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## Embedded Product Design Engineer

### Embedded Product Design Engineer

**Job Title:** Embedded Product Design Engineer

Summary: A product design engineer is needed to design, program, prototype, build and test novel medical instruments. The engineer will be responsible for the hardware and embedded firmware of microcomputer controlled products and they will oversee the initial manufacturing.

The engineer will take a key role in researching, developing, and commercializing a life-enhancing and life-saving technology. The product design includes general analog and digital circuit design, interfacing microcontrollers to sensors and actuators, embedded software design, and programming; including software coding for sensor data acquisitions, real time control, motor control and user interfaces. The applicant will need to be as comfortable with hardware debugging and they are with programming embedded systems.

The applicant's responsibilities include developing and integrating the firmware with hardware, debugging, and project documentation with a regulated medical environment.

**Company Overview:** Hibernicor, LLC is an innovative company responsible for designing, manufacturing, assembling, packaging, processing and labeling Asporto; a heart preservation device that allows for the improved and prolonged preservation of the donor heart. Asporto uses a mission-critical embedded system with the ultimate outcome to improve

heart transplant patient's lives. The company is part of cutting-edge medical science which is at the frontier of industrial innovation and globalization of healthcare technology.

**Key Position Responsibilities:** The embedded system developer will design a computer system that controls a peristaltic pump with real-time computing constraints. The embedded microcomputer is part of a complete heart preservation device often including a custom designed printed circuit board and thermoelectric (Peltier) cooling module.

The applicant must have hands-on experience in analog and digital circuit design and analysis, electronic test equipment (oscilloscopes, multimeters, logic analyzers), hardware debugging, and microcomputer interfacing. Experience with electrical schematic design and printed circuit board layout is essential, as is general knowledge of embedded processors and digital hardware circuits.

The applicant should also have experience in embedded programming and real-time control systems such as PC based control, motor control or robotics. They will use compilers, assembles, and debuggers to develop embedded firmware. The engineer applicant must be skilled in the real-time programming required of multi-tasking or multi-threading applications and they must have excellent debugging skills in the C-programming language.

The developer will perform mechanical assembly including soldering of PCB (Printed Circuit Board) assemblies, building and routing of cable and harness assemblies, as well as document procedures to perform necessary electro-mechanical assembly. The developer will also assemble prototype systems and components with visual and mechanical inspections of in-process components and assemblies, in addition to performing troubleshooting to determine cause of system failures during assembly.

Desirable applicant characteristics include talents for understanding how to build a reliable, low power, and low cost devices. The design architecture should ensure functioning within a highly secure & reliable environment. As needed for individual productivity, the developer will obtain software licenses by procuring information from vendors; recommending purchases; testing and approving products to maintain company competitiveness while understanding fiscal and budgetary constraints.

Future responsibilities may include working with networking standards and protocols such as TCP/IP and cellular, wireless, and global positioning system telecommunications standards and is expected that the applicant would learn new knowledge to meet the company objectives.

The developer will create embedded software code and hardware in accordance with design for manufacturability requirements in compliance with FDA and CE requirements. As needed, the developer may design and built test stations to assist quality control and manufacturing.

We are looking for someone with an obvious passion for engineering and building new things, as demonstrated by experience in embedded product design, robotics, communications, microcomputer board use, or application design.

**Desired position skills in:**

AutoCad (2D and 3D), Solidworks or Pro-E solid modeling systems

TCP/IP, GPRS, Cellular, WiFi

— Serial Communication Interfaces (SCI): RS-232

Universal Serial Bus (USB)

Multi Media Cards (SD Cards, Compact Flash etc.)

Ethernet and Fieldbuses: CAN-Bus, LIN-Bus, PROFIBUS, etc.

— Real time clocks, PLL(s), Capture/Compare and Time Processing Units

— General Purpose Input/Output (GPIO)

— Analog to Digital/Digital to Analog (ADC/DAC)

JTAG, ISP, ICSP, BDM Port, BITP, and DB9 ports.

— Microcontrollers (68HC11, Freescale 68HCS12, Arduino, ST Microelectronics, Microchip, Atmel ARM)

Programming languages (BASIC, Forth, C, C++, Visual Basic, Java, PHP)

PCB layout and schematic design

Microsoft Office (Word, PowerPoint, Excel)

Design for Manufacturability (DFM)

• FCC / Safety certification

IEEE Software Requirements Recommendations

The applicant should have the following personal characteristics: In addition to technical skills, the applicant will need strong communications skills (especially in technical writing), interpersonal skills, and the ability to manage priorities and deadlines. They must be inquisitive and open-minded, enjoy learning about new healthcare technologies and demonstrate the ability to see a project through to completion. The individual must also be self-motivated and be able to work independently as well as within small groups to implement technological change.

The applicant should understand how to problem solve and acquire new skills and techniques to succeed as the leader in their field. Examples of this include a desire to continuously learn and improve by attending conferences, maintaining personal networks, participating in professional organizations, and reading relevant publications.



**Minimum employee qualifications:**

Bachelor of Science Electrical Engineering or Computer Engineering

US or UK citizen or permanent resident

**Reporting:** The Embedded Product Design Engineer will reports to the project manager.

**Location:** The location of the job is flexible and occasional travel will be necessary to meet at the company offices either in the US or UK.

**Type of Employment:** The position is full time.

**Salary Range & Benefits:** The salary and benefits are commensurate with the applicant’s qualifications and experience.

**Contact Information:**

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