

Design and Development of Electrical Power Steering System Meeting Functional Safety Standard ISO 26262



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Abstract:

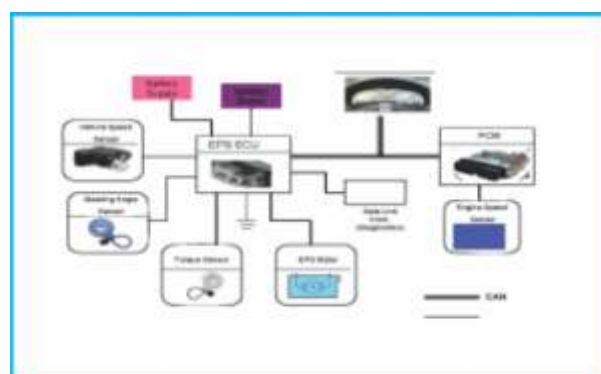
The work describes a microcontroller architecture fulfilling the requirements for the new Functional Safety standard ISO 26262 for the Electrical Power Steering system for a passenger car. The new safety standard ISO 26262, forces automotive electronic system manufactures to align all their development processes with safety considerations. The impending introduction of the ISO 26262 will offer OEMs and suppliers an agreed industry standard for managing risk for electronic vehicle systems.

Literature survey for Electrical Power Steering system was carried out by referring to online data, books and related documents. Literature survey on Functional Safety Standard ISO 26262 [all parts] were carried out by referring to standards, research papers, journals and related documents. System functional block diagram for the Electrical Power Steering System was arrived at, based on literature review. The sub system components for the proposed Electrical Power Steering system were identified.

The automotive safety integrity levels for the Electric Power Steering system for the failures Unintended Steering during Drive and More Steering Effort during parking were calculated. Safety Integrity Level comes out to be ASIL D and ASIL B respectively based on the Hazard analysis and risk assessment which is derived from the severity, probability of exposition and controllability, Above the threshold speed of 90 km/hr the EPS is deactivated for Fuel efficiency improvement.



Instrument cluster simulation



Electrical power steering system