

using waterfall-model for AirBag.

1. Requirements:

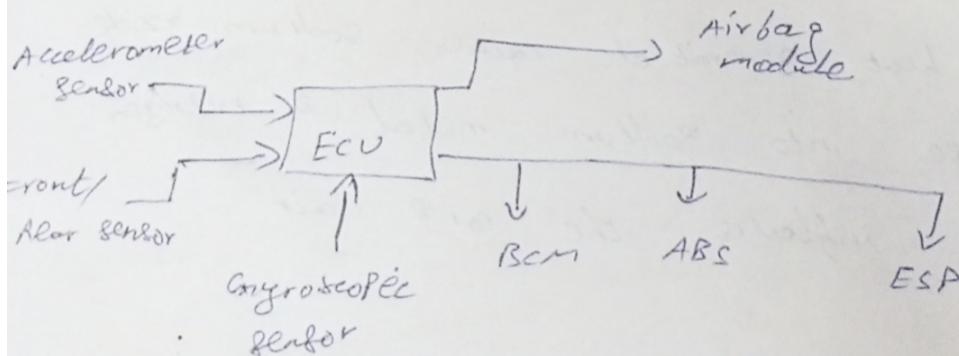
⇒ To Provide a cushion like a bag for the car who are travelling in the car when the any accident is occurs.

⇒ To Protect the human body from the collision that occur on the car.

⇒ It can be completed with in fraction of second so the output of the bag can be completed within the seconds.

2. Analysis and Design:

- 1) Accelerometer sensor
- 2) Front / Rear Collision sensor
- 3) ECU
- 4) Airbag cushion
- 5) Gyroscopic sensor



ECU - Electronic control unit

BCM - Body control module.

1. Accelerometer sensors:

→ It is used to detect the change in speed. If the deceleration is high enough, the accelerometers trigger the air bag circuit.

2. Front/rear sensors:

→ If the collision occurs in front/rear, that sensor will detect the collision and trigger to ECU.

3. ECU:

→ It can control the airbag function, with the some signals from the sensor. It can react to the airbag.

4. Airbag cushion module:

→ The airbag cushion module the chemical at the heart of the air bag reaction is called sodium azide, or NaN_3 .

→ Crashes trip the sensors in cars that send an electric signal to the Ignitor.

→ The heat generated causes sodium azide to decompose into sodium metal & nitrogen gas which inflates the car's air bags.

3. Development:

=> Develop the coding that determines to trigger the sensor & the gas can fill to the bag within fraction of second.

4. Test:

=> The testing is done with the above program that we can dump in SO of Hardware in the loop (HIL).

5. Deployment:

=> This can be deployed to the car and then it will work when the accident or collision is occur.

6. Maintenance:

=> To maintain it with some of the things the gas is ignite after some years & the sensors are working.