

Experience Profile

Edward (Ned) Riedel

Thesis

Photoinduced dechlorination of ortho dichlorobenzene.

Education

Ph.D. Mechanical Engineering, University of Colorado, Boulder, CO, 1997

M.S. Mechanical Engineering, University of Colorado, Boulder, CO, 1995

B.S. Mechanical Engineering, San Diego State University, San Diego, CA, 1989

Expertise

A broad-based engineer but with particular experience in mechanical systems including machines, cryogenics systems and explosion safety equipment.

Industries/Experience

Redstone Aerospace Corp., Longmont, CO

Currently leading the design of telescope subassembly as part of a precision optical gimbal project

Ned Riedel Engineering LLC, Boulder, CO

Designed, fabricated and integrated systems for use in LCD fabrication, fire suppression equipment manufacture, billboard manufacture and assorted small R&D projects. Accomplishments include:

- **Oversaw installation and startup of a pilot scale R&D biomass processing facility** designed to innovate the wood pellet making industry
- **Design and fabrication of manufacturing equipment**, including a "first of its kind" large format paper folder (72"x72"), an aftermarket ink dispenser system for production line printers, and a large diameter steel mesh cartridge rolling machine for manufacture of explosion suppression devices
- **Design and integration of automated systems, including** a mobile dust explosion test system, a fast acting pinch valve used for vessel isolation during explosions, a quench tube venting device used to suppress explosions in powder vessels
- **Analysis:** Performed stress, pressure/flow and heat transfer analysis as required per project

Colorado School of Mines, Golden, CO

Machine Design, Thermodynamics and Computer Aided Engineering.

Redstone Aerospace Corp., Longmont, CO

Designed, fabricated and integrated cryogenic systems, and responsible for the maintaining all DAC test systems for the company. Accomplishments include:

- **Design Consultant to NASA KSC** on the Ares Mobile Launcher cryogenic fueling system
- **Fabrication of 3 Helium cryostats** for use as test beds to evaluate performance of microwave telescopes

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- **Design, fabrication and assembly of 1000 liter multi-instrument cryostat (Spider)** to be deployed from Antarctica by long duration balloon. Worked with customer to meet mission critical requirements, including: the ability to house 7 microwave telescopes, a 25 day Helium boil-off lifetime, and the ability to withstand a 10g shock load upon landing. The most stringent requirement met was a dry weight of less than 1850 lbs, despite the cryostat's large size (~84" diameter x 90" long)
- **Feasibility study of a cross gimbal cryo-cooler.** Responsible for the design/integration of a proof of concept test system, as well as test matrix development and data reduction

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Lead mechanical engineer on Air Force fire suppression research project.

- **Designed and integrated** a solenoid actuated dead-man valve used to deploy fire suppression system
- **Built a data acquisition and control system** to conduct fire suppression testing at the CSM fire test facility. Including analog/digital signal acquisition, video acquisition and system control

UCAR, Boulder, CO

Lead mechanical engineer supporting the design of instruments for the ARIM research group.

- **Opto-mechanical design and integration** of a UV spectrometer based solar spectrum data collection instrument that flew on NASA's SOLVE II mission
- **Designed and integrated** a range of other laboratory and field/ground based optical instruments

Zight Corporation, Boulder, CO

Lead engineer for Liquid Crystal on Silicon (LCoS) manufacturing development group until company ceased operation in 11/2001. Responsible for the design and optimization of process equipment used in the R&D, manufacture and inspection of LCoS microdisplays.

- **Designed and integrated** a system for in-process test of microdisplay cells providing a cost savings as well as a critical failure analysis tool for manufacturing
- **Improved** LCD rubbing machine design to increase uniformity and repeatability of LCD manufacture
- **Optimized** an image processing algorithm used for recognition of visual defects in microdisplays

Colorado School of Mines, Golden, CO

Responsible for the design, analysis, construction and integration of various high cost experimental systems.

- **Led the mechanical and fluid/thermal design** of the "Mist" experiment which flew on STS-107 in January of 2003. Including all subsystems; fluid, mechanical, optical and controls
- **Recognized** by NASA as "Project Member of the Month" for meeting the stringent design requirement that the Mist experiment integrate with the Space Shuttle Orbiter's existing fluid, mechanical and electrical systems while not requiring modifications to existing orbiter hardware

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- **Designed, fabricated and integrated** an airborne experiment for NASA KC-135 aircraft including liquid and gas handling systems, electronic control system, and laser based droplet detection and data systems
- **Designed, fabricated and integrated** a Molecular Beam Mass Spectrometer (MBMS) for the Chemical Engineering Department

University of Colorado, Boulder, CO

Performed experiments in preparation for dissertation and supported departmental research.

- **Designed, fabricated and integrated** a high temperature formaldehyde UV photo reactor
- **Designed, and integrated** a lab-scale solar enhanced liquid waste incinerator

DH Technology Inc., San Diego, CA

Responsible for the electro-mechanical, thermal design and optimization of dot matrix print heads.

- **Designed and built** the company's first high speed (2 kHz) 28 wire print head
- **Developed** a method to more accurately measure print head coil temperature, greatly improving design
- **Developed** a tool steel print wire for use as a less costly alternative to Tungsten Carbide

Patents

J. Butz, J.T. McKinnon, C. Turchi, A. Kimball, E. Riedel, "Fine Water Mist Multiple Orientation Discharge Fire Extinguisher," WO/2008/100348.

- This patent was a spin-off from our research project aboard the Space Shuttle STS-107. Fire extinguishers based upon this design are currently being developed for the International Space Station.

Publications

C. B. Dreyer, O. Walton, and E. P. Riedel. "Centrifugal Sieve for Size-Segregation and Beneficiation of Regolith." Earth and Space 2012 conference, ASCE, Pasadena CA