



## Muhammad Umer

📍 **Home** : Post office Ugoki (51050) Sialkot, Punjab, Pakistan, 51050, Sialkot, Pakistan

✉ **Email**: [umermughal614@gmail.com](mailto:umermughal614@gmail.com) ☎ **Phone**: (+92) 3314405397

**Gender**: Male **Date of birth**: 08/06/1997 **Nationality**: Pakistani

### RESEARCH INTERESTS

#### Renewable Energy / Renewable Energy Technologies

Solar Photovoltaic Energy

Solar Thermal Energy

#### Battery Management System

#### Smart Grid Technologies

#### Smart EV Charging Technology

### EDUCATION AND TRAINING

[ 2019 – 2022 ]

#### Master of Science in Electrical Engineering

##### *University of Gujrat*

**Address**: Gujrat, Pakistan

**Field(s) of study**: Engineering, manufacturing and construction

**Final grade**: 3.82/4.00

**Thesis**: SIMUALTION ANALYSIS OF 5KW EXPANSION SOLAR ASSISTED VAPOUR COMPRESSION AIR CONDITIONING SYSTEM

- Understanding of the basics of simulation and modeling using MATLAB and TRNSYS software.
- Familiarity with the features and capabilities of both MATLAB and TRNSYS software.
- Knowledge of creating and running simulations, including inputting data and analyzing results.
- Understanding of how to use MATLAB and TRNSYS for various applications such as energy systems, control systems and other engineering systems.
- Familiarity with the use of different optimization techniques.
- Algorithms to improve the performance of the simulation results.
- Understanding of renewable energy technologies such as solar, wind, and hydropower.
- Knowledge of energy storage systems and grid integration of renewable energy sources.
- Ability to design, analyze, and optimize renewable energy systems.

[ 2015 – 2019 ]

#### Bachelor of Science in Electrical Engineering

##### *University of Gujrat*

**Address**: Gujrat, Pakistan

**Field(s) of study**: Engineering, manufacturing and construction

**Final grade**: 3.48/4.00

**Thesis**: Auto Power Control System using Arduino using Multiple Power Inputs

## WORK EXPERIENCE

[ 11/2022 – Current ]

### Junior Engineer

#### *Pioneer Electric Systems Company ( PESCO )*

**City:** Gujrat

**Country:** Pakistan

- Project Management.
- Engineering Design inspection.
- Electrical Troubleshooting.
- Provides general, entry-level support to the engineering department.
- Verifies and tests assigned metrics on projects.
- Enters test results into the quality control database.
- Identifies potential areas of product improvement; recommends and assists with developing appropriate solutions.

[ 01/2021 – 10/2022 ]

### Senior Research Assistant

#### *University of Gujrat Hafiz Hayat Campus*

**City:** Gujrat

**Country:** Pakistan

#### **Design of 10KW on Grid System integrated with Solar Thermal Air Conditioning System**

1. Design, develop and implement simulation models for solar thermal-assisted air conditioning systems using advanced software and programming languages.
2. Collaborate with the research team to develop new experimental setups and test protocols for solar thermal-assisted air conditioning systems.
3. Conduct laboratory experiments and field tests to validate simulation models and gather data for analysis.
4. Analyze and interpret data to identify trends and patterns and present findings to the research team.
5. Develop and maintain detailed documentation of simulation models, experimental setups, and test protocols.
6. Design and fabricate solar thermal-assisted air conditioning system prototypes and components.
7. Test and evaluate the performance of solar thermal-assisted air conditioning systems, including measurement of thermal efficiency, energy consumption, and system behavior.
8. Provide technical support to other research team members, including training on simulation models and experimental setups.
9. Participate in the design and development of new solar thermal-assisted air conditioning system technologies and products.
10. Contribute to the preparation of research papers, reports, and presentations to share research findings with the scientific community and other stakeholders.

[ 07/2019 – 12/2020 ]

### Research Assistant

#### *University of Gujrat Hafiz Hayat Campus*

**City:** Gujrat

**Country:** Pakistan

#### **Design of 10KW on Grid System integrated with Solar Thermal Air Conditioning System**

1. Assist senior research staff in designing, developing, and implementing hardware and software components for solar thermal-assisted air conditioning systems.
2. Conduct laboratory experiments and field tests under the guidance of senior research staff to gather data and validate simulation models.
3. Assist in fabricating and assembling solar thermal assisted air conditioning system prototypes and components.
4. Help maintain and organize laboratory equipment, experimental setups, and test data.

5. Assist in preparing research papers, reports, and presentations by collecting, analyzing, and summarizing data and results.

## PUBLICATIONS

[ 2022 ]

### [Simulation Analysis of Solar Thermal Water Heating System for Climate of Lahore](#)

**Reference:** International Conference on Emerging Trends in Electrical, Control and Telecommunication Engineering

**M. Umer**, S. Dilshad, A. Akbar, and N. Abas, "Simulation Analysis of Solar Thermal Water Heating System for Climate of Lahore," in *2022 International Conference on Emerging Trends in Electrical, Control, and Telecommunication Engineering (EECTE)*, Dec. 2022, pp. 1–6, doi: 10.1109/EECTE55893.2022.10007346.

**Link:** <https://ieeexplore.ieee.org/document/10007346>

### **Thermal Performance Analysis of Forced Circulation Flat Plate Solar Water Heater using TRNSYS [ Submitted ]**

**GHG Emissions Estimation and Assessment Towards Low Carbon Future: A case study for Pakistan [ Submitted ]**

## CONFERENCES AND SEMINARS

[ 02/12/2022 – 04/12/2022 ]

### **International Conference on Emerging Trends in Electrical, Control, and Telecommunication Engineering (EECTE)**

Lahore, Punjab, Pakistan

DOI: [10.1109/EECTE55893.2022](https://doi.org/10.1109/EECTE55893.2022)

**Link:** <https://ieeexplore.ieee.org/xpl/conhome/10007062/proceeding>

## LANGUAGE SKILLS

**Mother tongue(s):** Urdu

**Other language(s):**

**English**

**LISTENING** C1 **READING** C1 **WRITING** C1

**SPOKEN PRODUCTION** C1 **SPOKEN INTERACTION** C1

## DIGITAL SKILLS

TRNSYS (Advanced level) | Origin Pro | REFPROP | Social Media | Microsoft Office | Microsoft Word | Google Drive | Google Docs | Microsoft Excel | Basic programming (Visual Basic, C++) | MATLAB

## HONOURS AND AWARDS

**The Punjab Educational Endowment Fund Awarding institution:** Government of Punjab, Pakistan

(2015 - 2019)

PEEF (Punjab Educational Endowment Fund) scholarships are highly competitive and awarded to students with exceptional academic performance. Being awarded a PEEF scholarship for your entire undergraduate degree is a significant achievement and demonstrates your dedication to your studies. The scholarship will not only financially support you throughout your degree but also serve as a motivation to maintain your good academic standing.

## **CERTIFICATIONS**

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**Pakistan Engineering Council**

**Solar Energy and Electrical System Design. [University at Buffalo]**

**Photovoltaic Systems. [Technical University of Denmark]**

**Microsoft Office Specialist.**