

# Prof. Md. Zahurul Haq

## Curriculum Vitae

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### Research/Professional interests

- ▶ Thermodynamics, Energy engineering, Energy conversion, conservation and efficiency
- ▶ Combustion, Internal combustion engines, Alternative fuels
- ▶ Measurement and instrumentation, Industrial control, Mechatronics and robotics
- ▶ Refrigeration and air-conditioning (HVAC), Building Mechanical Systems (BMS)

### Current positions

- 2004 - **Professor**, Department of Mechanical Engineering, Bangladesh University of Engineering.  
2010 - **Member, Board of Directors**, Bangladesh Diesel Plant Ltd. (A Commercial Enterprise of Bangladesh Army).  
2015 - **Member, Technical Advisory Committee** for Sustainable Finance Department (Green Banking Wing), Bangladesh Bank

### Education and Qualifications

- 1993 B.Sc. Engg. (Mech), Bangladesh University of Engineering & Technology (BUET), Dhaka, Bangladesh  
1995 M.Sc. Engg. (Mech), Bangladesh University of Engineering & Technology (BUET), Dhaka, Bangladesh  
1998 Ph.D. The University of Leeds, Leeds, UK.

### Membership of Associations

- ▶ Life Fellow (F 7621), The Institution of Engineers, Bangladesh (IEB).
- ▶ Certified Energy Auditor (No. 90208), The Association of Energy Engineers (AEE), Atlanta, USA.
- ▶ Life Member, Bangladesh Solar Energy Society (BSES).

### Additional/Past Affiliations

- Feb, 2014 - Feb, 2016 **Head**, Dept. of Mechanical Engineering, BUET.  
Feb, 2012 - Aug, 2014 **Director**, Centre for Energy Studies, BUET.  
Sep, 2006 - Apr, 2010 **Provost**, Titumir Hall, BUET  
Nov, 2003 - Nov, 2005 **System Analyst**, Computer Centre, BUET.  
Dec, 2008 - May, 2010 **Member**, Board of Directors, Rupantarita Praktik Gas Co. Ltd. (RPGCL).  
Mar, 2007 - 2015 **Member, Project Management Board**, Haripur Gas Turbine Power Station.  
Jan, 2012 - Dec, 2015 **Chairman**, Engg. Div. Committee, Bangladesh Standards & Testing Institution (BSTI)  
Oct, 2013 - **Member, ISO PC-248/WG-3**, International Organization for Standardization (ISO).
- ▶ *ISO/CD 13065: Sustainability Criteria for Bio-energy*: **Chairman**, National Mirror Committee & **Head of Delegation** ISO ISO/PC 248 meetings
    - 23 Sept - 4 Oct 2013, Stockholm, Sweden
    - 14 - 21 Feb 2014, Berlin, Germany
    - 19 - 23 Jan 2015, Berlin, Germany.
  - ▶ *Asia-Pacific Robot Contests (ROBOCON 2005-2009)*: Participating Team-Instructor for
    - Robocon 2009, Tokyo, Japan
    - Robocon 2008, Pune, India
    - Robocon 2007, Hanoi, Vietnam
    - Robocon 2006, Kualalampur, Malaysia
    - Robocon 2005, Beijing, China: team achieved PANASONIC Award.

### Specialized Training/Workshop/Seminar participation

- *Energy Audit Training of Trainer in Korea*, (19-27 Nov 2018), KEA-ADB partnership, Korea.
- *Energy Efficiency and Conservation (EE&C) in Japan*, (22-29 Jul 2015), JICA, Japan.
- *ISO 'Sustainability Criteria for Bioenergy' standard pre-seminar and ISO/PC 248 WG3 meeting*, (14-21 Feb 2014), Berlin, Germany.
- *ISO 'Sustainability Criteria for Bioenergy' standard pre-seminar*, (23-29 Sep 2013), Stockholm, Sweden.
- *Increasing Consensus & Stakeholder Engagement*, (3-4 Jun 2013), ISO Workshop, Indonesia.
- *Advanced Micro-Power System*, (9-13 Jul 2012): SERI-UKM, Malaysia.
- *Unigraphics NX-4 and Team-center*, (2-22 Jul 2006): UGS, India.
- *Laser Diagnostics of Combustion Processes*, (22-26 Jun 2002): National Institute of Laser Enhanced Sciences, Cairo University, Egypt.
- *Mechatronics System Technology*, (26 Nov - 14 Dec 2001): Japan-Singapore 3rd Country Program for the 21st Century, Singapore.
- *Engine Emissions Measurements*, (29 Jun - 3 Jul 1998): The University of Leeds, UK.

### Major invited talks

- *Sustainability of Bioenergy* [Keynote Presentation] (2013): International Conference on Green Energy and Technology (ICGET), Aug 24-26, 2013, Kitakyushu, Fukuoka, JAPAN.
- *Grid Connected Solar: Technical and Policy Issues in Renewable Energy Policy, Regulations and Grid Connectivity Issues* [Resource Person] (2012): SAARC Workshop, 21-22 Nov, 2012, Thimpu, Bhutan.
- *Thermodynamics of Power Generation: Rationale for Exergy* [Keynote Presentation] (2017): International Conference on Mechanical Engineering and Applied Sciences (ICMEAS 2017) Military Institute of Science and Technology (MIST), 21-22 February 2017, Dhaka.
- *Energy Efficiency: Thermal* [Resource Person] (2018): Basic Course on *Renewable Energy & Energy Efficiency, Capacity Building to Bangladesh Power Sector*, April/May 2018, Dhaka.
- *Power Generation: Efficiency Improvement* [Resource Person] (2018): Short Training Course on *Application of Energy Saving Technologies of Residential, Commercial and Industrial Sectors in Bangladesh* organized by Centre for Energy Studies, BUET, Sept. 2018, Dhaka.

### Theses/Academic project supervision

#### M.Sc. Engg. Theses:

- *Energy and Exergy Analysis of Waste Heat Recovery Systems using Organic Rankine Cycle* (A. Saha, 2016)
- *Exergetic and Power Augmentation Analyses of Gas Turbine with Air-bottoming Combined Cycle* (M.J. Hoque, 2016).
- *Optimum PID Control of a Servo-motor Subjected to Frictional Loads, Inertia and Disturbances* (K.A. Rahman, 2014)
- *Energy and Exergy Based Analysis of a Multi-Fuelled SI Engine* (A. Morshed, 2013)
- *Dynamic Response of a Mobile Robot Drive Using PID Control* (Z. Aziz, 2011)
- *Development and Tuning of a PID Control System for Mobile Robot Drive* (S.M. Ali, 2011)
- *Exergy Analysis of a Four Stroke Spark-Ignition Engine using Different Fuels* (M.R. Mohiuddin, 2010)
- *Dynamic Characteristics of Servo-Controlled Mobile Robot using Optimum Pulse Width Modulation (PWM)* (M.E. Kabir, 2009)
- *Sesame Oil as an Alternative Fuel for Diesel Engines in Bangladesh* (A.K.M.M. Morshed, 2008)
- *Energy-Exergy Analysis of a Diesel Engine Running of Preheated SVO (Straight Vegetable Oil)* (M.M. Islam, 2006)
- *Performance of a Diesel Engine with Preheated Vegetable Oil as an Alternative Fuel* (M.S. Uddin, 2005)
- *Comprehensive Modeling of Diesel Engine with Biogas/Diesel Dual Fueling for Optimized Performance* (Z.A. Bhutto, 2003)
- *Experimental Investigation of Dual-Fuel Diesel Engine* (M.H. Rahman, 2003)
- *Modeling of Flame Propagation in Biogas-Air Premixture* (M. Mizanuzzaman, 2001)

## Publications

### PhD thesis

1. Haq, M. Z. (1998). "Fundamental Studies of Premixed Combustion". PhD thesis. School of Mechanical Engineering, The University of Leeds, Leeds, UK.

### Refereed research papers (partial list)

1. Gu, X., M. Haq, M. Lawes, and R. Woolley (2000). Laminar burning velocity and Markstein lengths of methane-air mixtures. *Combustion and Flame* **121**(1), 41–58.
2. Haq, M., C. Sheppard, R. Woolley, D. Greenhalgh, and R. Lockett (2002). Wrinkling and curvature of laminar and turbulent premixed flames. *Combustion and Flame* **131**(1), 1–15.
3. Bradley, D., M. Haq, R. Hicks, T. Kitagawa, M. Lawes, C. Sheppard, and R. Woolley (2003). Turbulent burning velocity, burned gas distribution, and associated flame surface definition. *Combustion and Flame* **133**(4), 415–430.
4. Haq, M. Z. (2005a). Correlations for the Onset of Instabilities of Spherical Laminar Premixed Flames. *Journal of Heat Transfer* **127**(12), 1410–1415.
5. Haq, M. Z. (2005b). Effect of Developing Turbulence and Markstein Number on the Propagation of Flames in Methane-Air Premixture. *Journal of Engineering for Gas Turbines and Power* **128**(2), 455–462.

### Papers in conference proceedings (partial list)

1. Haq, M. (2003a). Developing Turbulence on the Propagation of Flames in Methane-Air Premixture. In: *Proceeding of the International Joint Power Generation Conference (IJPGC2003), June 15-19, 2003, Georgia, USA, Paper No. IJPGC2003-40143*. ASME.
2. Haq, M. (2003b). Prediction of Instabilities of Spherically Propagating Flames in Laminar Premixture. In: *Proceedings of the ASME 2003 Heat Transfer Summer Conference (HT2003), July 21-23, 2003, Nevada, USA, Paper No. HT2003-47484*. ASME.
3. Haq, M., M. Rahman, and Z. Bhutto (2003). Performance Studies of a Biogas Fuelled Diesel Engine Operating in a Dual Fuel Mode. In: *Proceedings of the International Conference on Power Engineering: ICOPE-2003*(3). JSME, pp.57–62.
4. Hossain, S., M. Y. Ali, H. Jamil, and M. Z. Haq (2010). Automated guided vehicles for industrial logistics- Development of intelligent prototypes using appropriate technology. In: *Computer and Automation Engineering (ICCAE), 2010 The 2nd International Conference on*. Vol. 5. IEEE, pp.237–241.
5. Haq, M. and M. Mohiuddin (2011). Thermodynamic Analysis of a Multi-Fueled Single Cylinder SI Engine. In: *Proceedings of the ASME 2011 International Mechanical Engineering Congress and Exposition (IMECE2011), November 11-17, 2011, Denver, Colorado, USA, Paper No. IMECE2011-62423*. ASME.
6. Haq, M. Z. (2013). Sustainability of Bioenergy. In: *Proceedings of the International Conference on Green Energy and Technology (ICGET), Aug. 24-26, 2013, Kitakyushu, Fukuoka, JAPAN*. Center for Natural Science & Engineering Research, pp.168–171.
7. Haq, M. and A. Morshed (2013). Energy and Exergy Based Analyses of a Multi-fueled SI Engine. In: *Proceedings of the ASME 2013 Power Conference, July 29-August 1, 2013, Boston, Massachusetts, USA, Paper No. Power2013-98279*. ASME.

### Book chapters (partial list)

1. Haq, M. Z. (2006). "Energy saving through ventilating and air-conditioning improvement". In: *Applied Energy Saving Technologies for Industrial, Commercial and Residential Sectors*. Ed. by S. I. Khan and M. Obaidullah. Centre for Energy Studies, BUET, pp.125–141.
2. Haq, M. Z. (2012c). "Measurement: System, Uncertainty and Response". In: *Applied Measurement Systems*. Ed. by M. Z. Haq. InTech, 51000 Rijeka, Croatia, pp.1–22.

### Editorials

1. Haq, M. Z., ed. (2012a). *Advanced Topics in Measurements*. InTech, 51000 Rijeka, Croatia.
2. Haq, M. Z., ed. (2012b). *Applied Measurement Systems*. InTech, 51000 Rijeka, Croatia.