

Robson Forensic

Engineers, Architects, Scientists & Fire Investigators

ERIN HIGINBOTHAM, P.E. Mechanical Engineer

Experienced with design, applications, maintenance, troubleshooting and proper use of the following equipment and technology:

Vehicles and Motorcycles

Automobiles, motorcycles, all terrain vehicles (ATV), scooters, dirt bikes, snowmobiles, bicycles, personal watercraft, aftermarket converted OEM vans (handicap), gasoline engines, diesel engines, hybrid gasoline and electric powertrains, aftermarket modified powertrains, aftermarket modified fuel systems, fuel injectors, catalytic converters, vehicle powertrain sensors, emissions control systems, on board diagnostics (OBD II), motorcycle handling dynamics, motorcycle suspension tuning, motorcycle maintenance, motorcycle component failure, fuel quality testing equipment, fuel handling equipment, fuel storage, engine dynamometer, chassis dynamometer, powertrain test cell.

Crash reconstruction for automobiles, motorcycles, and bicycles. Post-crash analysis of brakes, steering components, suspension, lamps, seatbelts, and airbag systems. Event Data Recorder (EDR) download.

Repair and tuning of modern and classic motorcycles. Rebuild of insurance “totals.” Performance blueprinting of motorcycle engines for racing applications. Machining of engine components using mill and lathe operations. Two and four cycle engines. Engine failure diagnosis.

Manufacturing

General machining, engine lathe, vertical mill, drilling, welding (MIG, stick), shrink fitting, grinding, polishing, plating, painting, assembly, end of line test protocols.

Industrial Machinery and Equipment

Automated equipment, distributed input/output process control, design of process safeties, online process control/monitoring via internet, programmable logic controllers (PLCs), hydraulic presses, material handling, drying systems, robotic pick and place equipment, chillers, air compressors, DC motors, AC motors, stepper motors, motor drive controllers, electrical circuit protection, mass flow controllers, pressure transducers, temperature transducers, oscilloscopes, digital voltmeter, pneumatic nailer, impact wrench, die grinder, circular saw, reciprocating saw, ceramic tile wet saw, chain saw, lawn mower, string trimmer, generator, pressure washers, vehicle lifts, engine cranes, specialty gases, specialty gas cylinder storage, specialty gas plumbing.

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Specialized skills in the following areas:

Performance Driving

Motorcycle riding, instruction, and racing experience: performance brake testing on small (150 cc) and large (1800 cc) motorcycles for FMVSS compliance, operation of instrumented motorcycles, on road motorcycle endorsement since 1989, experience with off road motorcycle operation since 1977, licensed roadracer since 2001 with current "Expert" classification. Proper rider technique and rider actions. Instruction and operation of track days on racetracks. Gearing optimization and suspension tuning. Highside and lowside crashes. Dry and wet weather operation.

Automobile driver training experience includes: high performance driving school with topics including: slalom, evasive maneuver, threshold braking, threshold braking in a turn, skid control, autocross, proper seating position, use of controls, use of vision, seat belt usage.

Powertrain Engineering

Design of emissions control systems and control hardware. Design and fabrication of custom powertrain components for use on test engines. Development of hybrid emission control equipment used in the evaluation of aftertreatment components. Exhaust aftertreatment optimization including operating temperature, durability, regeneration strategy and material selection. Fuel system optimization including fuel mixture preparation, injector timing, port design and airflow characteristics.

Test Engineering

Testing and evaluation experience of powertrains ranging from single cylinder spark ignited engines to heavy-duty compression ignition engines. Effectiveness of fuel chemistries and emissions control strategies. Hardware testing experience includes: exhaust after-treatment systems, fuel system (fuel injectors, fuel line and hoses, fuel tank and activated carbon canister), and novel engine components. Compliance testing with federal emissions and safety standards. Design of experiments and development of automated testing equipment. Data reduction and analysis.

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PROFESSIONAL EXPERIENCE

2006 to **Robson Forensic, Inc.**

present *Associate*

Provide technical investigations, analysis, reports and testimony towards the resolution of commercial and personal injury claims involving failure analysis; vehicle and motorcycle crashes, defects, product failures, vehicle and motorcycle engineering and crashworthiness, motorcycle operator actions; and machinery design, operation and maintenance.

2003 to **Transportation Research Center, Inc.**

2006 *Senior Project Engineer, Emissions and Powertrain Laboratory*

Managed programs dealing with research in areas of emissions, fuels, powertrain, control systems and alternative fuels. Consulted with clients regarding test component failure and poor performance of test components. Maintained knowledge of applicable test regulations. Designed and constructed custom test and data acquisition equipment for the laboratory. Trained technicians on operation of equipment and test procedures. Participated in performance brake testing and high performance operation of motorcycles. Trained motorcycle riders.

1995 to **Automotive Testing Laboratories, Inc.**

2003 *Project Engineer, Emissions Laboratory*

Oversaw research dealing with emissions, vehicle components and alternative fuels. Evaluated novel automotive technologies. Identified funding opportunities; prepared formal research proposals. Completed literature searches on research focus and presented project data at conferences.

1992 to **Electra Form, Inc.**

1995 *Service Engineer*

Commissioning for domestic and international customers with installation and operation of plastic injection molding equipment. Completed troubleshooting of mechanical, electrical and hydraulic systems. Provided training sessions to customers for the injection mold tooling.

1983 to **Harbor Cycle**

1986 *Bicycle Mechanic / Sales*

Performed mechanical repair, adjustment, and tuning of bicycles. Completed assembly of bicycles. Inspected crashed bicycles and wrote repair estimates. Completed wheel-building and wheel-truing.

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Mechanical Engineer

PROFESSIONAL REGISTRATION

Professional Engineer: NCEES, Ohio, Kentucky, North Carolina, South Carolina,
Texas, Florida, Louisiana

EDUCATION

B.S. Mechanical Engineering, The Ohio State University, 1992

Continuing Education:

Event Data Recorders, Ohio Traffic Accident Reconstruction Association, 2012

Threaded Fasteners and the Bolted Joint, SAE 2011

High Performance Engine Design and Development, SAE 2010

Motorcycle Safety Workshop, Public Health Traffic Safety Institute, 2009

Experienced Rider Course, Motorcycle Safety Foundation, 2009

Dirt Bike School, Motorcycle Safety Foundation, 2009

Basic Rider Course, Motorcycle Safety Foundation, 2008

Vehicle Accident Reconstruction Methods, SAE 2006

Level 1 High Performance Driver Training, Transportation Research Center 2005

National Instruments Labview Programming, 2003

Catalytic Converters, Design and Durability, SAE 2002

Western Eastern Roadracing Association Roadracing School 2001

Keith Code's California Superbike School 1997

MEMBERSHIPS

Society of Automotive Engineers

New York Statewide Accident Reconstruction Society

American Motorcyclist Association

Competition License #414293

2003 and 2006 AMA National Champion in Clubman class

Western Eastern Roadracing Association

Competition License #16642

"Expert" class ranking

American Historic Racing Motorcycle Association

East Coast Timing Association

Under 500 cc Record holder -136.955 mph

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PUBLICATIONS

Particulate Emissions from a Pre-Emissions Control Era Spark Ignition Vehicle: A Historical Benchmark (SAE #2000-01-2213)

Effect of Selected LPG Fuel Components on Speciated Exhaust Emissions (SAE #961990)

PRESENTATIONS

Central Ohio Association for Justice, March 2009

Society for the Scientific Detection of Crime, February 2009

American Motorcyclist Association, Government Relations Dept., 2002

Coordinating Research Council, On-Road Emissions Workshop, 1997, 1999

EXPERT NOT RETAINED