

Michael A. Spencer

22 Signal Hill Drive, Manvel, TX 77578

(903)-819-2782

mr.maspencer@gmail.com

Career Summary

Experienced mechanical engineer and technical leader specializing in technical and product development. Qualifications include engineering management, mechanical design and testing of new products and interfacing with customers for OEM product development. Knowledge of aerospace design standards, space station design, and mechanical systems design and installation for aviation. Knowledge of aviation industry standards and FAA Part 23 and Part 25 regulations. Highly motivated with great work ethics and a good overall attitude. Effective communicator, team leader, and motivator in teamwork environment.

Work Experience

Battelle Memorial Institute – Contracted through Checks and Balances (Columbus, Ohio)

Apr 2016 – Dec 2016: **Subject Matter Expert**

- Design of the Next Generation Chemical Detector (NGCD, USA-ASC Project) instrument. This design included design of subsystem components as well as the orientation of subsystem components and Commercial Off The Shelf (COTS) items.
- Drive design reviews and provide task to other cross discipline engineers to improving the design.
- Guidance in operation of Cylindrical Ion Trap Mass Spectrometer (OEM-1000). Giving direction on how to best utilize the OEM system in the NGCD design.
- Aide in development of software processes for instrument operation and testing.
- Develop on demand Nitrogen system to supply the buffer gas to the Gas Chromatograph (GC) system. This serves to minimize the amount of Oxygen that enters the GC column which increases the mean time between failures of the column.
- Simplify the NGCD design to better connect the GC column. The new design provided less interconnects, less dead volume, and less heated sections. This allowed for better transfer of analyte from the source to the GC column and from the GC column to the Mass Spectrometer.
- Analyze data from a variety of instruments for other projects using Python, MatLab, and R.

1st Detect, Corp. a subsidiary of Astrotech, Corp. (Formerly SPACEHAB, Inc.) (Houston, Texas)

2013 – Feb. 2016: **Mechanical Engineering Manager**

2010 – 2013: **Mechanical Engineering Lead**

June 2007 – 2010: **Mechanical Engineer**

- Mechanical Engineering chief designer and manager.
- Chief advisor to the CTO regarding product development, overall design decisions and technical direction. This included scouting new components and products at trade-shows and conferences.
- Built and led team of 2-4 mechanical engineers to develop a portfolio of products. This included a miniature desktop mass spectrometer (MMS-1000) as well as custom OEM mass spectrometer analyzers for research, aviation security, and chemical agent detection markets.
- Optimized the design of a cylindrical ion trap (core component to the mass spectrometer) to unique customer requirements using both commercial tools (SIMION) as well as conceived and developed a custom modeling tool utilizing c++ and Qt libraries to reduce the cycle time for the ion trap design by a factor of 25 or better.
- Led development of peripheral components for sample introduction and conditioning to add value and capability to core analyzer products (chemical pre concentrator, swab thermal desorber, GC interface, calibration hardware).
- Led mechanical engineering department including mentoring younger engineers and scientists across multiple disciplines, hiring and expanding the mechanical engineering department, performing employee evaluations as well as developing, maintaining, monitoring, and reporting on department budget.
- Implemented version control system (EPDM by SolidWorks/Dessault Systems) for configuration management of mechanical parts, drawings and assemblies.
- Implemented and maintained case-based management software (Trac) for internal and external customer problem and bug reporting.

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- Principle technical interface with external development customers and industrial partners on three >\$1M government plan-of-record programs.
- Travel with team to conferences for both manning company booth and for new customer development.
- Travel to customer sites for installation and integration into their systems.

Bigelow Aerospace (Houston, Texas)

July 2006 – June 2007: **Mechanical Engineer**

- Mechanical and structural design of the core structure of an inflatable space station.
- Create 3D models and drawings for structural components.
- Aid other departments (Payloads, ECLSS, Softgoods, etc.) in creating 3D models and drawings of their projects.
- Utilize Cosmos/M for FEA on structural components backed up with similar hand calculations.

Chelton Aviation Corporation (Denton, Texas)

Apr. 2006 – June 2006: **Acting Engineering Manager/Mechanical Engineer**

Sept. 2004 – Apr. 2006: **Mechanical Engineer**

- Mechanical design of aluminum brackets for AP3C autopilot system.
- Create drawings and 3D models of both AP3C system components and partial aircraft internals.
- Conducting in-flight testing of autopilot.
- Write and assist in development of installation drawings and manuals and other FAA required documentation.
- Design faceplates and housings for electrical components, and foam cut-outs for dealer tool boxes.
- Provide technical support for dealer installations.
- Design projects covered a variety of systems including structural, electrical, and testing done on both single and twin-engine aircrafts which include Cessna, Piper, Beachcraft (Raytheon), Grumman, Rockwell, and Found.

Patents

Granted

- 9,082,599 – Mass spectrometer ion trap having asymmetric end cap apertures
- 8,784,737 – Introducing an analyte into a chemical analyzer
- 8,946,624 – Mass spectrometer having an external detector
- 8,975,573 – Systems and methods for calibrating mass spectrometers
- 9,035,244 – Automatic gain control with defocusing lens
- 9,451,364 – Preconcentrating a sample in a preconcentrator evacuated to substantially the same pressure as an analytical device
- 9,214,325 – Ion trap with radial opening in ring electrode

Pending

- 2012/0180576 – Evacuating a Sample Chamber
- 2014/0250977 – Chemical analysis instrument with multi-purpose pump
- 2014/0190245 – Reduced pressure liquid sampling

Education

B.S., Mechanical Engineering, Texas A&M University, College Station, TX **2004**

- Senior Design Project with Dril-Quip

A.S., Mathematics, Grayson County College, Dennison, TX **2001**

- Awards and Honors: Calculus III Award, *cum laude*

Accumulative GPA: 3.27

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Experience/Skills

Experienced in: SolidWorks, Prototype Modeling, Microsoft Office, Adobe Photoshop, Windows, Linux, ANSI C/C++ Programming, Qt Libraries, MatLab Programming, Python, Lua, SIMION simulation, Microsoft SQL Database, Trac (issue tracking software), JavaScript, HTML, Perforce, Mercurial, Enterprise PDM, Apache Web Server.

Novice in: Creo/Pro-E, Windchill, AutoCAD, CosmoWorks and Cosmos/M, LabVIEW Simulation, Subversion, Microsoft IIS (Internet Information Server).

Honorary Memberships

Phi Theta Kappa National Honor Society, Sigma Kappa Delta National English Society, American Society of Mass Spectrometry (ASMS).

Interests and Activities

Math, Engineering, Graphics Design, Programming, Electronics, Trumpet, Guitar, Basketball

References available upon request.