

# Md Zahidul Haque



## RESEARCH INTEREST

Advanced Manufacturing, Renewable Energy, Automation and Robotics in Modern Manufacturing Systems

## EDUCATION

2017 - 2023 Bachelor of Science in Mechanical Engineering at **Rajshahi University of Engineering and Technology (RUET)** (GPA: 2.88/4.0)

## TEST SCORE

2024 **GRE** (Score: 317, Quant: 160, Verbal: 157, AWA: 4)

## RESEARCH EXPERIENCE

**Review & Economic Analysis of a Solar Powered Water Pumping System for Crop Irrigation** 2023

This is a research paper that evaluates the feasibility and performance of a solar powered water pumping system (SPWPS) for irrigation purposes. The paper compares the SPWPS with a conventional diesel powered water pumping system (DPWPS) in terms of technical, environmental, and economic aspects. The paper also proposes a mathematical model to estimate the cost of the SPWPS based on the irrigation requirements and solar radiation data. The paper concludes that the SPWPS is a viable and sustainable alternative to the DPWPS, especially in remote areas where grid electricity is unavailable or unreliable. Supervisor: Dr. Mohammad Rofiqul Islam, Professor, Mechanical Engineering, Rajshahi University of Engineering and Technology

**Integration of Geothermal and Run-of-River Hydroelectric Systems: A Hybrid Renewable Energy Model (Under Review)** 2024

This research explores the innovative integration of geothermal and run-of-river hydroelectric systems to create a hybrid renewable energy model that addresses the challenges of energy intermittency and sustainability. By combining geothermal energy's stable baseload with the seasonal adaptability of run-of-river hydroelectricity, the study demonstrates a balanced approach to renewable power generation. Utilizing river water for cooling enhances thermal efficiency, reduces thermal pollution, and lowers infrastructure costs through shared resources. The research also provides a comprehensive analysis of site selection, system design, heat exchanger optimization, and environmental benefits, particularly the preservation of aquatic ecosystems through controlled water return. Emphasizing grid stability and economic feasibility, the study identifies this hybrid model as a viable solution for regions rich in geothermal and hydrological resources, offering a sustainable pathway to reliable and low-carbon energy generation.[Access the paper here](#)

## PROFESSIONAL EXPERIENCE

**Bangladesh Power Development Board (BPDB)** Feb 2022 - March 2022

1-month-long Industrial Attachment in Bangladesh Power Development Board (BPDB), An enterprise of the Ministry of Power, Energy and Mineral Resources, Government of the People's Republic of Bangladesh. Gained detailed knowledge of power generation, transmission, and Company distribution systems. Visited and observed the operation and maintenance of the Barapukuria Coal Mining Limited and the Barapukuria Coal Power Plant in Dinajpur.

## PROJECTS

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### **Automatic street light system based on Light-Dependent Resistor (LDR)** 2019

Designed and implemented a circuit that uses an LDR and a transistor to control the switching of street lights based on the ambient light intensity. The circuit can save energy and reduce maintenance costs by automatically turning on and off the street lights at the appropriate time. The project involved using Arduino, LED, LDR, resistor, relay, and breadboard.

### **Design and fabrication of a hydraulic ram pump** 2018

Developed and tested a device that uses the energy of flowing water to pump water to a higher elevation without any external power source. The project involved using PVC pipes, valves, springs, and fittings. The pump can be used for irrigation, domestic water supply, or rural development.

### **Automatic braking system using fuzzy logic** 2017

Implemented and simulated a system that can automatically apply brakes to a vehicle based on the distance and speed of the obstacle ahead. The project involved using MATLAB, Simulink, and Fuzzy Logic Toolbox. The system can improve road safety, reduce human error, and prevent collisions.

### **Solar-powered refrigeration system using adsorption technology** 2017

Designed and constructed a prototype of a refrigeration system that uses solar energy to produce cooling effects. The project involved using activated carbon, methanol, copper tubes, and a solar collector. The system can be used for food preservation, medical applications, or air conditioning.

## TECHNICAL SKILLS

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<b>Software-</b>	Solidworks, Auto-CAD (2D, 3D), Ansys Workbench, Ansys Fluent, MS Office Tools
<b>Programming Languages-</b>	Python, C++

## LANGUAGES

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<b>English-</b>	Proficient
<b>Bengali-</b>	Native