List of publications (Journal Papers / Conference Proceedings / Research Reports/ Presentation) of
of
Professor Dr. M. Mahbubul Alam

Published Thesis, Research works and Reports


3. Alam, M. M., “Wind Power for Low-lift Pumps”, in the Department of Engineering, University of Reading, Whiteknights, Reading RG6 2AY, England from October 1990 to March 1991. Published as a research report as a part requirement for transfer of Higher Degree registration to Ph.D.


Published Journal Papers, Proceedings and Presentations


Research Background
of
Professor Dr. M. Mahbubul Alam

Background of my wind energy research:
The geographic location of Bangladesh combined with its climate, give rise to the occurrence of severe windstorm and/or flood in almost every year. Due to extreme population density, lack of opportunity and the disastrous situation of the country encouraged me (being a graduate from BUET) to look for new and renewable sources of energy and perform research in this field of study.

The Department of Mechanical Engineering at BUET, where I have been working, is one of its kind, which has been serving as the center of excellence for renewable energies for long time. With the present situation of world-wide energy situation, wind energy became one of the top priority subjects in the curricula both in undergraduate and post graduate levels of teaching here at BUET. Therefore, I am engaged in teaching and research related to various wind energy applications after having relevant academic achievements in this field. During my Master’s degree program, I studied and analyzed various forces that are involved in horizontal axis wind turbines and in my Ph.D program, I completed the research on various types of water pumps operated by wind energy for low-lift applications theoretically and experimentally. The University of Reading in England, one of the leading universities in the field of renewable energy provided excellent facilities for my Ph.D program. During that time I had opportunities to attend International conferences where I discussed some of our problems with distinguished researchers and scientists. In addition, I have published some research papers, one of which is published with co-authors P. T. Smulders and J. D. Burton, presented at the European Wind Energy Conference, Amsterdam, October 14-18, 1991. Moreover, along with other courses, I am teaching the Introduction to Mechanical Engineering course for more than 10 years. This is the basic Mechanical Engineering Course in which main emphasis is given to (i) Internal Combustion Engines including 4 & 2 stroke Petrol & Diesel Engines and Gas Turbines (ii) Pumps & Compressors (iii) Refrigeration & Air Conditioning. Based on this course, a completely fresh student of Mechanical Engineering discipline could make a choice of his/her target in which field he/she would become an expert in future.

Some of completed and on going researches
Of
Professor Muhammad Mahbubul Alam

1. Became the Chief Investigator & Project Coordinator of “Wind Energy Resource Mapping (WERM) Project for Bangladesh”, a 4 year project (during 2000-2004) based on some specified locations of Bangladesh; to be jointly carried out by LGED and funded by UNDP. (Under this project, Nebula Techno-Solutions Ltd completed 20 Installations of Towers and Data-loggers throughout the country.)


3. Trade Marks of wind-energy operated water pump named as “Alam Amin Hawai-Pump”, from The Trade Marks Office, Dhaka, under the Trade Marks Act 1940, by the Government of the People’s Republic of Bangladesh (No. 62233).


The Wind Energy Resource Mapping (WERM) project for Bangladesh:
After completing my higher studies in the relevant field of wind energy, I started to find out the problems associated with the failure of the wind energy projects in our country, Bangladesh. I found that the most common reason for failure of those earlier wind energy projects was that they were installed without appropriate wind energy resource survey. It was a common practice to design such wind energy conversion systems (WECS) based on average wind speed available from meteorological or other departments and used a wind turbine directly imported from a foreign country.

With a view to improve the situation, I initiated a project as a part of a post-Graduate research study for wind speed measurement at a place near Dhaka, the Capital of Bangladesh. Continuous wind speed data were recorded for a period of two years using a data-logger in which several statistical programs were set. From the available data, different wind speed distribution pattern and Weibull parameters (which are normally used to characterize the wind regime) were determined. The results of this research were found most suitable for designing appropriate WECS (regarding selection of stand-alone or hybrid system and choosing the type and size of the wind turbine).

In a forum of different research organizations and government authorities, I explained the need for further study on proper assessment of the wind energy resources and submitted a detail technical and financial proposal. Finally, all concerned authorities accepted my proposal, titled as “Wind Energy Resource Mapping (WERM) project for Bangladesh” and made me the Chief Investigator and Project Coordinator. For other detail visit website: www.reein.org/wind/werm.htm

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<thead>
<tr>
<th>DETAILED TASKS ASSIGNED</th>
<th>WORK UNDERTAKEN</th>
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<tr>
<td><strong>Project planning and highlighting the importance of the project</strong> – (Completed)</td>
<td><strong>Project Name:</strong> Wind Energy Resource Mapping (WERM) for Bangladesh</td>
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<tr>
<td><strong>Recruitment of different staffs and assigning respective jobs and scheduling</strong> - (Completed)</td>
<td><strong>Position held:</strong> Chief Investigator &amp; Project Coordinator</td>
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<tr>
<td><strong>Designing hand held portable apparatus for preliminary survey towards selection of most resourceful sites</strong> - (Completed)</td>
<td><strong>Brief Note:</strong> It is the first of its kind in Bangladesh, jointly undertaken by the Local Government Engineering Department (LGED) of Bangladesh, BUET and another Institute situated at the coastal region. One of the objectives of the project is to build a reliable wind energy database for the whole country, based on which future wind energy conversion system projects would be carried out successfully.</td>
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<td><strong>Preliminary site surveying using portable equipment</strong> - (Completed)</td>
<td><strong>Funding:</strong> About ¼ million US Dollars financed by UNDP.</td>
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<td><strong>Selection of Equipments/Machinery for automated Logging of Wind Data and floating of Tender</strong> (Completed)</td>
<td><strong>Location:</strong> Some specified selected sites distributed throughout the country.</td>
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<tr>
<td><strong>Coordinating and conducting meetings with different relevant groups</strong> – (Continuing)</td>
<td><strong>Duration:</strong> July 2000 to June 2004 in its 1st phase</td>
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<td><strong>Supervising Installation of Wind Speed Monitoring Stations throughout the selected sites and administering the overall situation including Data Recording and Transferring</strong> - (to be started after equipment procurement)</td>
<td><strong>For details</strong> visit the website: <a href="http://www.reein.org/wind/werm.htm">http://www.reein.org/wind/werm.htm</a></td>
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**Preparation of detailed specification for buying educational equipment for schools and Colleges,**

**Comparing various companies for their Responsiveness**

**Verifying the Equipments/Machinery with some administrative works**

| **Project Name:** Higher Secondary Education Project | **Position held:** Expert for Technical Committee |
| **Funding:** Ministry of Education, Govt. of Bangladesh | **Location:** Throughout the country |
| **Duration:** July 1997 to date |