

CURRICULUM-VITAE

NAME : Dr. Md. Ehsan
DATE OF BIRTH : 10th December 1966
NATIONALITY : Bangladeshi
MARITAL STATUS : Married
PRESENT ADDRESS : 20/2 BUET Staff Quarters, Dhaka - 1000
PRESENT OCCUPATION: Professor
Department of Mechanical Engineering
Bangladesh University of Engineering & Technology
(BUET), Dhaka - 1000, BANGLADESH
E-MAIL ADDRESS : ehsan@me.buet.ac.bd



EDUCATIONAL QUALIFICATIONS :

| Degree Awarded | Institution | Year | Result |
|----------------------------------|---|---------------------|--------------------------------|
| Ph.D | University of Edinburgh Scotland, UK | 1997 | - |
| M.Sc Engineering (Mechanical) | Bangladesh University of Engg & Technology | 1993 | GPA: 3.75 / 4 |
| B.Sc Engineering (Mechanical) | Bangladesh University of Engg & Technology | 1991 | 1st Class 1st (79.5% marks) |
| H.S.C | Notre Dame College, Dhaka | Dhaka Board 1984 | 1st Division (81.6% marks) |
| S.S.C | Univ. Laboratory School Dhaka | Dhaka Board 1982 | 1st Division (75.1% marks) |

Post Doctoral Research : "Dynamic Simulation of a Hydraulic Excavator Arm"
(Under a Post-Doctoral Fellowship, 2005, – University of Edinburgh, UK)

Ph.D Thesis Title : "A New Type of Malone Engine with Digital-
Displacement Hydraulic Drive".
(Under Commonwealth Scholarship Program, awarded from 1993 to 1997, Univ. of Edinburgh, UK)

M.Sc Thesis Title : "Study of the Effect of Spark advance on
Gas run Petrol Engine". 1993, BUET

B.Sc Project Title : "Design, Fabrication and Performance Test of a Vortex Tube". BUET

SPECIALIZATION : Time Domain Modelling, Internal combustion Engines, Automobiles, Thermal Engineering, Stirling Cycle Engine, Computer Aided Drawing and Design (CAD).

LIST OF PUBLICATIONS :

Journals :

- (1) Ehsan M., Barman S., Buiyan S., “Low Pressure CNG System for Diesel Power Generation”, Paper No. W09-0010, *Journal on Power and Energy Engineering (OJPEE)* Vol. (1) – No. (2), June 2010.
- (2) Ehsan Md., Rahman M., and Saadi H. M., “Effect Of Fuel Adulteration On Engine Crankcase Dilution”, Paper No. JMED-2009/34, *Journal of Mechanical Engineering(IJME)*, Institution of Engineers Bangladesh (IEB), Dhaka, accepted for publication, December 2010.
- (3) Ehsan Md. and Bhuiyan S., “Dual Fuel Performance of a Small Diesel Engine for Applications with Less Frequent Load Variations”, Paper no. 97510-7373, *International Journal of Mechanical & Mechatronics Engineering IJMME*, Vol: 9 No: 10, 2009.
- (4) Ehsan Md., “Effect of Spark Advance on the Performance of a Gas Run Automotive Spark Ignition Engine”, Vol CheE24, No.1, pp 42-59, *Journal of Chemical Engineering*, Institution of Engineers Bangladesh (IEB), Dhaka, December 2007.
- (5) Payne G. S., Kiprakis A., Ehsan M., Rampen W. H. S., Chick J. P., Wallace R., “ On the Efficiency and Dynamic Performance of Digital DisplacementTM Hydraulic Transmission in Tidal Current Energy Converters”, Paper No. JPE298, *Journal of Power and Energy*, Part A : *Proceedings of IMechE*, Volume 221, pp. 207-217, May 2007.
- (6) Ehsan Md. and Naznin N., “Performance of a Bio-Gas Run Petrol engine for Small Scale Power Generation”, pp. 1-9, Volm. 4, *Journal of Energy and Environment*, published by Center of Energy Studies, BUET, Dhaka, Bangladesh, May 2005.
- (7) Ehsan Md. and Alam M. S., “Effect of Independent Gas Flow Control on the Performance of a Fixed-Speed Gas Run SI Engine”, pp 71-79, paper No. JMED-128/ ME33, June 2004 Vol., *Journal of Mechanical Engineering*, Institution of Engineers Bangladesh (IEB), Dhaka, June 2004.
- (8) Ehsan Md., Sarkar M.R.A, Obaidullah M. and Islam M.A, “Pre Feasibility of Cogeneration in a Paper Recycling Mill in Bangladesh” published in *Chiang Mai University Journal*, Vol 2 No. 1 pp. 27-35, Thailand, April 2003.

- (9) Sarkar M.R.A. and Ehsan Md., “Solar Thermal Applications : The Bangladesh Perspective”, *International Energy Journal*, published by RERIC, Asian Institute of Technology, Thailand, December 2003.
- (10) Ehsan Md, Rampen W.H.S and Salter S.H, “Modelling of Digital-displacement Pump-Motors and their Application as Hydraulic drives for Non-uniform Loads”, *Journal of Dynamic Systems, Measurement and Control, Transactions of ASME*, pp.210-215, Vol.122, March 2000.
- (11) Alam M. S. and Ehsan Md., “Performance of a Gas Run Petrol engine for Small Scale Power Generation”, *Journal of Energy and Environment*, pp.101-107, Vol. 1, November 1999.
- (12) Sarkar M.A.R., Ehsan Md., Obaidullah M., Huq Aziz-Ul A.M., “Techno-Economic Viability of Cogeneration in a Commercial Building in Bangladesh”, *Journal of Energy and Environment*, pp.71-78, Vol. 1, November 1999.

International Conferences (Outside Bangladesh) :

- (1) Ehsan M., Barman S., Buiyan S., “Low Pressure CNG System for Diesel Power Generation”, Paper No. 038, Proceedings of The 2009 World Congress on Power and Energy Engineering, WCPEE'09, 5-8 October, Cairo, Egypt, 2009.
- (2) Payne G. S., Stein U., Ehsan M., Caldwell N., Rampen W.H.S., “Potential Of Digital Displacement Hydraulics For Wave Energy Conversion”, pp. 365-371, *Proceedings of 6th European Wave and Tidal Energy Conference*, Glasgow, UK, 29 Sept – 2 October 2005.
- (3) Abedin M. Z., Ehsan M., Sarkar M.A.R, “ Heat Transfer through a Tube with Wire Coil-Inserts at Low Turbulent Raynolds Number”, pp. 110-118, *Proceedings of 31st National Conference on Fluid mechanics and Fluid Power*, 16-18 December 2004 organised by Dept. of Mechanical Engineering, Jadavpur University, Kolkata, India, 2004.
- (4) Ehsan Md., Bhuiyan M.S.A., Naznin N., "Multi-Fuel Performance of a Petrol Engine for Small Scale Power Generation", Paper No. 2003-32-0063 (03SETC-41), *Proceedings of Small Engine Technology Conference and Exhibition, Sec 10 : pp. 7-13, SETC2003*, Madison, WI, USA, 16-18 September 2003.
- (5) Ehsan Md., Rampen W.H.S, “Using Digital-Displacement Hydraulic Drive for Controlling Piston Motion of Heat Engines”, TH-11/1 pp. 993-1000, *Proceedings of 2nd International Conference on Fluid Mechanics and Fluid Power*, IIT-Roorkee, India, December 12-14, 2002.
- (6) Sarkar M.A.R., Ehsan Md. and Obaidullah M., “Performance of a solar Lantern”, Accepted for publication in the *Proceedings of World Energy Congress VII*, Cologne, Germany, 29 June – 5 July, 2002.

- (7) Sarkar M.A.R., Ehsan Md. and Obaidullah M., “Solar PV Submersible Water Pumping for Small Scale Use in Bangladesh”, *International Workshop on Renewable Technologies for Clean and Sustainable Development*, Amman, Jordan, 26-29 March, 2002.
- (8) Rampen W.H.S, Ehsan Md. and Stein U, “A Digital-Hydraulic Power Take-off for Stirling-Cycle Engines”, *Proceedings of 8th International Stirling Engine Conference and Exhibition*, No. ISEC 97083, pp.601-612, Ancona, Italy, 27-30 May, 1997.
- (9) Ehsan Md, Rampen W.H.S and Salter S.H, “Computer Simulation of the Performance of Digital-Displacement Pump-Motors”, *Proceedings of ASME International Mechanical Engineering Congress and Exposition*, FPST Volume-3, pp.19-24, Atlanta, USA, November 1996.
- (10) Ehsan Md, Rampen W.H.S and Taylor J.R.M, “Simulation and Dynamic Response of Computer Controlled Digital Hydraulic Pump/Motor System Used in Wave Energy Power Conversion”, *Proceedings of 2nd European Wave Power Conference*, pp. 305-311, Lisbon, Portugal, 8-10 Nov. 1995.
- (11) Rampen W.H.S, Ehsan Md, Almond J.P, Taylor J.R.M and Salter S.H, “Progress on the Development of the Wedding-Cake Digital Hydraulic Pump-Motor”, *Proceedings of 2nd European Wave Power Conference*, pp. 289-296, Lisbon, Portugal, 8-10 Nov. 1995.

International Conferences (Inside Bangladesh) :

- (1) Ehsan M., Kabir M. N. I., Reaz S. and Sultana S. “Non-Conventional Use Of Small Diesel Engines : Case Studies”, paper no. ICME09-TH-26, pp. 1–6, *Proceedings of the 8th International Conference on Mechanical Engineering*, BUET, Dhaka 26-28 December, 2009.
- (2) Chowdhury M. S. and Ehsan M., “Performance Of A Biogas Run Stirling Generator”, paper no. ICME09-TH-29, pp. 1–6, *Proceedings of the 8th International Conference on Mechanical Engineering*, BUET, Dhaka 26-28 December, 2009.
- (3) Ehsan M., Taposh R. M., Islam M. M., “Running a Diesel Engine with Biodiesel”, paper no. ICME2007-TH-34, pp. 1–4, *Proceedings of the 7th International Conference on Mechanical Engineering*, BUET, Dhaka 29-31 December, 2007.
- (4) Ehsan M., Rahman M. M., Saadi H. M., “An Investigation On Increase Of Volume Of Lubricating Oil Used In Vehicles Around Dhaka City”, paper no. ICME2007-TH-18, pp. 1–5, *Proceedings of the 7th International Conference on Mechanical Engineering*, BUET, Dhaka 29-31 December, 2007.

- (5) Ehsan M., Shah M. Z., Hasan M., Hasan S. M. R., “Study of Temperature Profile in Automotive Exhaust Systems for Retrofitting Catalytic Converter”, paper no. ICME2005-TH-34, pp. 1–6, *Proceedings of the 6th International Conference on Mechanical Engineering*, BUET, Dhaka 28-30 December, 2005.
- (6) Sarkar M.A. R., Hasan A. B. M. T., Ehsan M., Talukder M. A., Haq A. M. A., “Heat transfer in Turbulent Flow Through Tube with Longitudinal Strip Inserts”, paper no. ICME2005-TH-46, pp. 1–6, *Proceedings of the 6th International Conference on Mechanical Engineering*, BUET, Dhaka 28-30 December, 2005.
- (7) Ehsan Md., Islam M Z, Haque S, “Computerised Car Diagnostic Centres : Dhaka Scenario” pp. 113-119, *Proceedings of 4th International Mechanical Engineering Conference & 9th Annual Paper Meet*, organised by Mechanical Engineering Division, Institution of Engineers, Bangladesh, 29-31 December, Dhaka, Bangladesh, 2004.
- (8) Ehsan Md. and Nur M. Al., “Controlling Emissions from Conventional Road Transports: Dhaka Situation”, paper no. ICME2003-TH-27, pp. 1–5, *Proceedings of the 5th International Conference on Mechanical Engineering*, BUET, Dhaka 26-28 December, 2003.
- (9) Ehsan Md. Intiaz Hossain Md., “The Role of Small Diesel Engines in Rural Bangladesh During the Flood of 1998”, *Engineering Concens of Flood*, BUET Proceedings, pp. 319-330, August 2002.
- (10) Ehsan Md., Rahman Z. S.M., Javed M. K, Mahboob M, “Performance Of A LPG Run SI Engine For Small Scale Power Generation”, *Proceedings of the 4th International Conference on Mechanical Engineering*, BUET, Dhaka 26-28 December, pp. 97-102, Vol. 2, Sec III, December 2001.
- (11) Mamun M., Ehsan Md, “Effect Of Coolant Temperature On Performance of a SI Engine”, *Proceedings of the 4th International Conference on Mechanical Engineering*, BUET, Dhaka 26-28 December, pp. 235-241, Vol. 2, Sec III, December 2001.
- (12) Ehsan Md, Haque H. M., “Reduction of Axle Length of Rickshaw and its Implications”, *Proceedings of the 4th International Conference on Mechanical Engineering*, BUET, Dhaka 26-28 December, pp. 131-133, Vol. 3, Sec VII, December 2001.
- (13) Uttam K.C, Hossain A., Shahriar N., Ehsan Md., “Development of a Mechanism for Mixing Two Different Gases at Constant Proportion for Variable flow Rates”, *Proceedings of the 6th Annual paper Meet and International Conference*, Institute of Engineers, Bangladesh, paper no. 54, pp.437-447, 27-29 January, 2000.

- (14) Ehsan Md., Rampen W.H.S, “Prospects of Stirling Cycle Engines”, *Proceedings of the 2nd International Seminar on Renewable Energy for Poverty Alleviation, ISREPA-99*, Institute of Engineers, Bangladesh, pp.446-458, 26-27 Nov. 1999.

RESEARCH WORK ABROAD :

- Worked in a research project “Dynamic Simulation of a Hydraulic Excavator Arm”, as a post doctoral research fellow of University of Edinburgh, Scotland, UK, for 8 months March-October 2005. The program was funded by Artemis Intelligent Power Ltd., a R&D organization located at University of Edinburgh, as a sub-contract from SAUER-DANFOSS, Denmark and USA.

The work involved selection of software and development of a model incorporating Artemis DDPM technology in to a mobile hydraulic application such as an excavator arm. The excavator arm requires combined modelling of hydraulic, mechanical and control components which can interact smoothly. Since the control models for DDPM was already constructed using SIMULINK, the interfacing of the control parts with MATLAB-SIMULINK was essential. The excavator model was developed using DYMOLA and physical data measured from a CATERPILLER excavator arm. HYLIB integrated with DYMOLA was used for the hydraulic circuits. The motion simulation of the excavator arm under various loading conditions helped in the development of the control strategy to be used from excavator manoeuvring. The models were compared with experimental data, to extrapolate excavator arm operation of larger sizes.

- Worked in a research project “Dynamic Simulation of Hydraulic Transmissions”, at Edinburgh, Scotland, UK, May - June, 2002. Funded by Artemis Intelligent Power Ltd., a R&D organization located at University of Edinburgh, as a sub-contract from DANA, USA.

The simulation work involved development of an automotive vehicle model with a digital-displacement hydraulic transmission system facilitating regenerative braking. One stage of digital-displacement pump converts power of the engine into fluid power, while wheel motors are used to convert the energy back to tyre rotation. Displacement rates of the pump and the motor allows to have almost any desired gearing ratio. Another bank of digital-displacement pump stores the energy of braking as hydraulic pressure in an accumulator, which can be fed back as a torque addition during acceleration or taking care of idle engine motion. Using the model comparative evaluation of different strategies for utilization of energy stored during braking could be made. Results showed up to 30% saving in fuel economy in a FTP-72 EPA city drive cycle. Software used included - MATLAB-SIMULINK , MATHCAD and Excel. I am carrying out some of the follow-up modeling work from Bangladesh at present.

- Worked in a research project “Advanced Modelling of Stirling Cycle Engine”, at Edinburgh, Scotland, UK, Oct - Nov 1999. Funded by University of Edinburgh.

The digital-displacement pump-motor is a hybrid device, which combines reciprocating hydraulics with micro-processor control, creating a highly integrated machine capable of producing variable flow and power. It is based on the conventional hydraulic piston pump but with actively controlled poppet valves for each cylinder. This allows enabling or disabling on a stroke-by-stroke basis in any desired sequence. The advantages of this approach over conventional techniques lie with both the response speed and the inherent energy efficiency. The

response speed of the machine is sufficient to accurately follow the piston motions demanded by an optimized Stirling liquid cycle, such that pressure peaks are avoided and maximum use is made of the metallurgical strength of the thermodynamic pile hot-end. The modeling work involved modification and advancement of the Digital-Displacement Pump-Motor and Stirling Cycle engine models developed during my Ph.D work, allowing variable piston numbers from a single program and more options in control strategies. Software used included - MATRIXx, MATLAB-SIMULINK and MATHCAD.

M.Sc ENGINEERING RESEARCH PROJECTS :

- Supervision of a M.Sc Engineering research project funded by BUET titled: “Influence of Valve timing on SI Engine Performance”, completed in August 2010. This research work involves developing a engine model using SIMULINK and calibrate the model compared to some experimental measurements of an engine. The objective is to simulate the effect of variation in valve opening operation on the performance of the engine.
- Supervision of a M.Sc Engineering research project funded by BUET titled: “Optimizing the Compression Ratio of A CNG Converted Diesel Bus Engine”, completed in April 2010. In this project the performance of a CNG converted diesel engine is studied under variable compression ratios. The objective is to optimize the compression ratio of operation of such conversions. This research will allow evaluation of the CNG conversion techniques of Diesel bus engines currently practiced in Bangladesh.
- Supervision of a M.Sc Engineering research project funded by BUET titled: “Study of a Stirling-Generator Using Alternative Fuels”, completed in April 2008. In this project the performance of a small Stirling-Generator of 750 W capacity, made by DEKA Corporation USA, was evaluated with alternative fuels like Bio-gas and LPG. This research work allowed to have practical exposure to a Stirling engine prototype developed in USA and evaluate its performance using alternative fuels in the rural conditions of Bangladesh.
- Supervision of a M.Sc Engineering research project funded by BUET titled: “CNG Replacement in a Diesel Run Bus Engine”, completed in December 2007. In this project a most suitable minibus driving engine was selected in the perspective of Dhaka by investigating minibus registration data from Bangladesh Road Transport Authority (BRTA) and the diesel engine specifications. In this project a very similar single Diesel engine was run in dual fuel mode replacing most of the Diesel with natural gas. From the single cylinder performance results the output from a 6-cylinder bus engine was estimated. The thesis also involved a cost analysis of the economic feasibility of such Dual fuel operation of a Diesel engine.
- Supervision of a M.Sc Engineering research project funded by BUET titled: “Study of a SI Engine Using Synthetic Biogas for Driving a Small Generator”, completed in April 2007. In this project a small petrol engine run generator of 1.5 kW capacity is being run on bio gas with minimum hardware modification. Bio-gas for the engine is produced synthetically by mixing predetermined proportions of methane and carbon-di-oxide. Performance parameters are to be

compared with petrol, natural gas and liquefied petroleum gas (LPG) results found in previous thesis works. Practical implication of the projects is related to running of small petrol generators in villages/poultry farms in rural Bangladesh.

- Supervision of a M.Sc Engineering research project funded by BUET titled: “Effect of Coolant Temperature On Performance of a SI Engine”, completed in October 2001. In this project performance parameters of an automotive engine were compared with different coolant temperatures and flow rates. A high-speed data-acquisition system along with pressure transducer and shaft position sensor was used to specially investigate the changes in the pressure-volume diagram. Practical implications of the project is related to many vehicles running with faulty cooling systems in traffic congested Dhaka city, specially in hot summer days.
- Supervision of a M.Sc Engineering research project funded by BUET titled: “Study of a SI Engine Using Natural Gas For Driving a Small Generator”, completed in 1999. In this project a small petrol engine run generator of 1.5 kW capacity was run on line supply of natural gas. Minimum hardware modifications were made in order to retaining instant inter-changibility with petrol. Performance of running on natural gas showed better combustion, emissions and lower cost, though limited in the maximum power output to some extent. Practical implication of the projects is related to running of small petrol generators in congested market places.

NATIONAL LEVEL PRESENTATIONS :

- (1) Ehsan Md., “Diesel Engines – Emissions and Controls”, a seminar organized by the Department of Environment (DOE), Government of Bangladesh in June 2010. Dr. Md. Ehsan, Professor, Mechanical Engineering Dept. of BUET, presented his lecture as a part of the National Consultation Workshop on Clean Fuels and Vehicles arranged by DOE, held in Dhaka and Chittagong.
- (2) Ehsan Md., “Natural Gas Technology in Automobiles”, a seminar organized by the Dept. of Mechanical Engineering was held in BUET in May 2009. Dr. Md. Ehsan, Professor, Mechanical Engineering Dept. of BUET presented his key note speech. Mr. Sumit Kumar Saha, Deputy General Manager, NAVANA, CNG Ltd. And the Vice Chancellor of BUET took part in the discussion following the presentation.
- (3) Ehsan Md., “Use of CNG in Internal combustion Engines”, Keynote paper, 10th ANGVA NGV School, Dhaka, Bangladesh-China Friend-Ship Conference Centre, 30 April 2008. An international seminar organised by Bangladesh Natural Gas Vehicles Association (BNGVA), in association with Asian Natural Gas Vehicles Association (ANGVA) Korea. The presentation focused on the recent developments of CNG technologies and emphasised on practice of CNG safety issues.

- (4) Ehsan Md., “Automotive Technology in the Future”, Key Presentation, IPDC Auto Expo 2008, Bangladesh-China Friend-Ship Conference Centre, 24-26 March 2008. Organised by Autoline Bangladesh Ltd. The presentation identified the potential new fields in which the trends of automotive research and development is likely to advance in near future.
- (5) Ehsan Md. “Use of Internal combustion engines: Case Studies”, Keynote paper, Seminar organised by the Chemical Engineering Division, The Institution of Engineers Bangladesh on 6 June 2006. The keynote paper described the experimental study of the use of CNG fuel in three types of internal combustion engines. Case-1 : A small portable power generator SI engine; Case-2 : Dual fuel operation of a diesel engine used for irrigation; Case-3 : Use of CNG in a typical automotive engine. The paper also presents the overview of the CNG technology used in SI and CI engines.
- (6) Ehsan Md. “Effectiveness of Catalytic Converter and Diesel Particulate Filters in Used Vehicles”, - Keynote presentation in a National level Discussion, Organised by Society for Urban Environmental Protection (SUEP), 3rd November 2002, National Press Club, Dhaka. The discussion was covered by the national news media, at a time when the government is making use of Catalytic Converters and Diesel Particulate Filters mandatory in used vehicles in Bangladesh. The presentation describes the Catalytic Converter and Diesel Particulate Filter Technology and limitation of its effectiveness in the used vehicles of Bangladesh.
- (7) Ehsan Md. “Emission from 2-Stroke Three-Wheelers and its Implication on the Environment”, - Keynote presentation in an National level Expert Discussion, Organised by ‘Parash’ a leading Environmental group of Bangladesh (BAPA), 27th January 2002, at BUET. The discussion was covered by the national news media. It played a role in preventing the government from changing its policy and legalizing the operation of 2-Stroke Three-Wheelers with the use of Catalytic Converters. The presentation describes the 2-stroke technology, operation of Catalytic Converters, and difficulties of its operation with two-stroke engines used in Bangladesh.

TECHNICAL REPORTS :

- (1) A report on the Post Doctoral research activities in University of Edinburgh during the sabbatical leave of March-October 2005. This 109 page technical report mainly contains three chapters – (i) Simulation Software Evaluation (ii) Developing The DDPM Part-Stroke Models, (iii) Modelling of the Excavator Arm. This was submitted to BUET in 2006 as a part of the follow-up requirement of sabbatical leave.
- (2) Ehsan Md., Hossain Md. Imtiaz, “Study of The Role of Small Diesel Engines in Rural Bangladesh During The Flood of 1998” - Survey & Study Report, Bangladesh University of Engineering & Technology, 1999. A study based on the survey findings regarding the damage assessment and alternative use of Small Diesel Engines in Rural Bangladesh During The Flood of 1998.

EXPERIENCES : (Academic/Research)

- I have been selected in the editorial board of the “Journal on Power and Energy Engineering”, OJPEE published by International Foundation for Modern Education and Scientific Research (INFOMERS) in November 2009 (<http://www.infomesr.org/journals.html>).
- I am working as the Chief Investigator of a research project titled “Dual Fuel Performance of a Diesel Generator Using Compressed Natural Gas”. This research project funded by BUET was approved by CASR in July 2008. The project work involves the development of a portable low-pressure CNG systems, which will allow testing the performance of a 20 kW standby diesel generator in dual fuel mode replacing a major fraction of the diesel fuel with natural gas. The research work is presently under progress.
- Introduction of a new course in M.Sc programme of the Department of Mechanical Engineering. Use of alternative fuels like CNG in vehicles have reached a new era in Bangladesh, as it has become the 6th largest natural gas vehicle (NGV) vehicle user in the world. A need for a post graduate course regarding this emerging technology was being felt and such a course was developed blending the theoretical aspects and the applications in the industry. The course curriculum was reviewed by the BPGS, Faculty and finally the Academic council in August 2007. The course passes as ME 6175 : Alternative Fuels for Engines, was first offered by me in October 2007 – March 2008 semester of the post graduate programme.
- I have worked as BUET representative assigned by the vice chancellor BUET, in a four member committee for development of the curriculum of the Departments of – Mechanical Engineering, Mechanical and Production Engineering, Department of Industrial Engineering and Department of Mechatronic Engineering – for Ahsanullah University of Engineering and Technology (AUST). The committee has submitted the phase-1 and phase-2 reports in December 2008.
- Re-commissioning of the Twin-shaft demonstration Gas turbine GT-82 in Heat engine laboratory after Fourteen Years. The work involved – understanding the control circuit, problem identification, renovation of a number of transducers and components and making alternative arrangement for control logics. The GT unit received under a Japanese grant in 1993 had technical difficulties from the beginning, after re-commissioning in May 2007 it is being successfully used as a part of the GT demonstration and performance analysis under the course ME 404.
- I have worked as the Publication-Secretary of the Proceedings of ICME2007, the 7th International Conference of Mechanical Engineering, which was successfully published before the conference on 29-31 December 2007 at BUET. Three keynotes and 125 peer-reviewed papers from home and abroad were published in the conference proceedings.
- I have worked as the core trainer of the software Virtual Product Simulator (VPS) from FUJITSU corporation Japan, under the BUET-MEGA training program. Based on the 7 day training received in FUJITSU corporation Tokyo, from 3-14 July 2006, I developed a 16 week training course on the software. This training program was organised between July 2006 – January 2007, for selected BUET graduates. After successfully completing the software training 18 BUET graduates were recruited directly by Japanese companies for employment in 2007-2008.

- I have worked as the Publication-Secretary of the Proceedings of ICME2005, the 6th International Conference of Mechanical Engineering, which was successfully published before the conference on 28-30 December 2005 at BUET. Three keynotes and 125 peer-reviewed papers from home and abroad were published in the conference proceedings. The proceedings were made available both in paper bound and CD-ROM formats.
- I have worked as the Member-Secretary of the organising committee of ICME2003, the 5th International Conference of Mechanical Engineering, which was successfully arranged on 26-28 December 2003 at BUET. Such biannual conference is being held by the Department of Mechanical Engineering, BUET since 1995. The conference was attended by about 300 delegated from 11 countries of the world. About 120 peer-reviewed papers from home and abroad were presented in the conference. Being the member secretary of the conference I played a key role in coordinating the overall arrangement of the conference in details.
- Associate Editor, Journal of Energy and Environment, Center for Energy Studies, BUET, Dhaka, since January 1999. Two volumes of this Journal have already been published. First volume was published in November 1999 and the second volume in September 2002. The third volume is in the process of publication.
- Member, National Study Team for “Feasibility study of Co-generation Technology in Bangladesh”. This national study team was formed in 1998 to investigate the feasibility of adaptation of co-generation technology in various existing industries of Bangladesh. The team consisted of academicians from BUET, experts from UN-ESCAP and representatives of Industry and Bangladesh Government. Computer analysis was carried out with the data available regarding heat supply and power consumption of a number of plants. Suggestions were made regarding feasibility of co-generation technology for the plants studied.
- Chief Investigator of a research project funded by BUET titled: “Study of The Role of Small Diesel Engines in Rural Bangladesh During The Flood of 1998”, completed in 1999. This was one of the post-flood research projects taken up by BUET to study and evaluate the various aspects of the damage caused by the devastating flood of 1998 in Bangladesh. This project was particularly focused on the flood-time role of the small diesel engines widely used in rural Bangladesh. The functionality and alternate use of the engines in adverse situation was assessed in this survey-work as well as the damage estimations.
- Worked part-time as a System Analyst at the ‘Institute of Information and Communication Technology (IICT)’, BUET from May 2001 to April 2003. I designed and conducted a number of computer related courses for participants. These include – AutoCAD, Programming in C/C++, Introduction to PC Hardware, Introduction to MS-Office, Introduction to MS-Project and Introduction to web pages.
- I am in-charge of a team which maintains the departmental web pages at BUET web site since January 2001. Work involves – Collection of information, Updating web pages in a regular basis, Web page design and Co-ordination with the BUET web site.

TECHNICAL CONSULTANCY AND TESTING EXPERIENCE

- I have been appointed as the Technical Adviser (Mechanical) of BUET by the Vice Chancellor, in March 2009.
- I have worked as a member of the national team for selection of the - Engineering, Procurement and Consultation (EPC) contractor for Haripur 350 MW combined cycle power plant under Electricity Generation Company of Bangladesh (EGCB). The work of the team involved evaluation of the International Tender and negotiating with the foreign consultant team regarding the technical and other aspects of the project, reaching an agreement under the prevailing rules and regulations.
- I have been one of the core members of the design team for a 130 kW low temperature difference heat exchanger design and fabrication. The unit was designed and fabricated in BUET and installed with the 600 m³/h CNG compressor cooler at MONI CNG station at Mirpur, Dhaka.
- I have been one of the core members of the design team for a 1.5 ton/hour centrifuge used for drying processed salt. The unit was designed and fabricated in BUET and installed at Super Salts Ltd., Narayanganj.
- Team leader of the installation and commissioning phase of the R&D project of Department of mechanical engineering titled “Upgradation of 42 Salt Iodination Plants (SIPs) in Narayanganj District. Work in this project funded by Micro-Initiative (MI), Canada involved overall responsibility of installing and commissioning of 42 upgraded SIPs in various locations of Narayanganj. I also developed an alternative design of the iodine solution spraying mechanism- which was much more robust and cost effective which is successfully being used by the three largest salt factories since April 2006. I also made some modifications in the salt hopper mechanisms.
- I have worked as a team leader for dual fuel conversion of a number of diesel generators in various industries of Bangladesh between 2006-2008. The works included three 640 kVA machines in Jute mills, one 250 kVA machine in a Glass factory, one 380 kVA machine in a textile industry, one 185 kVA machine in a Garments industry and one 360 kVA unit in a Shipyard. The work involved – hands-on technical and economic feasibility study of units based on the local load pattern, Fabrication and Installation of a suitable dual fuel system and ensuring engine performance and safe operation.
- In-charge of - management, work distribution and remuneration allocation of all testing works of the department of mechanical engineering on behalf of Bureau of Research, Testing and Consultation (BRTC) of BUET, from January 2001 September 2003. Works include massive involvement regarding – Consultation and public relations with concerned client companies or

individuals, Allocation of Jobs to appropriate teachers by optimizing job-relevance and work load balance, Co-ordination between the client and the teachers concerned, Co-ordinating respective laboratory schedules and overall technical co-ordination and management of the testing services of the department. I have developed a computer software for automated distribution of remuneration among the teachers and technical staff of the department, according the existing rules and framework of the department.

- Computer Aided Design and Drafting (CADD) Consultant, Designing of Central Air-Conditioning System for 15 Storied Building of the Head Office, Titas Gas Transmission and Distribution Co. Ltd. Dhaka, Bangladesh, 1999.
- Database Analysis Consultant, “Technical Assessment of 267 Salt Iodation Plants in Eight Salt Producing Zones of Bangladesh”. survey work carried out by dept. of ME, BUET in association with UNICEF and BSCIC.
- Involved in development and modification of a four-stroke diesel engine run locally fabricated three-wheeler vehicle. Works included Chassis design modification and consultation during fabrication.
- Involved in the standardization test procedures for fifteen different models of automobiles (to be purchased by different departments of the government), carried out by the Department of Mechanical Engineering, BUET in 1998. Works included design and fabrication of a separate fuel supply setup to be used for automobiles with Electronic Fuel Injection (EFI) systems.
- Worked as the university consultant in a government committee formed for emission/condition assessment of several hundred disputed vehicles at Benapole land port at Bangladesh-India border, Nov 2001.
- Involved in various testing conducted by the Dept. of mechanical Engineering BUET, Dhaka which includes - Performance tests of vehicles, engines, pumps and electric motors. Standard tests for different fuel and lubricating oil properties. Dimension and property test of various mechanical products according to standards for different organizations through out the country.

SPECIAL TRAINING/COURSES ATTENDED

- Completed a ten day training program on Virtual Product Simulator (VPS) software by FUJITSU Company Ltd. in Tokyo, Japan, 3-14 July 2006. The training was arranged as a collaboration program between BUET, FUJITECH and MEGA corporation in Japan for training up BUET graduates in Bangladesh targeting the Japanese job market.
- Training workshop on “Implementation of Montreal Protocol in Bangladesh”, organised by Dept. of Environment, Ministry of Environment and Forestry, Dhaka, 24 March 2006.

- Short course on “Road Vehicle Dynamics” organised by the department of mechanical engineering, Islamic University of Technology (IUT), Dhaka, 13-17 October, 2002.
- One week workshop on Computer Aided Design and Manufacturing (CAD/CAM), held at AIT, Thailand, during 21-26 July 1998.
- Short course on “Small Hydro Power” organised by the Center for Energy Studies, BUET, 6-9 May, 1998.

OTHER ACTIVITIES :

I am working as the Chief Mechanical Advisor to the Vice Chancellor of BUET since Nov 2009.

I have worked as the chief coordinator as one of the main co-ordinators in arranging the admission test of BUET 2008-2009. The work involved overall co-ordination and responsibility sharing of almost all the activities of the arrangement of the admission process of BUET. The work load included academic, administrative and logistical involvements for a period of about four months.

I worked part time as a provost, the chief executive post, of ‘Nazrul Islam Hall’, a major residential facility of the university, where about 300 students are resident, from January 2006 – January 2010.

I worked as the chairman of a number of committees for arranging the recruitment of a number of staff in – Department of Mechanical Engineering, Nazrul Islam Hall, Auto-Shop BUET, CAD laboratories and Engineering office.

I have worked as chairman and as a member in a large number of enquiry committees – involving disputes related to different teachers, staff and students of the university.

I have worked as a member for two committees for fixation of pay scale and gratuity management of university staff.

I am the teacher-in-charge of the Departmental Student’s Association, which organises various academic and non-academic activities of the students since 1997.

I like music and practice it as a hobby.