



Job Title: Electrical Engineer – Magnetic Sensor Array/Systems

FLSA Status: Exempt

Reports To: Engineering Manager

Supervises: None

Date: March 2021

Summary

Perform innovative research using computerized tools and the technical knowledge to create, simulate, implement, and test advanced signal processing algorithms for metal detectors and similar instrumentations products. Utilize magnetic field theory and modeling, and digital signal processing algorithms to develop complex magnetic sensor arrays and develop analog and digital circuitry to acquire and process sensor data.

Essential Functions

1. Utilize magnetic field theory and modeling, and Digital signal processing algorithms to develop complex magnetic sensor arrays/systems.
2. Develop analog and digital circuitry to acquire and process sensor data.
3. Develop and implement DSP algorithms to capture, filter, and analyze sensor data.
4. Develop circuitry and perform computerized circuit analysis as required. Develop and evaluates demonstration circuitry to confirm circuit concepts. Performs computerized circuit analysis as required.
5. Develop low level firmware needed to support circuit development and testing of embedded systems.
6. Assist with the development of circuit architectures and schematics.
7. Assist with engineering change processes to ensure changes are properly tested and documentation is accurate and updated in a timely manner.
8. Maintains required documentation of development and testing activities, including engineering notes and reports.
9. Assist in the development and troubleshooting of hardware prototypes.
10. Develop and execute necessary tests to evaluate hardware and software designs.
11. Follow company standards in software testing and documentation.
12. Responsible for product development and implementing software and systems for innovative metal detection systems and related instrumentation products.
13. Implement and develop tools for developing software for digital filtering systems/processes, signal processing algorithms, C Programming and Matlab.
14. Read, analyze and interpret technical documents to define problems and establish facts.
15. Prioritize, organize, and handle multiple projects simultaneously.
16. Comply with all safety policies, practices and procedures. Report all unsafe activities to supervisor and/or Human Resources.
17. Participate in proactive team efforts to achieve departmental and company goals.
18. Provide leadership to others through example and sharing of knowledge/skill.

Required Education and Experience

1. Master's degree in Electrical Engineering
2. Minimum of eight years of relevant experience

Skills & Qualifications:

1. DSP signal processing
2. Magnetic field theory and modeling
3. MatLab data analysis and algorithm development
4. Analog circuit design and analysis, Spice
5. Proficient with C programming language
6. Communications theory
7. Ability to collaborate with others in a multidisciplinary team environment
8. Trouble-shooting and problem-solving skills

Work Environment

1. Well-lighted, heated and/or air-conditioned indoor office/production setting with adequate ventilation and moderate noise.
2. May work with or near moving mechanical equipment.

Physical Demands

Moderate physical activity performing non-strenuous daily activities of a productive/technical nature to work from a sitting or standing position.

1. Manual dexterity sufficient to reach/handle items and work with the fingers.
2. Must be able to bend, stoop, squat, crouch.
3. Must be able to sit for long periods of time.
4. Must be able to lift up to 20 pounds, with or without assistance.