

## Dr. Horizon Walker Gitano-Briggs

USM Dept. of Mechanical Engineering  
14300 Nibong Tebal, Penang, Malaysia

+(604) 599-6361  
HorizonUSM@yahoo.com

### EDUCATION

Colorado School of Mines, Golden CO, August 1984 to May 1988  
B. Sc. Engineering Physics, May 1988

University of California at San Diego, August 1988 to December 1991  
M. Sc. Mechanical Engineering, December 1991

Colorado State University, Fort Collins CO, Aug. 2001 to May 2004  
Ph. D. Mechanical Engineering, May 2004

### WORK EXPERIENCE

Conner Peripherals, San Jose CA and Longmont CO, 1992 to 1995  
Component level head/disk tribology tester development

Seagate Technologies (merged with Conner in 1997) Penang, Malaysia  
1995 to 2001, **Managed Failure Analysis group** (6 engineers, 3 technicians)  
responsible for yield and quality improvement and customer returns.  
Conducted industrial training courses in Malaysia, China, and Mexico

Colorado State University, Fort Collins CO, August 2001 to Sept. 2002  
**Graduate Teaching Assistant** occasionally lecturing full classes and teaching lab  
courses in mechatronics and dynamics, grading and holding office hours

Colorado State University, September 2002 to May 2004, **Instructor**,  
Prepared syllabus, tests, and assigned grades to large Junior level classes:  
Mechatronics, Dynamics, Materials, Fluids Lab, Machine Design  
Research included: Large bore natural gas two-stroke engine exhaust  
tuning, Two-stroke motorcycle exhaust tuning, Small displacement two-  
stroke engine direct injection conversion, Engine/Generator matching  
Ion probe positioning system development for Boeing Space Systems  
Electric Toothbrush Dynamics high-speed photography and analysis

#### **Private Consulting**, May 2004 -

Worked with various companies (Envirofit, Omnilux, Agilent, Modenas) in the  
Philippines, Malaysia and the US developing product prototypes, R&D equipment and  
instrumentation, establishing vehicle test centers. **Founded Focus Applied  
Technologies Sdn. Bhd. in 2008** to commercialize operations.

**Professor of Mechanical Engineering**, Universiti Sains Malaysia, June 2006  
**Director of USM Engines Lab** performing research in the areas of alternate energies,  
fuels and engines, Direct Fuel Injection, electric vehicles and etc. Reorienting the  
Mechanical Engineering curriculum to reflect greater importance of electronics and  
mechatronics as well as industrial research ties.

## **SKILLS**

Industrial project/problem management (including KT trouble shooting)  
Industrial training: SPC, Disk Drive Technology, Failure Analysis  
Experimental measurements and automation  
Programming: PLCs, Micro Controllers, Z-80 and 8088 Assembler Language, Pascal, Fortran, Basic, C  
Computer Modeling: Wave Engine Dynamics, 3-D modeling  
Mechatronics, digital and analog electronics, electrical wiring for power  
Gasoline engine tuning and rebuilding, 27 cc to automotive, EFI & Carbureted  
Sterling Engine Development  
Languages: English, Spanish, Portuguese, Malay, German  
Some proficiency in Mandarin, Thai  
Extensive multicultural experience over 35 countries

## **PAPERS**

For a current list of papers please see the attached addendum

## **MAGAZINES**

Monthly articles in "*Motor News Malaysia*" on engine technologies, 2010-2012

## **BOOKS**

"*Small Wind Turbine Power Controllers*" pages 165-188 in the book entitled "*Wind Power*", ISBN 978-953-7619-81-7

## **PATENTS**

US Patent 6,275,353 "Disk Drive Housing Having Cantilevered Base Slot to Reduce Mechanical Shock Damage", August 1999  
US Patent 5,545,989 "Non-intrusive Measurement of Spindle Velocity, Head-Disk Interference, and Head Takeoff Velocity", Jan. 1995  
US Patent 5,490,024 "High Wall Disk Clamp Design", Nov. 1993  
Pending: Compression Pressurization Technique for Direct Fuel Injection  
Pending: Mechanically Resonant Reflector for a Scanning Light  
Malaysian Patent: Method for Determination of TDC from a 2-Stroke Waist Spark Ignition System for Direct Fuel Injection Applications  
Malaysian Patent: Magnetic Coupling of an Eddy Current Dynamometer to an Engine

## **REFERENCES**

Dr. Allan Kirkpatrick, Dept. Head, ME. CSU, allan@engr.colostate.edu  
Dr. Dave Alciatore, Dept. of Mech. Eng. CSU, +1 (970) 491-6589  
Dr. Rudolph Stangelmaier, Dept. of Mech. Eng. CSU, +1 (970) 214-3305  
Darrell Cosper, former boss at Seagate, Malaysia +1 (361) 645-1832

## **ADDITIONAL RESPONSIBILITIES**

Academic Program Advisor for UNI-KL MSI in Kulim, Malaysia, 2008-  
Chairman of the Malaysian National Standards (SIRIM) Committee on Eclectic Motorcycles 2010-2011  
Contractor for United Nations FCCC (2011-2012)  
Vehicle Accident Failures Analysis for Consumers Association of Penang

***Attachment to the resume of Dr. Horizon Gitano-Briggs***

**PUBLISHED PAPERS**

- "Design and Optimization of Mechanically Resonant Torsional Spring Mechanism for Laser Light Dispersion Applications", Journal of Mechanical Design, ASME, 2011
- "Analysis of Motorcycle Fuel Consumption in Malaysia" SAE2010-10SETC-0064
- "Development of Motorcycle Drive Cycles for Malaysia" SAE2010-10SETC-0067
- "Design optimization and fatigue testing of an electronically-driven mechanically-resonant cantilever spring mechanism" Journal of Materials and design, 2010
- "Development of the Gaseous Fuel Direct Injection System for Small Two-Stroke Transports", SAE 2009-SETC
- "Small Motorcycle Electronic Port Fuel Injection Retrofitting", SAE2009-SETC-7034
- "Well-To-Wheel Energy Analysis of Conventional and Electric Motorcycles in Malaysia", SAE-2009-SETC
- "Design Analysis and Performance Prediction of the Cardiac Axial Blood Pump", Res. J. of Bio. Sci. 4 (6): 2009, ISSN:1815-8846
- "Outlet Optimization of the Centrifugal Blood Pump", J. of Eng. and App. Sci. 3(9), 2008, ISSN:1816-949X
- "Friction and Wear Characteristics of Surface Coatings in a Small Two-Stroke Utility Engine", SAE 2008-SETC-32
- "The Performance Characterization of a Direct Injection LPG Fueled Two-Stroke Motorcycle Engine", SAE 2008-SETC-0031
- "Design Optimization and Fatigue Testing of an Electronically-Driven Mechanically-Resonant Cantilever Spring Mechanism" USM Product Optimization and Simulation Conference DEC 2007
- "Two-Stroke Engine Emissions Prediction for Premixed and Directly Injected Gaseous Fuels", USM Product Optimization and Simulation Conference DEC 2007
- "Carburetor Tuning Optimization of a 120cc Motorcycle", USM Product Optimization and Simulation Conference DEC 2007
- "Frictional analysis of a small two-stroke utility engine via tear-down testing", SAE 2007-SETC-32-067
- "LPG direct injection: an alternative fuel solution to the two-stroke emissions problem", SAE 2007-23-8451
- "Design and testing of a low cost peak-power tracking controller for a fixed blade 1.2 kVA wind turbine", Elect. Pow. Qual. And Utilization, July 2008
- "Development of a Compression Pressurized Direct Fuel Injection System, SAE ICERT, September 2004
- "Design of a Compression Pressurized Air-Blast Direct Injection System for Small Displacement Two-Stroke Engines" ASME ICEF2003-785, 2003
- "Simulation of the airflow Characteristics of a Two-Stroke Natural Gas Engine with an Articulated Crank" ASME ICES2003-552, 2003
- "Effects of Exhaust Tuning on the performance of Large Bore CNG Engines" ASME 2003
- "The effect of Disk Clamping Warpage on the Tribological Performance of the Head-Disk Interface" Adv. Info. Storage Syst, Vol. 5, 1993
- "The Dynamics of 50% Style Sliders Using Laser Doppler Vibrometry" IEEE Transactions on Magnetics, MAG-27, 1991
- "The Dynamics of 'Micro' Sliders Using Laser Doppler Vibrometry"

IEEE Transactions on Magnetics, MAG-26, 1990  
"The Dynamics of IBM 3380K Slider Using Laser Doppler Vibrometry"  
IEEE Transactions on Magnetics, MAG-25, 1989

## **GRANTS**

---

USM Short Term Grant, 19,000RM, 2006-2008, Direct Injection of Gaseous Fuels in Two-Stroke Engines  
Fundamental Research Grant, 111,000RM, 2007-2010, Composite Surface Roughness Effects on Friction and Wear  
Research University Grant, 898,000RM, 2007-2010, Small Engine Developments  
Industrial Research Grant (BioEnergy), 5,000RM, 2006, Fuel Additive Testing  
Industrial Research Grant (Modenas) Multiple:  
9,881RM, 2007, Kriss 120 Oil/Fuel consumption Investigation  
1,900RM, 2008, Ignition Timing Combustion Analysis  
1,200RM, 2008, Initial WAVE Training  
3,400RM, 2008, Superflow Dynamometer Refurbishing  
1,815RM, 2009, Knock Investigation of AM120  
4,000RM, 2009, Extended WAVE Training  
15,000RM, 2011, Intake and Exhaust Tuning of 110cc engine  
Industrial Research Grant (Ecozoil), 2,000RM, 2009, Diesel Fuel Emissions Testing  
Industrial Research Grant (Envirofit International) 57,000RM, 2009, LPG-DI  
Fundamental Research Grant, 82,500, 2008-2009, Artificial Heart Blood Pump Optimization

## **US PATENTS**

---

Patent 6,275,353 "Disk Drive Housing Having Cantilevered Base Slot to Reduce Mechanical Shock Damage", August 1999  
Patent 5,545,989 "Non-intrusive Measurement of Spindle Velocity, Head-Disk Interference, and Head Takeoff Velocity", Jan. 1995  
Patent 5,490,024 "High Wall Disk Clamp Design", Nov. 1993  
Pending: Compression Pressurization Technique for Direct Fuel Injection  
Pending: Mechanically Resonant Reflector for a Scanning Light  
Pending: TDC Determination in 2-Stroke Engine Waist Spark System

## **GRADUATE STUDENTS**

---

Teoh Yew Heng, Msci. 2007-2010, Direct Injection of LPG in 2-Stroke Engines  
Dhyaa Hussien, Msci. 2008-2010, Optimization of Artificial Heart Blood Pump  
Wong Chee Khoon, Msci. 2008-2011, Ammonia-Water Cycle Air Conditioner  
Teoh Say Lai, Msci. 2008-2011, Electronic Fuel Injection for Motorcycles  
Loh Jian Haur, Msci 2008-2011, 2-Stroke DI Diesel Development  
Tan Yee Hern, Msci. 2007-2011, Simulation of Gaseous Fuel Direct Injection  
Lim Kar Loon, Msci. 2008-2011, Aerospace Vehicle Controls  
Chong Chuong Leong, Msci. 2008-2011, Wind Energy Systems  
Ahmad Syazli Mhod. Khalil, Msci. 2007-2011, Electrical Vehicle Studies  
Koay Loke Kean, PhD 2009-2014, Mech. Resonant Control system  
Lee Ying Wei, Msci. 2010-2013, Autonomous Vehicle Controls  
Devarajan Ramasamy, PhD 2010-2015, CNG Tubulant Flame Speed Optimization  
Goh Chin Yuan, Msci. 2010-2014, Autmomotive CNG Engine Optamization  
Lee Jih Houh, PhD 2010-2015, Small Vehicle Efficiency Improvments  
Knog Ching Hwa, Msci 2010-2014, Composite Metal Friction Reduction

Koo Aik Soon, Msci 2010-2012, Engine Torque Optamization at Low Speed  
Vigren Radha, Msci. 2010-2014, Wind Energy Systems  
Ali Jamaluddin, Msci 2007-2011, Small Engine Friction and Wear