R.R.M. SALAHUDDIN

01781405393 • salahuddin@iut-dhaka.edu • https://www.linkedin.com/in/salahuddin15/ • https://salahuddin03.github.io

Education

Islamic University of Technology
BSc, Mechanical Engineering, CGPA: **3.44** out of 4.00
Thesis: Nov'19 – Mar'21 [Techno-Economic and Environmental Feasibility Analysis of Solar Water Heating System for A Textile Industry in Bangladesh]

Research Experience

Thesis: Techno-Economic and Environmental Feasibility Analysis of Solar Water Heating System for A Textile Industry in Bangladesh

- Conducted an economic and environmental feasibility study of solar thermal energy in Bangladesh's textile industry.
- Researched and analyzed the viability of a solar industrial process heating (SIPH) system for the textile industry, taking into account both its short- and long-term environmental and economic benefits.
- Conducted three important analyses: a thermal analysis to look at the impact of collector mass flow rate and inlet temperature on exit temperature and overall heat loss coefficient; an economic analysis to calculate the SIPH system's payback period and percentage energy savings; and an environmental analysis to evaluate the reduction of carbon dioxide emissions.
- Generated insightful findings about the possibilities of solar water heating systems for environmentally friendly business practices in Bangladesh.

Fire Dynamic Simulation

- Building design using SketchUp and fire behavior simulation using PyroSim were both required for the project.
- In order to simulate and analyze a fire, the building's design was first generated in SketchUp then loaded into PyroSim.
- PyroSim made it possible to analyze the building's fire safety procedures in great depth, pointing out potential improvement areas and assisting with well-informed design and construction choices.

Hybrid Energy System for Electricity Generation in Khagrachari

- The project's goal was to create a hybrid energy system in Khagrachari that would generate power using a combination of solar, wind, and diesel energy.
- The project involved a number of steps, including determining the community's energy requirements, choosing suitable components, and using HOMER software to optimize the system's setup and assess its viability financially.
- The final design showed notable advances in terms of energy efficiency, cost effectiveness, and sustainability, assuring a dependable and long-lasting source of electricity for the neighborhood.

Research Interest

Thermo-Fluids, Computational Mechanics, **Microfluidics, Energy Harvesting and Storage**, **NEMS, MEMS, Advanced Cooling Techniques**, **Combustion and Fire Dynamics, Automotive Engineering,** Quantum Engineering, Biomechanics, Additive Manufacturing, Airspace Engineering

Skills

Technical	MATLAB, Python, LaTeX, Microsoft Office, HTML
Design and Simulation	Solidworks, SketchUp, Adobe Creative Cloud, Homer pro, PyroSim, Pathfinder, Ansys, Trnsys
General	Time Management, Critical Thinking, Teamwork

Projects

Conveyor belt and object shape detection

- To improve material handling processes, an automated conveyor belt system with object recognition and form analysis capabilities was developed.
- Convolutional neural networks were used to categorize objects, optimize material flow, and increase safety through hazard identification and automatic belt stopping.
- demonstrated the system's potential for a range of industrial applications by handling several products efficiently in a variety of sizes and forms.

Generation of Small amount of Electric Energy by using Noise (Sonic Energy)

- Piezoelectric technology makes use of specific materials that, when put under mechanical stress, can generate an electric charge, making it a possible source of renewable energy.
- A piezoelectric material, usually a crystal, is sandwiched between two electrodes in a piezoelectric device, which produces electricity from noise by separating the positive and negative charges in the material.
- Although this technique only produces a modest amount of electrical energy, it presents an inventive and environmentally friendly form of energy production that may prove valuable in a variety of applications.

Language

- Bangla- Mother Tongue
- English- Advanced level

Internship

Operation and Maintenance of Thermal Power Plant

Bangladesh Power Development Board, Rajshahi Training Centre, Bangladesh

- participated in a thermal power plant operating and maintenance internship.
- visited numerous power plants to observe how they were maintained and operated.
- acquired training in fire control management and hands-on experience working with particular power plants, including the Katakhali 50 MW peaking power plant, the Barapukuriya 525 MW Thermal Powerplant, and the Baghabari 171 MW Power station.
- learned about the Amnura Grid Substation's function in the area's power distribution and its significance.

Extra-Curricular activities

- Organizer, Robotic Fight Division, Mecceleration (Mechanical Festival), IUT
- Battery recycling (led acid battery)
- CNC Plotter design, IMeche IUT student chapter
- Photography: Executive member, IUT photography Club

Reference

Sayedus Salehin
Assistant Professor
Department of Mechanical and Production Engineering,
IUT, Bangladesh
Email: sayedus@iut-dhaka.edu

Dr. Md. Rezwanul Karim
Assistant Professor
Department of Mechanical and Production Engineering,
IUT, Bangladesh
Email: rezwanul@iut-dhaka.edu