

RONALD D. SCHAPF, P.E. CA, NV

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PROFILE

Ronald is a Licensed Professional Mechanical Engineer with 30+ years of experience in the machine design field including the following industries: Theme Park Ride and Show, OEM Recreational Vehicles and On-Road and Off-Road Vehicles. Skills and attributes include extensive and varied mechanical engineering design and analysis knowledge, master problem solver and precise communicator with outstanding organizational skills. Ronald has taken on large challenges in safety critical vehicle and theme park ride systems that demanded success and delivered in every aspect.

Ronald has extensive knowledge of a wide variety of engineering materials, manufacturing processes, finishing methods, heat treating and fastener designs. Ronald has designed gear sets and housings, seals, belt drives, chain drives, multi disc wet brakes, springs, cables, radial and linear bearing applications, many types of bushings, tires and wheels, welded assemblies, rivetted and bolted assemblies. Ronald has done thousands of tolerance analyses, many fit calculations and released thousands of part and assembly drawings. He has designed complete hydraulic brake systems, steering systems and many chassis components and designed and calibrated front and rear suspension systems for ATVs. Ronald has personally done vibration data acquisition and large amounts of physical testing of vehicle brakes, suspensions, steering and drive train systems.

Ronald has personally performed hundreds of hours of finite element stress analysis and is very skilled in creating analytical models that accurately represent reality. That is a key skill that is rarely combined with extensive design knowledge and allows Ronald to be very efficient and productive in the design process. Ronald has also done Rigid Body Dynamics Analysis and Magnetic Eddy Current brake design using a major finite element software package as well as heat transfer analysis. Ronald is skilled in SolidWorks 3D CAD modeling.

Ronald has managed his own development projects for many years and is well able to overcome obstacles and keep projects moving quickly. Ronald is a registered Professional Engineer in both California and Nevada and has a Mechanical engineering degree from the University of Waterloo.

PROFESSIONAL EXPERIENCE

ER3 ENGINEERING

Mar 2022 – Current

Chief Engineer

Responsible for performing all consulting engineering work.

EXPERIENTIAL RESOURCES LLC

Sept 2021 – Current

Director of Product Engineering

Designed new patented zip line trolley with automatic magnetic braking and air cooling. Designed new automatic zip line end brake assembly with automatic magnetic braking and enough redundancy to eliminate the need for an EAD. Developing engineering consulting division.

CELTIC ENGINEERING, Orlando, LA

2017-2021

Technical Director

Provided technical direction along with personnel and program management for the Celtic Engineering office in Los Angeles. Lead engineering projects and interacted with clients on a wide variety of mechanical projects. Mentored young engineers. Held lead role in 3rd party review of high profile attractions such as tourist elevator drive mechanism on a major skyscraper in NYC. While working as the Engineer of Record for a major attraction in Las Vegas, Ronald found significant issues in the European design that were required to be addressed.

Senior Design Engineer

Assigned to Disney Imagineering as Lead Ride Mechanical Engineer on new dark ride between 04/18 and 09/19. Provided extensive support for major ride vendor including design contributions and analysis guidance. Also completed design of many OFI components and assemblies used in the ride vehicle.

Responsible for theme park ride design. Developed project quotations and designs. Interfaced with clients. Designed and supported prototype build of new powered roller coaster car that was displayed at IAPPA in 2017.

CHALLENGER MFG., Winnipeg, MB

2012 - 2016

Engineering Manager

Managed small engineering group, oversaw product development, coordinated changes with manufacturing and procurement, worked closely with external suppliers, supported production and quality control. Re-designed entire sweeper to improve performance, manufacturability and durability.

Senior Design Engineer

Responsible for product design and development of chassis mounted street sweepers.

CHRYSLER, Auburn Hills, MI **2010 - 2012**
Release Engineer (contract position)
Responsible for releasing 2014 truck suspensions. Work with all involved parties to ensure correct product developed on time. Trained in FMEA, DVP&R, TRIZ and some AQP. Delivered first prototypes of new 1500 series rear suspensions on time. Vehicles assembled as planned and functioned without failure.

PROCON MFG, Nisku, AB **2011 - 2012**
Consultant
Performed FEA on suspension and frame of custom mining truck. Designed torsion bar. Advised on various aspects of the design.

NAVISTAR INC, Fort Wayne, IN **2010 - 2010**
Project Engineer (contract position)
Responsible for new class 4/5 truck air suspension development and release and chassis cost reduction activity.

GIBBS TECHNOLOGIES INC, Auburn Hills, MI **2009 - 2010**
Senior Design Engineer
As lead engineer for suspension, steering and brake systems worked on designing new personal high speed amphibian vehicle from the ground up.

- Redesigned all suspension control arms and knuckles to cut weight and cost. Reviewed suspension geometry to optimize some parameters for improved handling.
- Worked with shock and spring suppliers to find the most suitable product.
- Used Pro Engineer Wildfire 4.0 and Catia for modeling and Catia for FEA of suspension components and assemblies.
- Directed component and assembly drawing creation and content for many drawings.
- Provided extensive support for prototype builds, vehicle testing and supplier selection.
- Participated in DFMEA work.

BOMBARDIER RECREATIONAL PRODUCTS Inc., Valcourt, QC **2001 - 2008**
Senior Project Engineer – ATV
As Senior Project Engineer for ATV suspensions, drive train and brakes, improved product performance and durability and reduced product cost and weight through new designs and modifications of existing designs. Intimately involved in the design, development and production implementation of various types of components and assemblies including injection molded plastic parts.

- Worked with GKN to design ATV half shafts, front differentials and rear angle drives while optimizing weight, cost, durability and performance. Utilized DVP&R process for several components. Evaluated several types of locking differential technology and worked on development of electronic locking front differential. Worked on combination angle drive, wet brake and slip clutch unit.
- Calibrated suspension for the 2003 Bombardier Outlander ATV, including ride work, spring design, shock calibration and some geometry work. After release the Outlander was named ATV of the Year by the largest U.S. powersports magazine publishing group while competing with such vehicles as the Honda Rincon. The ride and handling were among the very best features that reviewers loved. Did similar work on later models. Outlander and Renegade ATVs are renowned in the industry for their ride and handling. Helped BRP to gain significant market share and devoted followers in very short time.
- Mentored others on suspension calibration techniques.
- Developed several new tires and aluminum wheels for ATV's which were very successful products.
- Worked closely with many suppliers to get components into production in optimal way.
- Successfully performed FEA on several new cast aluminum wheel/hub assemblies as well as on some cast aluminum differential housings to eliminate field failures.
- Achieved weight savings of 25% on some components and cost reductions of up to 50%. Worked closely with suppliers to optimize their processes and BRP designs.
- Developed performance and test requirements for new locking front differential.
- Designed new brake components for new ATV. Reduced brake disc costs without affecting performance or durability for a saving of more than \$25.00 per vehicle.
- Worked with several internal departments on BOM maintenance, cost exercises, prototype build and test, quality control and supplier development.

POLARIS INDUSTRIES INC. ROSEAU, MN **1993 - 2000**
Senior Design Engineer - ATV'S
As Design Engineer for ATV suspensions, improved durability and functionality of existing designs and developed new ones. As Brake System Engineer, greatly improved product performance and durability while reducing component costs. Designed and put into volume production several injection molded parts including spring guides and retainers, shock protectors, spacers, spherical bearings, etc.

- Used Pro Engineer 3D CAD for component and suspension system design.

- Developed new shock calibrations and designed new springs for almost all Polaris ATV models, improving the ride and handling. (Polaris and BRP ATVs are well known to have the best ride and handling in the industry.)
- Modified suspension control arm designs to improve commonality and durability. Improved knuckle and swing arm designs.
- Developed several new tires for improved ride, handling and brake packaging.
- Reduced wheel costs with a different process at new vendor that saved \$1.5M annually.
- Together with supplier, designed new rear caliper with improved functionality for 6X6 ATV, which saved \$45.00 per vehicle.
- Developed new pads and discs for all ATVs, which increased brake pad life 400% and improved customer satisfaction while reducing cost.
- Implemented braided stainless steel brake lines on ATV's, which improved brake functionality and customer satisfaction.
- Developed new hand master cylinder with supplier to improve performance and reduce cost.

Design Engineer - Snow Group

Starting from a 6-month contract that consisted of design support for new snowmobile rear suspension components, progressed to overseeing design activity to ensure functionality and manufacturability for all snowmobile tunnel assembly and rear suspensions.

- Saved \$1M annually by implementing a new steel alloy in rear suspension components.
- Worked extensively on XTRA 12 - 121 and 133 snowmobile suspensions which were cutting edge technology at the time.
- Designed coupling system for XTRA 10 and 12 suspensions which was patented.
- Reduced weight of rear suspensions by using square wire instead of round. The entire industry followed.
- Improved design process with CAD analysis, BOM reorganization and usage charts to improve the efficiency of the engineering department.

EDUCATION / PROFESSIONAL DEVELOPMENT

University of Waterloo - B.A.Sc. Mechanical Engineering

Specialized in mechanical design courses including stress analysis, heat transfer and vibration.

Hydraulic Brake Systems, SAE

Advanced Pro-Engineer training, PTC.

GD&T training