ENGINEER: MECHANICAL

CHRISTOPHER S. SPIES, P.E.
Engineering Design & Testing Corp.
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EDUCATION:

1998 — Bachelor of Science, Mechanical Engineering
University of Missouri

EXPERIENCE:

2014-Present — **Engineering Design & Testing Corp.**
Overland Park, Kansas

Consulting Engineer. Consultation in the origin and cause and damage assessment of mechanical systems and components. Includes specialized consulting in the areas of mechanical systems, equipment specification, centrifugal compressor testing and design, vehicle mechanical and electrical systems, gearbox analysis and design. Investigation and analysis of mechanical fractures of materials and components. Assessment of fire damage related to mechanical equipment. Preparation of repair and/or replace cost estimates.

2011-2014 — **Innovative Standards, Inc.**

V.P. Operations, Director of Engineering. Design and construction of electromechanical products for consumer use. Design of power transmission systems, aluminum castings, steel and aluminum weldments, and development of enclosures to provide compliance with Consumer Fire Regulations. Design of product chassis electrical including wiring harness design, development of control systems and specification of electrical components including direct drive motors, gear motors, linear actuators, proximity switches. Cost analysis of products and supply chain development.

2008-2011 — **Shuttlewagon Inc./Nordco**
Product Development Engineer, Engineering Lead. Design, testing and construction of on/off rail vehicle. Development of high capacity vehicle compressor drive systems, hydraulic manifolds, Tier 4 diesel engine implementation and test cell development, as well as axle,

transmission, driveshaft and torque converter evaluation and specification. Also responsible for chassis electrical harness design and management of Printed Circuit Board (PCB) development for use in off-highway equipment. Vehicle electrical design, including incorporation of SAE J1939 CANbus systems. Design and Finite Element Analysis (FEA) of heavy steel weldments.

2005-2008 **Eskridge Inc.**
Olathe, Kansas

Project Engineer, Product Engineer. Design, testing and manufacture of planetary gear drives and multi-disc shaft brakes. Development and detailed analysis/prediction of gear life. Gearbox design also including finite element analysis of transmission cases, gear shafts and gear carriers. Implementation of carburized steel, through-hardened steel, gray iron, ductile iron and austempered ductile iron components, both cast and forged. Analysis of failed components including damage resulting from heat treat deficiencies, metallurgical composition issues, or overload conditions.

1998-2004 A**ccessible Technologies, Inc.**
Lenexa, Kansas

Product Development Engineer, Product Manager Centrifugal compressor design for automotive and industrial applications. Compressor gear and shaft design, gear case design, impeller design, and design of compressor covers. Product validation including operation in SAE J1723 supercharger test cell. Compressor implementation including engine dynamometer testing as well as in field use. Additional product development responsibilities included the development of air-to-air and air-to-liquid heat exchangers. Design of thermal formed and roto-molded plastic components.

CONTINUING EDUCATION:

Principles of Failure Analysis
ASM International, January 2015

Fire, Arson & Explosion Investigation
NAFI, March 2015

Investigation of Gas and Electric Appliance Fires,
April 2015

OSHA 29 FR 1910.146 Confined Space Certification,
December 2014

PATENTS:

7,107,962 "Carburetor hat for forced induction system"
6,786,044 "Air induction system having inlet valve"
6,691,685 "Air induction system having inlet valve"
6,571,780 "Air induction system having inlet valve"
6,474,318 "Air induction system having inlet valve"

PUBLICATIONS (non peer-reviewed):

"DMM Tech; Wiring Basics" Dirt Modified Magazine, July 2014.

"Block Party; The build of a 1000+ hp Power Adder Small-Block" Fastest Street Car magazine, June 2008.

"Be Green and Go Fast; E85: Fuel or Fad" Fastest Street Car magazine, October 2007 *(Co-Authored by Jake Amatisto)*

"Tubular: A look at Headers, Their Design and Theory" Fastest Street Car magazine, April 2007.

"Manifold Mania; To Fab or Not to Fab" Fastest Street Car magazine, December 2006.

"Secrets Revealed; Comp Cams: Inside cam development" Fastest Street Car Magazine, September 2006.

PROFESSIONAL ORGANIZATIONS:

Society of Automotive Engineers (SAE)
American Society of Mechanical Engineers (ASME)
ASM International
ASM Failure Analysis Society
National Fire Protection Association (NFPA)
National Association of Fire Investigators (NAFI)

REGISTRATIONS:

Registered Professional Engineer in Arkansas (#16541)
Registered Professional Engineer in Colorado (PE.0049810)
Registered Professional Engineer in Illinois (#62.067853)
Registered Professional Engineer in Iowa (#22692)
Registered Professional Engineer in Kansas (#24284)
Registered Professional Engineer in Minnesota (#52946)
Registered Professional Engineer in Missouri (#2012018136)
Registered Professional Engineer in Nebraska (#E-15509)
Registered Professional Engineer in New York (#98735)
Registered Professional Engineer in Oklahoma (#27858)
Registered Professional Engineer in South Dakota (#12823)
Registered Professional Engineer in Texas (#119810)
Registered Professional Engineer in Wisconsin (#E-44332)
National Council of Examiners for Engineering and Surveying (#13-265-21)