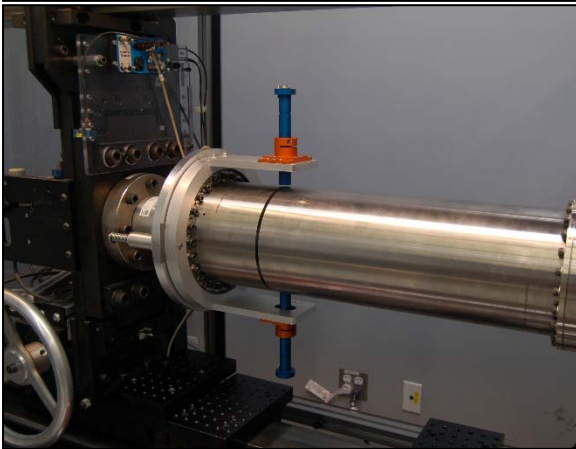
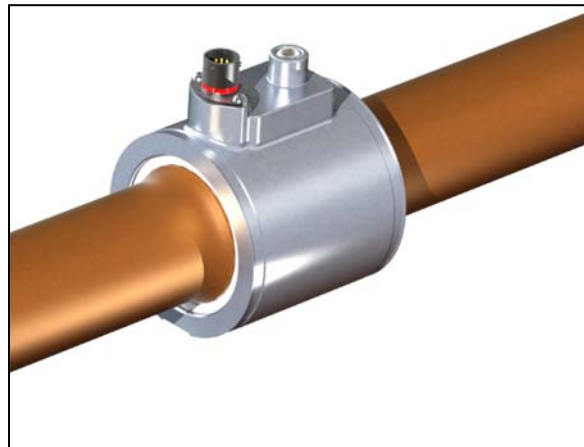


MAG CANICA

4204 JUTLAND DRIVE
SAN DIEGO, CA 92117
USA

HIGH PERFORMANCE WIRELESS TORQUE SENSING



JOB DESCRIPTION

ELECTRICAL HARDWARE ENGINEER
Full-Time Positions

Spring 2023

COMPANY OVERVIEW

MagCanica, Inc., a leading global provider of non-invasive torque sensor systems for high performance powertrains, is actively seeking new members to join our San Diego based team as we expect continued growth during 2023 and beyond. Since the Company's inception, MagCanica has focused its efforts on the development and commercialization of its non-contact torque sensor technology which is used to measure torque on high performance powertrains across the motorsport, aerospace, and energy sectors. MagCanica is the global market leader in motorsport torque sensing and powertrain performance monitoring across a variety of automotive racing series including Formula 1, Formula E, World Endurance Championship (WEC) Hypercar, IMSA GTP, NASCAR, and Cross-Country Rally Car. Additionally, MagCanica provides hardware, support services, and technology to the US Navy as well as Sikorsky Aircraft and Vericor Power Systems. Leveraging its leading position worldwide in motorsport torque measurement, and solving some of the most challenging torque measurement problems facing the automotive, aerospace, and energy industries, MagCanica is poised to expand further in its existing markets as well as into new markets such as high-performance sports cars and electric and autonomous vehicles.

JOB DESCRIPTION & TYPICAL TASKS

The primary role of the Electrical Hardware Engineer will be to help upgrade the electrical hardware in MagCanica's product line and the associated test and validation equipment. This role will require expertise and execution on the detailed sub-system level, and also on the broader systems-level perspective. Such a breadth and depth of perspective will empower the Electrical Hardware Engineer to use his or her knowledge of analog, digital, and mixed signal fundamentals to design, develop, test, and validate a combination of new product designs, process improvements, and in-house calibration hardware platforms. This will include design specification, design analysis, prototype testing and validation, in-house characterization and validation, directing final product manufacture, and release to clients both internal and external. To accomplish this, the Electrical Hardware Engineer will have to communicate effectively in order to relay his or her expertise to a very multidisciplinary group of Mechanical, Embedded Software, and Test Engineers. The Electrical Hardware Engineer will need to effectively explain his or her electrical hardware perspective to team members less familiar with the topics, while also understanding and integrating the expertise brought to bear by the other engineering disciplines. Additional tasks may include: hardware-interface level development of embedded software in the C language, meeting with customers and suppliers to communicate design requirements, applications engineering of customer installations, and failure analysis.

Typical Primary Tasks (75% min):

- Design circuits to meet instrumentation-grade requirements. Typical circuit design flow will include the following: SPICE simulation, lab testing, PCB design, performance validation, and overseeing manufacture (by outside vendors) and calibration (in-house) of PCB's in production
- Design, develop, and improve upon infrastructure for sensor processing, testing, and calibration. Examples include: test and calibration equipment used for magnetic field sensors and associated signal conditioning electronics, electromechanical magnetizing equipment, and torque testing benches
- Collaborate with other engineers to develop and release the latest updates to MagCanica's magnetoelastic torque sensor product lines in the form of highly accurate and robust signal

conditioning circuits for magnetic field measurement able to survive in thermally and electromagnetically harsh environments

- Design and release the latest updates to MagCanica's magnetoelastic torque sensor product lines in the form of additional output signal formats such as CAN FD, ModBus, or UART

Typical Secondary Tasks (25% max):

- Analyze and professionally document laboratory testing results, dyno testing results, and track data pertaining to systems and/or components described above
- Travel to client sites around the world including but not limited to Europe, Japan, and the US, to monitor system installation and provide field support at dyno tests, track test, and races as required
- Hand-assemble and modify electrical hardware that ranges from surface mount microelectronics to server rack electrical enclosures
- Write software in a variety of languages (LabView, Python, C) to support test and development infrastructure or new driver initial proofs-of-concept

JOB QUALIFICATIONS

Skill Requirements

- Strong and intuitive understanding of analog, mixed signal, and signal processing fundamentals
- Strong understanding of analog filtering, digital filtering, electromagnetics, and control systems
- Ability to complete circuit analysis by hand quickly and accurately
- Understanding of typical circuit design issues and component non-idealities
- Familiarity with systems modeling tools (e.g. SPICE, Matlab)
- Experience with complete hardware development life cycles including:
 - Requirement definition, design, development, integration, testing, and support
- Experience with schematic capture and PCB design (e.g. Altium)
- Familiarity with capturing and reading electrical hardware documentation including:
 - Wiring diagrams, bills of materials, and wiring tables
- Ability to multi-task and re-prioritize as needed based on external factors
- Strong understanding of design constraints in size-limited and harsh environments
- Familiarity with peripheral components including EEPROM and serial transceivers
- Strong problem-solving, debugging, and root cause analysis skills
- Effective communication with team members of varying disciplines, including non-engineers
- Ability to work effectively in a fast-paced, multidisciplinary environment
- Experience using 3D CAD software (e.g. Solidworks) helpful but not required
- Proficiency in writing and thoroughly debugging C code helpful but not required

Educational Requirements

A Master's degree in Electrical Engineering is preferred but outstanding applicants having a Bachelor's degree will be seriously considered. Two to four year of professional engineering experience are preferred, but outstanding applicants without prior experience will also be considered.

The Type of Person We Are Looking For

We are looking for self-motivated and committed engineers who have the ability to learn quickly and possess outstanding technical *and* interpersonal skills. Our approach to engineering is highly interdisciplinary and involves a unique combination of theory and execution. This means carrying out rigorous analysis and experimentation, and then actually building and testing functional hardware. It also means constantly pushing the boundaries and seeking continuous optimization and improvement in the product line and associated processes, with a solution-oriented approach and a can-do attitude. We are looking for individuals who are both very well-organized and highly flexible. Such candidates can fulfill multiple roles, and can work effectively even with limited supervision, while at the same time thriving in a dynamic multidisciplinary team environment. Successful candidates will have a strong attention to detail, a genuine concern for outstanding quality, and the ability to interact positively and effectively with clients and colleagues from all over the world.

COMPENSATION & BENEFITS

MagCanica offers a very competitive compensation package including base salary, a discretionary yearly performance-based bonus, paid vacation, and 10 paid holidays per year. Benefits include medical, dental, workers' compensation, disability, and life insurance as well as a 401k program with matching. The Company works hard to allow employees the greatest possible personal flexibility while achieving our overall engineering and business objectives.

CONTACT INFORMATION

Please send your resume **in PDF format with the file name containing your full name** to:
recruiting@magcanica.com

MAGCANICA IS AN EQUAL OPPORTUNITY EMPLOYER AND WILL CONSIDER ALL APPLICANTS WITHOUT REGARD TO RACE, COLOR, RELIGION, SEX OR NATIONAL ORIGIN.

Last Updated: Mon-10-Apr-2023