

Ahsan AHMED
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Objective:

“To pursue high-quality research in the field of engineering in a growing and dynamic organization which would provide me local and global opportunities to provide innovative, efficient and effective solutions to the society and refine raw student into a productive researcher.”

Qualification:

- **Master in Energy and Plant Management**
NED University of Engineering and Technology, Karachi
CGPA: 3.94 (1st Position), 2018
- **Bachelor in Mechanical Engineering**
NED University of Engineering and Technology, Karachi
CGPA: 3.521, 2014
- **Higher School Certificate (H.Sc. Pre. Engg.), Intermediate Board, Karachi**
College of Emerging Technologies, Karachi. **Percentage: 84%**, A-1 Grade
- **Secondary School Certificate (Science Group), Secondary Board, Karachi**
Light House Public School, Karachi. **Percentage: 88%**, A-1 Grade

Academic Working Experience:

- **NED University of Engineering & Technology**
(December 2018 – To Date)

Currently working as a Lecturer in the Department of Mechanical Engineering, NED University of Engineering & Technology (NEDUET), Karachi, Pakistan.



Courses Taught:

Taught the following courses to the regular and backlog students of the postgraduate and undergraduate programmes of NED University of Engineering & Technology:

- ✓ ME-562 Photovoltaic Systems (Theory)
- ✓ ME-530 Maintenance Engineering (Theory)

- ✓ MF-303 Applied Economics for Engineers (Theory)
- ✓ ME-214 Computer Programming and Applications (Theory and Practical)
- ✓ ME-217 Elements of Machine Dynamics and Design (Theory)
- ✓ ME-224 Internal Combustion Engines (Theory)
- ✓ ME-207 Computer Programming & Graphics (Theory)

Students' Feedback:

Achieved cumulative ISO Students' Feedback Ratings of 9 (out of 10) in both postgraduate and undergraduate programmes of the Department of Mechanical Engineering, NEDUET.

Co-supervised Master Thesis / Independent Study Project (ISP):

Co-supervised following master thesis / independent study project (ISP) in the Department of Mechanical Engineering:

- ✓ Assessment of Net Energy Contribution To buildings By Rooftop Photovoltaic Systems In Karachi, Pakistan.
- ✓ Modeling and Performance Evaluation of Bi-Facial Photovoltaic System.

Supervised Final Year Projects (FYP):

Supervised following FYP in the Department of Mechanical Engineering:

- ✓ Modeling, analysis and fabrication of portable solar photovoltaic system
- ✓ Development of hybrid renewable energy based solutions using wind, solar and batteries for sustainable power generation and transmission capability of congested networks
- ✓ Design & analysis of hybrid photovoltaic thermal water collector
- ✓ Designing of vapor absorption chiller for waste heat recovery from engine jacket water system
- ✓ Designing of three wheeler electric vehicle

Grants:

Following are the details of some of my major fundings/grants:

S. No.	Title	Awarding Agency / Programme	Role
1	Assessment of Net Energy Contribution to buildings by rooftop photovoltaic systems using GIS in Karachi, Pakistan	MoST Endowment Fund (7 th Cycle)	Co-PI
2	Introduction of Innovative Practices and Methodologies for Effective Teaching and Industry-Academia Linkages in Pakistan and Malaysia (GetInnovative4Impact)	European Union Erasmus+ Programme : Capacity building (higher education)	Administrative Role
3	Designing of three wheeler electric vehicle	Gresham's Eastern Pvt. Ltd., Dice Foundation and Ignite NGIRI	Co-Supervisor

International Peer-Reviewed Journal Publications:

Following are my recent publications in international peer-reviewed journals:

- ✓ Asad A. Naqvi, Talha Bin Nadeem, **Ahsan Ahmed**, and Faaz Ahmed Butt. "Effective Utilization of Solar Energy for the Production of Green Hydrogen from Photovoltaic Powered Electrolyzer.", Volume 52, Issue no. 1, 2024, Journal of Testing and Evaluation. <https://doi.org/10.1520/jte20230173>.
- ✓ Asad A. Naqvi, **Ahsan Ahmed**, Talha Bin Nadeem, Lehar Asip Khan, and Inam Ul Ahad. "Energy and stress analysis of a hybrid photovoltaic thermal module.", Volume 47, 2023, Case Studies in Thermal Engineering. <https://doi.org/10.1016/j.csite.2023.103114>
- ✓ **Ahsan Ahmed**, Talha Bin Nadeem, Asad A. Naqvi, Mubashir Ali Siddiqui, Muhammad Hamza Khan, Muhammad Saad Bin Khalid, and Syed Muhammad Ammar, "Investigation of PV utilizability on university buildings: A case study of Karachi, Pakistan", Volume 195, 2022, Renewable Energy. <https://doi.org/10.1016/j.renene.2022.06.006>.
- ✓ Ayman Alazazmeh, **Ahsan Ahmed**, Mubashir Siddiqui, and Muhammad Asif, "Real-time data-based performance analysis of a large-scale building applied PV system." Volume 8, 2022, Energy Reports. <https://doi.org/10.1016/j.egy.2022.11.057>
- ✓ **Ahsan Ahmed**, Asad A. Naqvi, Talha Bin Nadeem, and Muhammad Uzair, "Experimental investigation of dust accumulation on the performance of the photovoltaic modules: A case study of Karachi, Pakistan", Volume 57 (05), 2021, Applied Solar Energy. <http://dx.doi.org/10.3103/S0003701X21050029>.
- ✓ Asad A. Naqvi, **Ahsan Ahmed**, M. Jamal, A. Majeed, A. Khizar, B. Shaheer, "Performance Evaluation of Hybrid PVT Air Collector. A Comparative Approach", GMSARN International Journal, Volume 16 (02), 2022. pages: 121-127
- ✓ Asad A. Naqvi, Talha Bin Nadeem, and **Ahsan Ahmed**, "Designing of an off-grid Photovoltaic system for a remote location", Tecciencia, Volume 16 (31), 2021. <http://dx.doi.org/10.18180/tecciencia.2021.31.1>.
- ✓ Asad A. Naqvi, Talha Bin Nadeem, **Ahsan Ahmed**, Muhammad Uzair and S. Asad Ali Zaidi, "Techno-economic design of grid-tied PV system for a residential building", Advances in Energy Research, Volume 08 (01), 2021, pages: 59-71. <http://doi.org/10.12989/eri.2022.8.1.059>
- ✓ Asad A. Naqvi, Talha Bin Nadeem, and **Ahsan Ahmed**, "Efficiency improvement of photovoltaic module for air cooling", Applied Solar Energy , Volume 57 (06), 2021.
- ✓ Mubashir Ali Siddiqui, Muhammad Uzair Yousuf, Muhammad Kashan Rashid, and **Ahsan Ahmed**. "On Probabilistic Assessment of Exergy Analysis of a Wind Turbine for Optimum Performance". Transactions of the Canadian Society for Mechanical Engineering, 2021. <https://doi.org/10.1139/tcsme-2021-0122>.
- ✓ Talha Bin Nadeem, **Ahsan Ahmed**, Asad A. Naqvi, Muhammad Saad, Azan Ali Abbasi, Syed Muhammad Usama Arshad, and Farooq Ahmed, "Designing of heating, ventilation, and air-conditioning (HVAC) system for workshop building in hot and humid climatic zone using CLTD method and HAP Analysis - A comparison", Arabian Journal for Science

and Engineering, Volume 47, pp. 9019-9041, 2022. <https://doi.org/10.1007/s13369-021-06428-3>.

- ✓ Asad A. Naqvi, **Ahsan Ahmed**, Talha Bin Nadeem, Talha, Muhammad Hamza Tariq, Rayyan Ahmed Abbasi, and M. Ahmed Raza Siddiqui, “An effective and simplified method to select the working fluid for waste heat recovery based Organic Rankine Cycle”, TECCIENCIA, Volume 17 (33), pp. 23-33, 2022.
- ✓ Talha Bin Nadeem, Asad A. Naqvi, and **Ahsan Ahmed**, “Suitable Site Selection for Ocean Thermal Energy Conversion (OTEC) systems – A case study for Pakistan”, TECCIENCIA, Volume 17 (33), pp. 35-48, 2022.

International Peer-Reviewed Conference Publication:

Following are my recent publications in international peer-reviewed journals::

- ✓ **Ahsan Ahmed**, Musab Salim Khan, Faaiz Alavi, Hassaan Rasool, Hassan Ali, “Sizing of a novel off-grid mobile photovoltaic system”, Proceedings of 11th International Mechanical Engineering Conference (IMEC) 2022, Karachi, Pakistan, Jan. 2022.
- ✓ Asad A. Naqvi, **Ahsan Ahmed**, Muhammad Kazim, "Techno-economic Analysis of Hybrid Photovoltaic Thermal (PVT) Air Collector", Proceedings of 10th International Mechanical Engineering Conference (IMEC) 2020-21, Karachi, Pakistan, Feb. 2021.

Reviewer of International Journals:

Served as a reviewer for following international journals:

- ✓ Renewable and Sustainable Energy Reviews
- ✓ International Journal of Environmental Science and Technology
- ✓ Journal of Building Engineering
- ✓ Energy and Environment
- ✓ GMSARN International Journal
- ✓ Journal of Testing and Evaluation
- ✓ Memoria investigaciones en ingeniería

Additional Administrative Roles:

While working as a lecturer, the following additional administrative roles are also assigned to me by the Chairman of the Department of Mechanical Engineering:

- ✓ Outcome based Education (OBE) Coordinator
- ✓ Library Focal Person
- ✓ Learning Management System (LMS) Coordinator
- ✓ Member of Departmental OBE Committee
- ✓ Career and Student Wellness Counsellor

Other Major Achievements:

Following are some of my significant administrative achievements during my tenure in the Department of Mechanical Engineering:

- ✓ Performed an essential role as an OBE Coordinator during PEC’s re-accreditation visit 2021. After the successful visit, re-accreditation of three years is granted to MED (as per

the decision of 102nd meeting of EAB, PEC). Following are some of my major contributions for the said visit:

- Briefed PEVs about the compliance of MED to all criteria of PEC Accreditation Manual 2019 and HEC NCRC 2017 and resolved the queries of PEVs during Re-Accreditation Visit 2021 (wherever required),
 - Drafted rejoinder in reply to the observation in response to PEV's observation during PEC's Re-Accreditation Visit 2021, under the supervision of CMD,
 - Corrected and verified CLO-PLO attainment sheets at individual, course, batch and programme levels,
 - Evaluated course files of all batches and suggested remedial actions (where required),
 - Prepared cohorts at the course level, batch level, and program level,
 - Ensure successful implementation of the CQI process (where required),
 - Developed required files and documents for PEC's Re-Accreditation Visit 2021 as per the PEVs' Evaluation Worksheet and PEC Accreditation Manual 2019,
 - Prepared Self-Assessment Report (SAR) 2020 for the undergraduate programme of the Department of Mechanical Engineering.
- ✓ Compiled and organized a comprehensive workbook for the course ME-214 Computer Programming and Applications. This workbook possesses a distinctive quality that lies in its profound application of computer programming as a potent tool for the art of engineering problem-solving.
- ✓ Prepared "Sample Course File Format" which may be treated as a reference format for making course file of any course. This format has entry fields. The faculty members just need to fill those fields for completing their respective course files.
- ✓ Formulated a comprehensive checklist for assessing course files. By using this checklist, anyone can assess the necessary material, required to complete a course file.
- ✓ Drafted a rejoinder under the supervision of CMD, in response to PEV's observation during PEC's Re-Accreditation Visit 2019.
- ✓ Served as an active member in a team that constructed and implemented the OBE framework in MED.
- ✓ Served as an LMS Facilitator in MED. Being an LMS facilitator, I performed a prominent role to:
- train faculty members for recording video lectures and conducting online sessions
 - prepare effective and easy-to-understand video tutorials which can be accessed through the MED website's link <https://med.neduet.edu.pk/GSuite>.
 - plan and execute activities for making examination question papers and conducting online exams.
 - setup numbers of stations for recording video lectures and conducting live sessions in a manner to follow social distancing.
 - ensure successful implementation and execution of recording and online sessions as per pre-specified schedule.
- ✓ Prepared a number of tutorial videos to help and guide all faculty members. G-suite tutorial videos are uploaded on the official webpage of MED. Dr. Asad Arfeen (DIT, NED)

acknowledged and admired my efforts. He also has shared my efforts with all the users of NEDUET's Zimbra Web Client.

- ✓ Designed and implemented an online class attendance system in my section of MF-303 Applied Economics for Engineers on a pilot basis (in Fall Semester 2019). In this system, the student attendance was taken in the class using a smartphone or a laptop and the teacher submitted the attendance to the department online in real-time. Dr. Asad Arfeen (DIT, NEDUET) also witnessed and admired this system. CMD shared the said attendance system and its advantages with the VC and the PVC via letter ref: NED/MED/2019/3396 dated: October 30, 2019.
- ✓ Reviewed practical workbooks to maintain them according to OBE standards.
- ✓ Familiarized faculty members with G-suite and trained them for recording video lectures and conducting online sessions.
- ✓ Prepared a record of books, courses and lab equipment for the Department of Mechanical Engineering of Thar Institute of Engineering, Sciences and Technology.
- ✓ Developed course contents and course material for a personality development training program entitled, "Team-work: Getting People to work together". This training course was delivered to the students of the second year in Spring Semester 2021. In the future, this course will be delivered to every batch in the second year to improve their leadership and team working skills.

Industrial Working Experience:

- **National Refinery Limited** (September 2016 – December 2018)
ISO 9001, ISO 14001, OHSAS 18001, RELATED AA+ & A-1 BY PACRA

Worked in National Refinery Limited as a **Maintenance Engineer** (Utilities and Power Generation) and served NRL through my managerial, technical, analytical and problem-solving. My scope of the job included maintenance management and planning of the following: pumps, compressors, turbines, air coolers (or radiators), cooling towers, vessels, heat exchangers, boilers, tanks, etc. and their associated piping.



Responsibilities:

Following were some major responsibilities which I was fulfilling with teamwork in National Refinery Limited:

- ✓ Planning, scheduling, managing and monitoring routine & priority-based maintenance jobs of all the rotary and stationary equipment with the best available combination of *American Petroleum Institute's* standards and site realities.

- ✓ Preparing purchase requisitions, job orders, material requisitions, job completion certificates and management of inventory through ERP system (*SAP ECC 6.0 Plant Maintenance Module*).
- ✓ Dealing and supervising contractors for the completion of jobs in the best possible way as per *API* and company standards.
- ✓ Reviewing process flow diagrams, *piping and instrumentation diagram* and *engineering drawing* to seek any change or development and for making a bill of quantity of materials for the assignment to be done.
- ✓ Managing, executing and monitoring different modification jobs to facilitate the enhancement as well as improvement of equipment/process.
- ✓ Coordinating and supervising the annual or emergency shutdown of priority equipment.
- ✓ Technically evaluate the proposals, provided by the vendors for the raised purchase requisition.
- ✓ Preparing spot bids, cost estimation and budgeting for special assignments and projects.
- ✓ Preparing punch list on completion of the work and ensuring that all punch list items are attended by the contractor before the issue of completion certificate.
- ✓ Preparing maintenance reports and other associated documents for audit and instrumentation and management system.
- ✓ Inspection of received goods like valves, fittings, pipe or any requested material in light of ANSI /ASME/API/ ASTM standards.
- ✓ Coordinating with different departments like operations, warehouse, workshop, projects, manufacturing, procurement, imports, administration etc. for resolving different issues.
- ✓ Authorized to receive all types of work permits like hot work permit , excavation permit, crane operation permit, confined space entry permit, electrical energize/de-energize permit and cold work permit.
- ✓ Participating in turnaround activities on different equipment.
- ✓ Ensuring safety in all aspects of maintenance works.

➤ **National Refinery Limited** (September, 2015– September, 2016)

Got on-the-job training in National Refinery Limited as Trainee Senior Management.



Highlights:

During my training in NRL, I was rotated through the following departments of NRL:

- ✓ **Engineering Department:** Technical Evaluation of quotations from Vendors, Evaluation and approval of manufacturing drawings from vendors. Tender Preparation and application of codes and standards as per their requirements.
- ✓ **Turnaround Planning:** Participated in the turnaround planning process by studying modification drawings and making the list of materials for procurement and manufacturing.
- ✓ **Local Manufacturing Cell:** Carried out all the activities such as receiving the notice of manufacturing (NOM), Making and sending requests for quotation, bid opening, analyzing the bids, issuing work order and receiving of material from the local vendors. Co-coordinating with the vendors to ensure the manufacturing of parts as per requirement. Using SAP Material Management Module to make quotations, cost comparison statements, work orders and bill parking.
- ✓ **Inspection Department:** Experienced the inspection techniques such as Ultrasonic thickness measurement, Die penetration test, Vibration monitoring of rotary equipment and Pressure testing of heat exchangers and boilers. Scheduling of internal inspection of storage tanks.
- ✓ **Maintenance Department:** Planning and Supervising daily maintenance and preventive maintenance jobs. Writing maintenance reports. Arrangement of spare parts and raising Notice of requirement (NOR) and Notice of Manufacturing (NOM) of Spare parts. Learned the SAP Plant Maintenance and Material Management Module.

Turnaround / Shutdown:

- Fuel Refinery (24 X 7) Turnaround 2016 (April 24th, 2016- May 31st, 2016)

Served in the 12 hours shift of fuel refinery turnaround 2016 in Inspection Team for Heat Exchangers inspection.

Responsibilities:

Following are some major responsibilities which I fulfilled as an inspection team member in National Refinery Limited:

- ✓ Initial inspection of Heat Exchangers shell and tube bundle.
- ✓ Pre cleaning and post cleaning final examination of heat exchangers in the light of TEMA, API 660 and ASME Sec. VIII .
- ✓ Providing recommendations for maintenance jobs (if needed).
- ✓ Hydrotesting (rolling test, tube side test, shell side test) of heat exchangers.
- ✓ Box-up of heat exchangers after complete satisfaction of all concerned individuals.

Internship Experience:

- **Karachi Shipyard & Engineering Works LTD.**
(Dec, 2012.Threeweeks)

Have a priceless experience of working in Karachi Shipyard & Engineering Works LTD where I have learnt how to work in an industry environment and gained a precious practical experience of different ship building process which I wouldn't be able to learn in theory's perspective.



- **Pakistan International Airlines** (Jun, 2013.Threeweeks)

Have another marvelous experience of internship in Pakistan International Airlines where I have learnt how to work in an avionics industry environment and gained a precious practical experience of different airplanes' models, engines and their maintenance procedure.



Certified Trainings :

- **Team-Work: Getting People Work Together**

Started on: February 24, 2020
Ended on: February 26, 2020
Institute: Pakistan Institute of Management (PIM)

- **Design and Function of Steam Turbine and Gearbox**

Started on: September 16, 2017
Ended on: September 19, 2017
Institute: Siemens, Germany

- **Welding Consumables and Equipment**

Started on: October 06, 2015
Ended on: October 06, 2015
Institute: Linde Pakistan and Industrial Development & Engineering Associates (IDEA)

- **Product Development using CAD/CAM Unigraphics NX-8**

Started on: June 09, 2014
Ended on: June 18, 2014
Institute: CCEE, NED University of Engineering & Technology

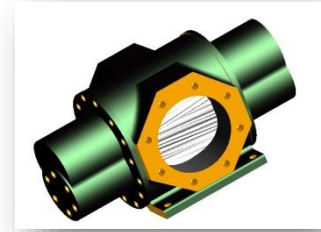
- **Computer Audio / Video Editing & Mixing**

Started on: February 01, 2008
Ended on: July 30, 2008
Institute: Global Computer Institute (Regd. by SBTE)

Final Year Project:

Design of a gear pump:

In this project, we, as a group, first chose a flow rate for which we would design a gear pump. So, for this purpose, we visited PSO TERMINAL-3 where we got the primary specifications of a gear pump and then we determined technical specifications. After that, we designed the 3D model of a gear pump on PRO-E and finally got a safe design on ANSYS.



Relevant skills:

1-Computer Skills:

- **ERP Software:** SAP ECC 6.0 (Plant Maintenance Module)
- **Design Softwares:** Hourly Analysis Program, Unigraphics NX-8 & Adobe Illustrator
- **Modeling Softwares:** PVsyst, Ret Screen & Homer
- **LMS:** G-suite
- **Statistical Softwares:** Minitab
- **Video Editing Softwares:** Filmora, Camtasia and OBS
- **Other Softwares:** Microsoft Office, Adobe Photoshop, Pixel Lab and Turbo-C

2-Managerial Skills:

- Outstanding leadership and management skills of dealing with unionized staff
- Marvelous communication, interpersonal, and management skills
- Excellent management potentials with strong persuasion and planning capabilities
- Maintaining all office documentation with proficiency
- Good systematic and analytical problem solving approach
- Function well as both independently and as a team member
- Adapt easily to new concepts and can adapt myself in an Environment of changing circumstances

3-Technical Skills:

- Can design off-grid PV system, on-grid PV system and PV powered pumping system for nay building.
- Practical experience of operating Lathe, Milling, Welding, Grinding and Drilling machines
- Can calculate cooling loads for different situations through HAP
- Can plan, execute, manage and monitor different projects' planning and execution

- Have skills and experience of inspection and maintenance activities of boiler and shell & tube heat exchangers

4-Sportsman Skills:

- Ex player of Corporate Level NRL Cricket Team
- Played many tape ball and hard ball cricket tournaments
- Organized many day and night cricket tournaments
- Played badminton at inter-societies level

Industrial Visits:

- **Bolan Castings Limited (BCL) – since 1982**
Manufacturing more than 16,000 tons / year of tractor and automotive castings (of more than 200 different types) in grey and ductile iron.
- **Hinopak Motors Limited**
Assembles, manufactures and markets world-renowned Hino diesel trucks and buses in Pakistan.
- **PSO Terminal – 3**
Markets and distributes Motor Gasoline (Mogas), High Speed Diesel (HSD), Furnace Oil (FO), Jet Fuel (JP-1), Kerosene, CNG, LPG, Petrochemicals and Lubricants.

Honors & Achievements:

- Recipient of **Best Researcher Award** by NED University of Engineering and Technology.
- **3 years of Level-II Accreditation (2021)** for undergraduate programme of bachelor of mechanical engineering as an OBE Coordinator.
- Recipient of **Best Teacher Award 2020** by NED Alumni Association of Southern California (NEDAASC).
- **2 years of Level-II Accreditation (2019)** for undergraduate programme of bachelor of mechanical engineering as an OBE team member.
- Scored **highest CGPA in Master's Programme** among whole batch.
- My conference paper (Asad A. Naqvi, **Ahsan Ahmed**, Muhammad Kazim, "Techno-economic Analysis of Hybrid Photovoltaic Thermal-PVT Air Collector) won **best paper award** in 10th International Mechanical Engineering Conference (IMEC) 2020-21.
- Served as a **reviewer** in various highly reputed internal journals.
- Awarded laptop through **Prime Minister Laptop Scheme**.