate and Test Prototypes

- Ran engine simulator tests to see if the engine could withstand high speeds for a long duration and long periods of idling
- Tested radiator to see if it pulled in enough air

- Realized the radiator needed to be bigger than they wanted during testing but it still had to look nice
- Tested the sound of the bike to make sure it sounded like a Harley
- Ran road tests to see if the bike could withstand high speeds and mileage
- Let the bike idle in the sun
- Left separate parts of the bike out on the roof to see if they could withstand weather

8: Communicate the Design:

- Figuring out a good name for the bike (V-Rod)
- Released the bike at a Harley expo
- Had a business team that came up with how to release the bike to the public