European Union
European Regional Development Fund

Job Description

Job title	Scientific Officer - Electronic and Control Systems Engineer
Department	R&D
Reports to	Electronics and Control Systems Team Leader
Responsible for	Not Applicable

Job purpose

To design and implement embedded remote control and monitoring systems (RCMS) suitable for use in processes for the entire supply-chain of biogas from production via anaerobic digestion through upgrading, storage and final applications.

This role involves development of novel measurement techniques for use in challenging operating environments including cryogenic, explosive atmosphere, vehicular and high vacuum. Prototype solutions require ruggedising towards commercially scalable products with adherence to relevant standards and regulations.

The electronic and control systems engineer provides support within the R&D team for experimental testing and validation of prototype devices and processes by constructing and operating control and monitoring systems. Logged data from such systems are shared with the R&D team and interpreted in order to feed back into the product design cycle. The role also requires that all system operating parameters and logic may be changed to optimise process performance.

It is sometimes necessary to achieve interoperability of the Bennamann RCMS with other control systems by developing or selecting appropriate communications protocols.

Frequent collaboration with the R&D design team is required across various aspects of all projects to ensure that solutions are fit for purpose, safe and deliverable within a reasonable timescale and budget.

Duties and responsibilities

Operational responsibilities

- Support in the design and build of control systems that combine sensor data, user inputs and operating procedures to safely and efficiently control small and large processes.
- Assist in the development of new sensors and electronics based on our novel IP
- Support the R&D process by developing simple, effective means of controlling prototype equipment and running tests.
- Develop control system hardware and software taking first principles and translating these into efficient, safe control regimes
- Assist in the design and build of Internet of Things (IoT) enabled of RCMS

Peer group /cross team liaison

o Maintain a good working relationship with colleagues and peers, reflecting Bennamann values

o Provide input to all aspects of the design process collaborating with fellow engineers across multiple disciplines and areas of expertise

o Regularly participate in reviews for maximising safety and optimising operational aspects of our processes and equipment

Reporting and communication

- o Regularly participate in internal and external face to face meetings or Teams video calls
- Produce documents supporting and recording design pathways including design reports, test reports, test plans, as-built documentation and technical drawings e.g. circuit schematics
- Liaise with colleagues and suppliers by telephone and email where necessary to establish appropriate technical specifications and procurement actions for required specialist equipment / components
- Task planning in scrum format where tasks are established and verbally explained as fortnightly completion aims with regular review of these objectives aligned to company strategic goals

Management of team *(if applicable)*

- No Management required at present but as the company expands there will be opportunities for to take a more senior role.

Team

- o Proactive member of motivated and engaging team
- Participate actively in team meetings and proactive in own review and development
- Supportive member of *R&D* team, role modelling Bennamann values in both internal and external relationships:
- Open to exploring alternative methods in own work or designs and those of other team members

H&S

- Where required training and support will be provided.
- Responsible for own H&S adhering to company guidelines be this in an office / workshop setting, on site, in a vehicle and/or any other reasonable context
- Highlight any H&S risks you identify to management
- Ensure you have any and all reasonable PPE and highlight any deficiencies to management who will address as required
- *Employ sound engineering judgement to eliminate or minimise hazardous use of equipment or substances either through design considerations or operating methods.*

Person Specification

ATTRIBUTES	ESSENTIAL (must have these skills or experience)	DESIRABLE (…but prepared to train or develop in these areas)
Relevant Experience Work and non-related work experience relevant to the job and organisation	**Technical/Operational** **Physical computing:** Hardware circuitry design & prototyping, analog and digital transducer interfacing, signal conditioning. Serial communications protocols I2C, SPI, CAN, 1-Wire. PCB design (KiCAD or similar electronic design automation package), hand assembly of PCBs for test and debug. Familiarity with Raspberry Pi and Arduino platforms/ecosystems. **Software:** Experience of using and configuring Linux systems. BASH, Python C++, git version control. General incremental approach to software development, debugging systems by tracing, isolating and resolving issues anywhere from circuit to software faults. **Networking: Ethernet TCP/IP, WiFi** **Practical skills:** Familiar with use of common laboratory test equipment e.g. oscilloscope, logic analyser, power supply, multi-meter etc. Safe and competent use of basic hand tools. Adherence to agreed procedures for managing hazardous activities and substances. **Business Acumen** Adopts solutions with appropriate balance of cost, reliability and safety	Experience in ultrasonic circuit design DC & AC power systems Thermal relief, EMC Mechanical engineering, awareness of available manufacturing processes, particularly in PCB fabrication & assembly CANBUS SAE J1939 DSEAR TRAINED DESIGN OF INTRINSICALLY SAFE CIRCUITRY AND SYSTEMS Browser-based UI implementation e.g. NodeRED, PHP Azure, SQL PID control System dynamics modelling GSM, satellite modem comms. SSH, network security. Competent in small SMT hand soldering e.g. with TSSOP packages Experience of 3D design and 3D printing for rapid prototyping e.g. Tinkercad, Fusion, Sketchup, Cura etc Budget estimation and project planning
Education/ Training Specific qualifications and or training	Degree in engineering subject with electronics / computer science either as a key part of programme of study or gained from subsequent working experience.	Computer science degree Electrical qualifications: BS7671, CompEx

Qualities, knowledge & skills Personal skills, qualities, behaviour, most of these will be essential as many of these cannot be trained	An empathy and affinity with the Bennamann company values: - Safe and Reliable - Able to remain calm under pressure - Value customers, value the environment, value the team - Profit with integrity - Revolutionarily creative - Passionate, with a can-do attitude In addition: - Adheres to process and policy, including PPE and uniform - Presentable, with the ability to be a positive representative for Bennamann in relationships with customers and suppliers; Methodical, patient and perseverant in approach to solving problems. Breaks complex tasks down into manageable pieces with demonstrable completion criteria Self-motivated and schedules own workflows to align with company aims. Offers assistance to other team members if necessary and seeks advice or assistance where own workflow is impacted by difficulties beyond own capacity to resolve.	Natural engagement with an engineer's logbook as a key tool for problem solving, reflection, planning and recording findings
Additional factors Working conditions/hours, ability to drive, any special working conditions (e.g. gas handling	Flexible working hours based around Core 9:30-15:00 Mon-Thurs and 9:30-13:30 on Fridays.	Driving license, use of own vehicle Towing license

To apply please send cv and cover email to: people@bennamann.com