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Married

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**References:** Available upon request
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**4th INTERNATIONAL CONFERENCE ON RENEWABLE ENERGY RESEARCH AND APPLICATIONS (ICRERA 2025)**
**October 27–30, 2025, Vienna, AUSTRIA**

# ASHRAF MOHAMED ZAKI JAHLAN


## Assistant Lecturer

*Minia University-Faculty of Engineering- Mechanical Power and Energy Department.*


**EDUCATION**

**Minia University-Faculty of Engineering- Mechanical Power and Energy Department**
2007 - [To] - 2012
[B.SC, Mechanical Power & Energy Dept. *I completed my bachelor's degree in mechanical Power and Energy engineering with very good [2012 class, first rank with Hons (84.22%)*]

**Minia University-Faculty of Engineering-Mechanical Power and Energy**
2012 - [To] - 2017
I obtained my MSc. degree in the field of Refrigeration and Air Conditioning (Indirect Evaporative Cooling) on 15 of August 2017

**King Fahd University of Petroleum and Minerals 9/2022 [to] until now**
PhD candidate in Mechanical Engineering Department

## WORK EXPERIENCE

**Minia University, Demonstrator**
2012–[To] - 2017

**Minia University, Assistant Lecturer**
2017–[To]-Until Now

**Job-related skills**
I have about 6 years of teaching many courses in Faculty of Engineering, Minia University from November 2012 until the moment:
•Refrigeration and Air Conditioning (Specialization) •Cryogenics
•Thermodynamics •Renewable Energy •Fluid Mechanics •Hydraulic machines
•Heat transfer •Industrial Ventilation •Mechanical Drawing using Computer

**Research Interest**
Refrigeration and Air conditioning Processes, Prediction of Energy consumption for Buildings (ML), Energy storage, HVAC- CFD Modeling


**Summary:**
**Ashraf Mohamed Zaki Jahlan** is a dedicated academic and researcher with a strong foundation in mechanical power and energy engineering, reinforced by over a decade of teaching and research experience at Minia University and ongoing Ph.D. studies at King Fahd University of Petroleum and Minerals. His work demonstrates a deep commitment to advancing energy efficiency, HVAC optimization, and the application of machine learning in thermal systems. Through numerous publications in reputable journals and continuous engagement in both experimental and computational research, he has contributed significantly to the fields of indirect evaporative cooling and sustainable energy systems. His professional journey reflects a balance of academic excellence, innovative research, and a passion for developing solutions that address modern energy and environmental challenges


**Paper abstract:**
**Paper ID**: 361
**Paper title**: Machine Learning–Based HVAC Optimization for Energy-Efficient Air Conditioning in Office Buildings.


Thirty percent or more of China's primary energy comes from buildings. Future sustainable development will need to lower building energy use through increased energy efficiency and the application of innovative technology. To estimate energy usage in office buildings, this research compares two machine learning regression models: Multilayer Perceptron and K-nearest Neighbor. The study uses meteorological information, building attributes, and historical data on energy use as input elements for model training. The performance of both models is evaluated using metrics such as Mean Absolute Error (MAE), Root Mean Square Error (RMSE), and coefficient of determination (R-squared). The study also looks at how different elements like building location, size, and occupancy patterns affect each model's ability to forecast the future. This study evaluates four regression tree models: Extreme Gradient Boosting (XGBR), Extra Trees Regressor (ETR), CatBoost Regressor (CatBR), and Voting Hybrid Regression (VHR) using two years of real meteorological and office building data. Model performance was assessed through multiple statistical indicators. Results show strong predictive accuracy: XGBR ($R^2$ = 0.9868), ETR (0.9934), CatBR (0.9923), and VHR (0.9925). VHR achieved RMSE = 46.73, MAE = 4.84, and MRE = 0.0897. ETR demonstrated the best overall performance for HVAC energy forecasting.