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## **Curriculum Vitae**

### **DAVID G. SMITH, MSME, MBA, PE, CSP**

#### **MECHANICAL ENGINEERING EXPERT**

Experienced mechanical engineer (MS, PE) with seven issued patents. Award winning inventor. Vice President of Alpine Engineering and Design, a mechanical engineering consulting company with clients around the United States ranging from individual inventors to Fortune 500 companies. Worked on the development of multiple successful products including among other things: aerial lifts, garbage trucks, thrill rides, ziplines, trailers, oil and gas equipment, exercise equipment, manufacturing equipment and multiple consumer products.

Graduated Cum Laude with a bachelor's degree in mechanical engineering. Completed a master's of science degree in mechanical engineering and an MBA with an emphasis in product development. Licensed professional engineer (PE) and a certified safety professional in comprehensive practice (CSP). Certified trainer for boom lifts, scissor lifts, rough terrain and counterbalanced forklifts. Over 10 years' experience in product development, patents, equipment safety and risk assessments.

Experienced expert witness having drafted over 200 reports/declarations in patent cases and catastrophic injury and death cases. Designed and built multiple custom testing devices to obtain data and evaluate opinions. Created multiple demonstratives to explain the mechanics and circumstances of accident sequences and patented devices. Testified in deposition 16 times and in trial three.

#### **EDUCATION**

- MBA, Brigham Young University, Emphasis in Product Development (2011)
- Masters of Science, Mechanical Engineering, Brigham Young University (2011)
  - Thesis: Off-axis Stiffness and Piezoresistive Sensing in Large-displacement Linear-motion MEMS
  - Areas of study: Compliant Mechanisms, Springs, Structural Analysis, MEMS, Stress and Deflection analysis, FEA, Machine Design, Product Development
- Bachelors of Science, Brigham Young University - Idaho, Mechanical Engineering (2007)
  - Cum Laude Graduate
  - Academic Scholarship
  - Boy Scouts of America Scholarship

## REGISTRATIONS AND CERTIFICATIONS

- Professional Mechanical Engineer (PE)
  - Utah license # 8645497-2202
  - Idaho License #19657
- Certified Safety Professional in Comprehensive Practice (CSP), License # CSP-30707
- Certified Forklift Operator
- Certified Counterbalanced Forklift Operator Trainer
- Certified Rough Terrain Telehandler Operator Trainer
- Certified Aerial Boom Lift Operator Trainer
- Certified Aerial Work Platform (scissor lift) Operator Trainer

## AREAS OF CONSULTING FOCUS

Involved in hundreds of consulting projects. Major areas of focus and expertise include: aerial lifts, trailers, towing systems, tarping systems, refuse trucks, exercise equipment, forklifts and telehandlers, drilling equipment, oil and gas equipment, heavy equipment, hydraulic equipment, consumer products, chairs and seating, plastic design, zip lines, thrill rides, structural analysis, designing to standards, and design for safety.

## EXPERT WITNESS

Mr. Smith has been retained as an expert on over 85 patent, product liability, and personal injury cases and has testified in a number of these. He has worked as a senior associate on an additional 45+ patent cases and an additional 75+ product liability/personal injury cases. Mr. Smith has attended SEAK expert witness training and has experience and competency in the following areas:

Patent Invalidity/Non-infringement  
Patent Infringement/Validity  
Prior Art Searching  
Claim Construction

Product Liability  
Personal Injury  
Failure Reconstruction  
Safety

## PATENTS

During his time at Alpine Engineering and Design, Inc., Mr. Smith has become familiar with patent prosecution and patent litigation. He has written several provisional patent applications, and has worked with attorneys in writing the specifications, creating drawings and drafting claims for utility patents on products he has helped design. As part of the product development process, he has performed patent searches, both for informational purposes and to lessen the likelihood that new developments would infringe other's intellectual property. Mr. Smith is listed as in inventor on seven issued patents.

- 9,387,788 - Combination Trailer
- 9,616,799 - Pneumatic Tank Trailer
- 9,758,083 – Pneumatic Tank Trailer
- 9,789,916 - Pneumatic Tank Trailer
- 10,206,495 - Vehicle Receiver Hitch-Supported Cargo Rack Transformable into a Picnic Table with Benches
- 10,683,176 – Material Placer
- 11,013,391 – Scraper Apparatus

As an expert, Mr. Smith has also been involved in patent litigation in the areas of claim construction, prior art and patent searches, infringement/validity analyses and non-infringement/invalidity analyses on over 45 cases. The following are a few of the categories of patent issues Mr. Smith has consulted on:

Semi Trailers	Plastic Components	Hinges
Mobile Equipment	Office Supplies	Seating
Vehicle Mounted Equipment	Food Processors	Hand Tools
Agricultural Equipment	Blenders	Springs
Trailer Tarping Systems	Coffee and Tea makers	Car seat gap fillers
Oil/Gas Drilling Equipment	E-Cigarettes	Chairs
Weight Machines	Hospital Equipment	Baby bottle warmers
Athletic equipment	Marching Band Equipment	Cooler Latching Systems

## PEER REVIEWED PUBLICATIONS

- Off-axis Stiffness and Piezoresistive Sensing in Large-displacement Linear-motion MEMS (Brigham Young University, Master's Thesis, 2009)
- Piezoresistive Encoders for Ratcheting Actuation Systems (Sensors and Actuators A: Physical, Volume 165, Issue 2, February 2011)
- Design Optimization of a Linear-motion Large-displacement Micro Mechanism for High Off-axis Stiffness (ASME International Design Engineering Technical Conferences IDETC/CIE 2009)
- Metrics for Evaluation and Design of Large-displacement Linear-motion Compliant Mechanisms (Journal of Mechanical Design, 2012)

## MAGAZINE AND WHITE PAPER PUBLICATIONS

- An Engineering Guide for Trailer Safety Chain Installation, Attachment and Use (White Paper, Linklock.net)
- Your Rear Impact Guard Questions Answered (Tracks Magazine, National Association of Trailer Manufacturers, September/October 2019)
- The Nuances of Advising on Product Liability Cases (Lawyer Monthly, January 2021)
- Community Highlights: Meet David Smith of Alpine Engineering and Design (Voyage Utah Magazine February 2022)

## BLOG/LINKEDIN ARTICLES

- 9 Ways Engineering Analysis Adds Value to Your Manufacturing Operations
- 100% Defense Verdict in Forklift Case – Reviewed by a Mechanical Engineering Expert Witness
- The Safety Cliff
- Take the Handcuffs Off of Your Safety Managers
- What is a Provisional Patent Application?
- 7 Unexpected Lessons from Preparing to Launch a Product on Kickstarter
- 9 Ways to Find Your Next Expert Witness on a Single Cup of Coffee
- How to Make Money Inventing... Without Going Broke First
- Expert Opinion: Improper Forklift Operation Kills Delivery Driver
- Expert Opinion: Efficiency Improvements Result in Tractor Operator's Death
- Expert Opinion: No, Ma'am! The Swing Set Was NOT Vandalized
- Expert Opinion: Defective Auger Conveyor Amputates Employees Arm
- Expert Opinion: Improper Forklift Operation Kills Deliver Driver
- Expert Opinion: Just Because it Can Be Done Without Injury Does Not Mean it is Safe

- Expert Opinion: Engineering Standards Buckling Under American's Ever Increasing Weight Gain
- Expert Opinion: Auger Conveyor Design Defect Amputates Employees Arm