

James K. Smith – Senior Mechanical Engineer, Proof Engineering Co, LLC

Education:

B.S. in Mechanical Engineering, Arizona State University, 2000

Background:

James Smith has 15 years experience in mechanical engineering, specifically in the areas of design and analysis. His primary background is in the area of automotive seat design and solar tracking systems. He has also worked on various automated industrial machine applications in various industries such as manufacturing and military. Areas of expertise include:

- Solar tracker system design
- Automotive seat design
- Design of 80/20 (t-slotted framing) enclosures for low-volume manufacturing machines
- Simulation of pneumatic and hydraulic systems
- Working model simulations (kinematic and dynamic)
- Design for manufacturability
- Technical and non-technical writing
- Development of spreadsheet-based tools for design and cost estimating
- Mechanical design for six sigma
- Design of experiments (DOE)
- Web-based research

White Paper Publications:

- Estimating Material Cost for a Ground-Mounted PV Tracker Plant
- Streamlining the Design of Custom Industrial Machinery
- A Cost-effective Approach to Reliability Prediction and Analysis of Mechanical Systems
- An Application-Tailored Rock Breaker Tower for Aggregate Processing
- The Need for an Improved Rotorcraft Restraint System

Experience:

2010-           Proof Engineering Inc., Senior Mechanical Engineer  
2004-2009     ESG Engineering, Senior Mechanical Engineer  
2000-2003     Elio Engineering, Mechanical Engineer

## Projects:

### *Automotive*

- Energy absorbing recliners and tracks
- 2<sup>nd</sup> row seat flip and tumble mechanism
- Flip and fold 2<sup>nd</sup> row seat mechanism
- Automotive show seat – conceptual prototype
- Energy absorbing all-belts-to-seat system
- Reliability analysis of military seating systems
- Dynamic simulations of OEM seat tracks using LS-DYNA
- Dynamic simulations of OEM seat recliners using LS-DYNA

### *Alternative Energy*

- Garage top Solar trackers
- Ground-mounted fixed PV system for solar plant
- Ground-mounted tracking PV system for solar plant
- Concentrating dish solar tracker

### *Manufacturing*

- Enclosure design for laser marking systems
- Laser marking machines for medical industry
- Fabric peeling machine for defense industry
- Fabric installation machine for body armor
- Drying machine for semiconductor industry

### *New Product Design*

- Wheelchair lift for mobility industry
- Machine used to bind sand to plastic
- Tubular ,energy absorbing seat recliner with a plurality of pins
- Tubular , energy absorbing seat track with opposing levers

### *Mining and Heavy Machinery*

- Bulk material hopper (rock box) for aggregate crushing plant
- 3D layout of aggregate processing plant

## Business Development:

- Sales and sales management
- Website design and maintenance
- Email, direct, and trade-show marketing campaigns
- SBIR proposals, white papers, technical writing
- Customer relations, CRM
- Market research/analysis