Solution Engineering Group
SolutionEngineering.com

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Jeffrey S Williams

President

Professional History:

2013 – Present **President of Engineering Answers, Inc., DBA: Solution Engineering Group, Montgomery, IL.**

- Manage all facets of the operation of Solution Engineering Group, a multi-disciplinary engineering consulting company.
- Manage the test lab, including designing/fabricating test fixtures and equipment required for accident reconstruction and product testing.
- Conduct laser scanning of accident scenes and equipment.
- Create models and displays for courtroom, educational and trade show use.
- Organize, manage and assign engineering cases.

2012 – 2013 **Technologist for TGER Technologies, Bolingbrook, IL.**

- Part of the design team building a working prototype Tactical Garbage to Energy Refinery (TGER) alternative energy unit for the DOD.
- Member of the equipment fabrication team for a TGER alternative energy unit with tasks including stainless steel fabrication, pneumatic feed system design and fabrication, auger system construction/modification, high temp heating zone design & fabrication, IR sensor troubleshooting and installation and design/fabricate support systems for the skid mounted equipment.
- Set up, troubleshoot and successfully operate the TGER unit for the Department of Defense at the Aberdeen Proving Ground in Maryland.

1991 – 2012 **Technologist for Packer Engineering, Inc., Naperville, IL.**

- Team member for research projects for NASA grants and DOD that were kept within small fixed budgets including:
  - NASA SBIR metal solidification in microgravity experiments flown on the NASA microgravity jet – designed, built and operated the test fixture for 120 zero G parabolas (1 parabola = a 30 second period of micro gravity), 20 Martian G parabolas and 20 lunar G parabolas.
  - NASA SBIR Phase I liquid free fall and vaporization in lunar gravity flown on the NASA microgravity jet – designed, built and operated the test fixture for 30 lunar G parabolas.
  - NASA SBIR Phase II regolith vaporization ground based testing included designing and building a fixture to vaporize small quantities of regolith (lunar

soil) simulant. Also included inventing a slip casting method to create Thorium Oxide (radioactive) vessels as evaporation containers for the simulant. Designed and built an oven to vaporize the regolith simulant that achieved a temperature of 2352 °C (4269 °F) before the tungsten heaters degraded.
    - Aluminum and composite boat canopy prototype built for DOD SOCOM Seal rapid insertion craft.
    - USDA Biomass R&D program to construct an alternative energy unit that would turn corn stalks and yard waste into syngas for producing electricity and hydrogen fuel.
    - US Marine Corp and National Center for Manufacturing Sciences shot counter designed to count the number of shots fired from a weapon. Constructed micro electric pick up coils and magnet holders, attached them to various pistols & machine guns and conducted live fire testing.
    - DOE hydrogen storage in nonporous silicon test fixture construction.
- Designed and created hundreds of displays used as courtroom exhibits, many with time critical deadlines, scale models to full scale mock ups and sets. In some cases the displays were credited with saving millions of dollars in judgments against companies.
- Responsible for quoting project cost and managing the project budget.
- Created working displays that include features like motor driven models, pneumatically controlled fixtures, lighting, water control and motion, fog and sound.
- Produced static displays including 2-D and 3-D drawings, magnetic display boards, small scale models, full scale mock ups, cut away teaching models and furniture.
- Created prototypes of small kitchen appliances and designed a line of appliances for sale in the US.
- Photographed and took video of accident scenes, tests and displays. Set up lighting for videos and edited them into finished products.
- Consulted for Crawford Technical Services on behalf of Sears to determine the cause of power tool accidents. The investigations and subsequent reports resulted in favorable settlements for Crawford and saved hundreds of thousands of dollars in possible claims against the company.
- Testified in three trials and one deposition.
- Regularly work with AutoCAD, Master CAM, Adobe Photoshop, Adobe Premier, Microsoft Word and Excel. Able to program and operate CNC equipment.
- Mentor for STEP intern program for 8 years.

1982 – 1991 Owner/Lead Model Maker for SAW Groups, Inc., Naperville, IL.

- Lead designer and fabricator creating 2D, 3D, static, dynamic, reduced scale, 1:1 and expanded scale models and displays for use in court room trials, depositions, trade shows and sales meetings.

- Skilled with all model shop equipment, proficient in designing and build in the areas of carpentry, electrical, plumbing, finish carpentry, mechanical systems, mock ups, mold making, material selection, drafting, presentation drawings, paint systems and theater set design. Extensive knowledge in materials. Experience in photography, videography, lighting, sound and video editing.
- Managed company finances and payroll.

Education:

1984	B.S. Degree, Business Management, University of the Ozarks, Clarksville, Arkansas.
Continuing Ed.	Algebra, Calculus, Plastics Technology and AutoCAD at COD Community College, Glen Ellyn, IL.

Certifications/Memberships:

- American Society of Mechanical Engineers
- American Institute of Aeronautics and Astronautics
- National Space Society
- Association of Professional Model Makers
- Producer, Naperville Community Television, Naperville, IL.
- NASA, Johnson Space Center, Physiological Training with 25,000 foot Chamber Flight and Rapid Decompression
- Department of the Army Commendation for work done on the Tactical Garbage to Energy Refinery alternative energy project.

Publications:

- "Large Thoria Castings for Ultra-high Temperature Processing with Oxygen," Schubert, Williams, Wilks, Ende, Babcock, Meno, USACA 34th Annual Conference on Composites, Materials & Structures (ITAR restricted) 23-26 Jan 2012

- "Advances in Extraction of Oxygen and Silicon from Lunar Regolith," Schubert, Williams, Bundorf, Di Sciullo Jones, AIAA SPACE 2010, 30 Aug -2 Sept 2010, Anaheim, CA