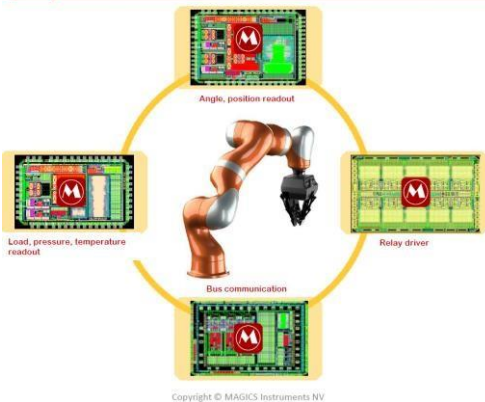




New integrated circuits to withstand high ionising dose radiation and high energy particles

F4E and MAGICS have developed a new generation rad-hard ASICs for position sensing, motion control and bus communication. These integrated circuits can withstand more than 1 Mgy total ionising dose and could be used for sensors, actuators or complete systems for harsh environments.

Rad-hard CLMC in picture



The technology

Designed for a new radiation resistant closed-loop motion control system for remote handling applications, these circuits consist of five rad-hard system on-chips:

- an angle and position readout system
- a relay driver ASIC
- a limit switch
- a load, pressure and temperature readout system
- a bus communication ASIC.

ASICs resistant to strong radiations and high energy particles

The major breakthrough relies on the high resistance of the integrated circuits to ionising dose radiation (>1MGy) and high energy particles. These are based on BiSS-interface, an open-source, real-time fieldbus protocol which brings a speed of 10 Mbps over a cable length of 100 m, safety, flexibility and minimised implementation effort.

Huge potential in radiation hard electronics and sensors

The solution comes as a game changer in terms of radiation-resistant technology and could find many applications in sensors (pressure, temperature, flow, radiation), actuators (relay drive, solenoid drive, motor drive) for harsh environments. It could also be integrated in complete systems (such as rad-hard cameras and remote handling systems) used in nuclear, space and particle accelerator industries.”

Collaboration opportunities

The technology package is available for licensing and adaptation to new environments. These ASICs can be integrated by the industry into existing systems or used as an off-the-shelf product in new developments.

Nicolas LOUEE,
Technology broker
Phone: +33 6 58 46 71 47
Email: nicolas.louee@inextenso-innovation.fr