

Senior Mechanical Design Engineer

Interfaces:

Reporting line:	Technology Development Director
Direct reports:	N/A
Interface:	Technology Development Electronics, Software, Mechanical, Production and Operations
Location:	Norwich, England

Job Brief:

This position is based in Norwich within the Technology Team, developing advanced wellbore and pipeline inspection tools for the oil and gas industry. You will work closely with engineers from a range of disciplines, each bringing diverse skills and experience.

EV's core technology centres around video capture in extreme downhole environments, including temperatures exceeding 200°C and pressures above 20,000 psi. This includes the integration and refinement of advanced optical systems operating under harsh thermal conditions.

As a Senior Mechanical Design Engineer, you will collaborate with the design, production, and operations teams—providing support while gaining the experience necessary to further advance your career.

The Technology Team operates in a casual but fast-paced environment where no two days are the same. As part of a small, multi-skilled team, you'll have the opportunity to broaden your expertise with the full support of your colleagues. A willingness to adapt and expand your skill set is key to success in this role.

Role and Responsibilities:

- Take full ownership of the end-to-end design and development of our Downhole and Pipeline Tools, providing innovative, practical, and manufacturable engineering solutions.
- Lead and mentor junior engineers in design, prototyping, testing, and validation activities, ensuring products consistently meet the required performance, reliability, and quality standards.
- Drive design reviews and engineering processes, balancing technical feasibility with schedule constraints.
- Collaborate with suppliers and manufacturers to optimise processes, apply design-for-manufacture principles, and oversee Bills of Materials (BOMs).
- Oversee optical and thermal system design, simulation, and integration, ensuring mechanical constraints, environmental conditions, and operational requirements are met.
- Conduct thermal, stress, and vibration analyses using FEA and other simulation tools to validate designs under operational loads.
- Ensure the creation and maintenance of technical documentation, including assembly, servicing, and operating manuals, in collaboration with cross-functional teams.
- Maintain proactive communication with the design team and project managers to prioritise work, track progress, identify risks, and recommend design improvements.

- Champion adherence to all workplace quality, health, and safety standards, and drive continuous improvement initiatives.
- Undertake hands-on modification and refinement of metalwork in-house using a variety of workshop tools and equipment to support rapid prototyping and iterative development.

Required Skills/Competencies:

Technical Expertise:

- Expert proficiency in 3D CAD software for complex design, assembly, and simulation, ideally SolidWorks.
- Deep understanding of mechanical engineering principles, including materials science, stress analysis, thermal management, and high-pressure/high-temperature systems.
- Experience in thermal simulation (ideally SolidWorks or ANSYS) and finite element analysis (FEA) to validate performance under mechanical, thermal, and environmental loads.
- Knowledge of optical system integration and simulation tools, ideally Photopia, to guide lens, LED, sensor, and optical housing designs, or a willingness to develop these skills.
- Extensive understanding of manufacturing processes, DFMA principles, and the ability to drive manufacturability improvements.
- Experience with product lifecycle management, revision control, and configuration management.

Problem-Solving and Analytical Skills:

- Demonstrated ability to lead complex problem-solving efforts, providing innovative and robust engineering solutions.
- Analytical mindset to evaluate design trade-offs in terms of performance, reliability, and manufacturability.
- Meticulous attention to detail to ensure high-quality deliverables across all engineering outputs.

Leadership, Project, and Time Management:

- Proven capability to lead engineering projects, mentor junior staff, and manage multiple priorities to meet project milestones.
- Ability to plan strategically, anticipate technical challenges, and implement mitigation strategies.
- Comfortable taking ownership of engineering outcomes and accountable for technical decisions.

Communication and Collaboration:

- Proven capability to lead engineering projects, mentor junior staff, and manage multiple priorities to meet project milestones.
- Ability to plan strategically, anticipate technical challenges, and implement mitigation strategies.

- Comfortable taking ownership of engineering outcomes and accountable for technical decisions.

Adaptability and Continuous Learning:

- Proactive in learning new tools, technologies, and methods to remain at the forefront of engineering innovation.
- Flexible in a dynamic, fast-paced work environment with shifting priorities.
- Strong commitment to quality, safety, and regulatory compliance.

Experience and Qualifications:

- Proven capability to lead engineering projects, mentor junior staff, and manage multiple priorities to meet project milestones.
- Ability to plan strategically, anticipate technical challenges, and implement mitigation strategies.
- Comfortable taking ownership of engineering outcomes and accountable for technical decisions.