

Hardware software partitioning of crankshaft function in engine control units using FPGA-based testing

ABSTRACT

The automotive industry shows a gradual transition from a simple transportation model to a car that relies on electronics for safety control. A modern car will offer many features in which the car drive or park automatically; this shows the effort of the automotive industry in increasing the consumer's safety level on the road. The increasing awareness of safety results in reliance of today cars on the electronic controlling components such as engine, steering, transmission, braking system and airbags. This project proposes hardware and software co-design that provides flexibility, timing precision, performance, manageable software design, complexity and meets safety requirement. The solution is aligned with Application-Specific Integrated Circuit (ASIC), which features complex control algorithm, implementation in hardware and controllable through firmware.

Keyword: Co-design; ECU; Crank