

RYAN P. MCKAY

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Mechanical Engineer

Mechanical Design & Manufacturing – Project Management

Mechanical Design

FEA, CFD, and Thermal Analysis

GD&T ASME Y14.5

Machining, Assembly & Fabrication

Interdisciplinary Collaboration

System Integration

Testing Methodologies

Electrical Systems

Repeated success innovating engineering solutions. From ideation through operation of mechanical, pneumatic, hydraulic, electronic, and high power optical devices.

Proven track record of managing multimillion dollar interdisciplinary projects, as well as multiple concurrent smaller projects and investigations.

Specialized skill with high power laser fiber optics in demanding high-temperature, high-pressure environments.

Proficient in manual machining, welding, 3D printing, waterjet and laser cutting.

Adept in Lean Six Sigma Principles. Communicates ideas easily. Skilled at converting concepts into drawing and models, through assembly, manufacturing, and installation.

Extensive hands-on experience working in machine shops, clean rooms, laboratories, control rooms and in the field.

PROFESSIONAL EXPERIENCE

FORO ENERGY

Littleton, CO

2010-Present

Provider of high power laser tools for application in the oil, natural gas, geothermal, and mining industries.

Sr. Design Engineer

- Core member of a high tech company that is transforming the oil & gas industry using high-power laser assisted tools.
- Operated in a fast-paced environment that was extremely sensitive to leakage of proprietary information
- Designed, drafted, and oversaw manufacturing of over 1,000 custom parts using these materials:
 - Carbon Steel (e.g. A36, 4140/4130, 8620)
 - Stainless Steel (e.g. 17-4 PH, 303/304, 316, Nitronic 60, 440C)
 - Aluminum (e.g. 6061-T651, 7075-T651)
 - Copper alloys (e.g. 101, 110, high strength copper alloys)
 - Polymers (PTFE, PEEK, Delrin, PLA, Nylon)
- Specified heat treatments and surface treatments including anodization, e-less nickel, Au plating, QPQ, among others.
- Proficient with GD&T standard ASME Y14.5
- Identified a need for, invented, and tested a novel rotary junction for use with a 60kW laser.
- Devised and led production and operation of a full-scale laser drilling simulator that allowed for rapid process development
- Designed, assembled, and tested a downhole supersonic DeLaval nozzle to aid in clearing cuttings
- Planned and performed multiple qualification tests. Testing involved building multiple data acquisition systems that were used to gather, display and record data for later analysis. Tests utilized high pressure, high temperature, and/or high laser power.
- Designed, procured, and installed a micro hydraulic system for downhole use.
- Assisted with the design and lead testing of an experimental composite carbon fiber umbilical for use in downhole environments
- Lead the design, manufacturing and testing of a constant flowrate air regulator for use in a unique downhole drilling environment

Project Management

- Presented project status to potential and existing senior technical customers
- Interfaced with multiple high-tech vendors to ensure high quality parts and services were supplied on a timely basis and a within a limited budget.
- Regularly developed budgets and schedules for new projects
- Directly managed a team of electrical and control system technicians

Ryan McKay

Page 2 • Professional Experience (Cont.)

Operations Management:

- Served as Laser Safety Officer; held full accountability for preventative and corrective maintenance for multimillion dollar research and development facility with 100kW+ of cumulative laser power.
- Supervised a full-time machine shop: CNC lathe, machining center, as well as manual machines
- Allocated personnel and assets to maximize productivity of limited resources.
- Led and sustained a facility-wide 5S campaign that minimized wasted shop space and improved standardization between multiple work areas.
- Improved workflow and increased efficiency by developing assembly and qualification procedures, creating product documentation and deploying automated data collection systems.

TWYST INC.

Greenwood Village, CO

2014-2016

Transforming traditional retail stores into smart, digitally connected environments

Chief Engineer

- Led design and development of a novel BLE and RFID-enabled consumer device for use in a retail environment
- Designed, programmed, tested and manufactured 50 prototypes consisting of a microcontroller, antenna, battery, and charging circuit, all contained within a custom 3D printed enclosure.
- Led development of a novel mechanical fastener for use in apparel, outdoor sports, and on-wall applications.

ALLIANCE ENGINEERING

Denver, CO

2008-2010

- Managed construction of two major pipeline systems in the western Rocky Mountains.
- Designed and implemented launcher/receivers, custody transfer meters, shutdown valves, mainline valves, and a SCADA system
- Performed network flow calculations for a gathering system of 1600 wells

KINDER-MORGAN

Lakewood, CO

2007-2008

- Member of Pipeline Integrity Management Team: Assessed pipelines for risk factors, scheduled pig runs, interpreted pig data, developed pipeline repair procedures

TECHNICAL PROFICIENCIES

Programming: Visual Basic, C++, Linux, Microcontrollers, currently learning Python

Software: Expert Solidworks User , Solidworks PDM, Ansys CFD, FEA, Mathcad, Minitab, LabVIEW, Microsoft Office

Environments: Machine shops, clean rooms, laboratories, control rooms, and the field

SKILLS DEVELOPMENT

- Intrigued by flight since childhood; RC aircraft pilot; Aspirations to own and pilot a powered paraglider.
- Own and operate a home machine shop.
- Built and operate an FDM 3D Printer.
- Electrified a bicycle with a 1,500W brushless DC motor, 650Wh lithium battery, and controller.
- Overhauled multiple vintage and modern motorcycles.
- Designed, built, and operated a working steam engine to further my education about thermodynamics.
- Designed, fabricated, and operated a 23' trebuchet to further my education about semi-rigid multi-body dynamics.
- Amateur astronomy and armchair aerospace.

EDUCATION

COLORADO SCHOOL OF MINES, Golden, CO
Bachelor of Science, Mechanical Engineering