Sneak circuit analysis for control circuits

HBM Prenscia offers Omnicon's engineering services to help you tailor any analysis to your needs and provide results in the least amount of time. Sneak circuit analysis is an established means for finding latent design flaws that cause unwanted actions in control circuits and systems. These design flaws cause anomalies such as railroad doors that open while the train is in motion or wrongful missile launch.

Careful design practices and thorough testing can sometimes miss these flaws because it is usually impossible to consider all possible combinations of circuit inputs and internal circuit states. However, an exhaustive assessment can be made using software specifically developed for this purpose.

Unexpected product behavior can permanently damage the reputation of your product and even your company. With objective, independent analyses, your products can be made safer and more dependable – the least expensive path to avoiding loss of market share and recalls.

Sneak circuit analysis with automation

Engineering analysts have performed sneak circuit analysis on critical systems for decades, but without automation the analysis has been tedious, error-prone and labor-intensive.

Omnicon's automated approach substantially lowers cost and analysis time while greatly improving accuracy and thoroughness. Sneak circuit analysis is now feasible for all critical system designs and its cost is on par with the commonly applied failure modes, effects and criticality analysis (FMECA).

Omnicon's approach to improve accuracy

Omnicon's Automated Sneak Circuit Analysis provides a complete and fully accurate assessment of sneak behavior while minimizing possibilities of human errors. At the start of the analysis, engineers examine the control circuit or system and define its behavior as a set of logical rules that are captured in a database. Engineers then model the control circuit as a set of state-based components and interconnections that are also captured in the database.

Analysis software first retrieves database information and checks for logical errors, then constructs the circuit as a software model. It simulates circuit operations by applying each combination of input states and determines the corresponding internal and output states.

For each combination of input states, the analysis software compares output states to the database logic rules and determines whether circuit behavior is normal or anomalous. The software also looks for paths from power sources to inappropriate ground returns and for other possible circuit problems. All results are saved as text in log files and as graphic images. These results are submitted as appendices to the final report.

Omnicon can also perform sneak analysis on critical software modules. As with hardware systems, unexpected combinations of valid inputs to a software module can sometimes cause anomalous behavior that is not always predictable during design or disclosed during test.

Solving technical challenges within an aggressive schedule

Our engineers apply expert knowledge and experience to complex safety, mission and revenue-critical challenges that require innovative thinking and creative solutions, within an aggressive schedule. We strive to form lasting partnerships, as evidenced by our 96% repeat customer base.

Design innovation

System, software, electronic hardware and specialized test equipment
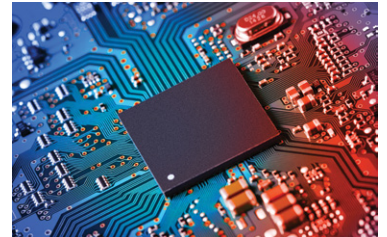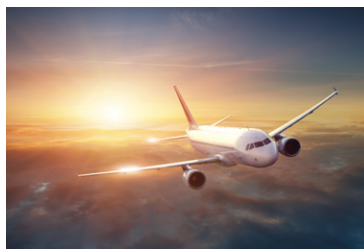
Product assurance

Reliability, safety, verification, testing, validation, maintainability and testability

Program execution

Project management, program leadership, mitigation and risk identification

Product development

Complete product design, development and manufacturing

About Omnicon

For over three decades Omnicon has combined its knowledge and industry experience to provide our customers unique solutions to their technical challenges. Our team, comprised of award-winning engineers and program leaders, has the technical background along with the leadership skills necessary to get your program completed on time and on budget. Our ultimate goal is to ensure that our customers' products are reliable and safe. Additionally, Omnicon offers comprehensive systems, hardware and software development as well as program management that results in deploying your product to market quickly with minimal risk. Top industry leaders throughout the world repeatedly turn to Omnicon as a vital component in developing their customized engineering solutions.

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