

Engr. Usman Bin Wilayat

Mechanical Design Engineer

Riyadh, Saudi Arabia

Phone No: +966 54 957 3018

Email: usmanwalayat111@gmail.com

Iqama: Valid & Transferable

Driving License: KSA Valid License



CAREER SUMMARY

Experienced Mechanical Design Engineer specializing in HVAC, plumbing, and fire protection systems for large-scale projects. Skilled in load calculations, duct and pipe sizing, and equipment selection in line with ASHRAE, NFPA, and IPC standards. Proficient in BIM coordination and 3D modeling using Revit and AutoCAD, with strong capabilities in preparing IFC and shop drawings. Also experienced in mechanical quantity surveying, including BOQ preparation and cost estimation, with a focus on code compliance, efficiency, and value engineering.

Following are my credentials:

- Bachelor's degree in Mechanical Engineering from NUST Islamabad, Pakistan.
- Lean Six Sigma Black Belt & Green Belt Certified. (LSSBB & LSSGB)
- Recognized Professional Engineer by Pakistan Engineering Council (PEC).
- Globally recognized Professional Engineer (PE) by Washington Accord (USA).



CAREER OBJECTIVE

Dedicated and results-driven Mechanical Engineer with proven expertise in the design and execution of HVAC, firefighting, and plumbing systems for large-scale construction projects. Seeking to leverage my skills in MEP design, system optimization, and project coordination within a forward-thinking organization committed to engineering excellence and sustainable building practices.

EDUCATION

Bachelor's degree in Mechanical Engineering

National University of Sciences and Technology (NUST) Islamabad, Pakistan

CGPA 3.16/4.0

FSC (Pre-Engineering)

Ghazali College Phalia

969/1100, 90%



WORK EXPERIENCE

1. Mechanical Design and Supervision Engineer

Company: 357 Design and Supervision Consultant

Duration: Sep 2024 to until

Responsibilities:

- Proficient in HVAC system design and load calculation using HAP and Carrier E20-II for diversified projects including restaurants, cafes, villas, and industrial facilities.
- Supervised on-site execution and commissioning of mechanical systems including VRF/VRV, split units, and ducted systems ensuring compliance with ASHRAE and SMACNA standards.
- Developed detailed mechanical shop drawings, coordination drawings, and schematic diagrams using AutoCAD and Revit MEP.
- Conducted static and dynamic pressure loss calculations for ductwork and piping networks ensuring optimized system efficiency.
- Designed and reviewed firefighting systems including sprinkler layouts, FM-200 suppression systems, and fire hose reel networks in compliance with NFPA codes.
- Executed plumbing and drainage system designs including water supply schematics, isometric diagrams, and gravity/sewage layouts per IPC standards.
- Prepared BOQs, material submittals, and technical specifications for mechanical equipment as per project and client requirements.
- Coordinated MEP services through BIM models to avoid clashes and ensure spatial compatibility with architectural and structural elements.
- Reviewed and approved material samples and method statements from contractors to maintain design intent and project standards.
- Inspected and verified mechanical installation works including duct routing, chilled water piping, and pump setups according to approved IFC drawings.
- Applied value engineering principles to optimize mechanical design while ensuring energy efficiency and cost-effectiveness.
- Liaised with authorities for approval of mechanical systems including civil defense approvals for firefighting systems.
- Conducted testing, adjusting, and balancing (TAB) of HVAC systems ensuring indoor thermal comfort and IAQ compliance.
- Implemented mechanical designs tailored to project types, adapting systems to kitchen exhaust, grease ducts, and smoke management requirements in F&B spaces.
- Managed multidisciplinary coordination meetings with architects, structural, and electrical engineers to streamline project delivery within timelines.



2. Mechanical Design Engineer

Project: 1B1 station (Riyadh Metro Project)

Company: Aril Construction & Industrial Co Ltd.

Client: BACS (RMP) Riyadh Metro Project

Consultant: RMTC.

Duration: Sep 2022 to Aug 2024



Responsibilities:

- Executed detailed HVAC system designs including duct routing, equipment selection, and static pressure calculations in compliance with ASHRAE and SMACNA standards.
- Developed 3D mechanical models and coordinated multidisciplinary clashes using Autodesk Revit and Navis works manage under BIM Level 2 environment.
- Performed load calculations (cooling/heating) using HAP and Carrier E-20 for optimal equipment sizing and energy efficiency compliance.
- Designed and reviewed plumbing and fire protection systems ensuring NFPA, IPC, and local Saudi Building Codes adherence.
- Created comprehensive mechanical shop drawings, IFC, and As-Built documents using AutoCAD and Revit MEP.
- Carried out Value Engineering exercises to optimize mechanical design without compromising project performance or compliance.
- Coordinated with RMTC and BACS for technical submittals, RFIs, material approvals, and system handover documentation.
- Conducted site inspections, snagging, and supervision for mechanical installation works including HVAC, firefighting, and plumbing systems.
- Utilized Primavera P6 for progress tracking of mechanical deliverables aligned with project milestones and schedules.
- Managed vendor and subcontractor interface for equipment delivery, material tracking, and compliance with project specifications.
- Designed ventilation and pressurization systems for underground and enclosed areas ensuring compliance with NFPA 130 and metro-specific codes.
- Collaborated in MEP coordination meetings, resolving spatial and system conflicts proactively during design and execution stages.
- Integrated sustainable design principles and monitored system performance for LEED certification targets.
- Assisted in commissioning of mechanical systems including testing, adjusting, and balancing (TAB) activities and validation of system performance.
- Maintained document control and version tracking using ACONEX and ensured alignment with QA/QC standards.

3. Mughal Group of Industries

Position: Mechanical Engineer

Duration: 2020 to 2022

Company: Mughal Iron and Steel Industries Limited (MISIL)



Responsibilities:

- Developed detailed mechanical designs for HVAC, plumbing, and firefighting systems for residential and commercial buildings.
- Conducted heat load calculations and system sizing to ensure optimal performance and energy efficiency.
- Coordinated with architects and civil engineers to integrate mechanical designs seamlessly into overall project plans.
- Prepared technical specifications, drawings, and bill of materials for mechanical systems.
- Ensured compliance with relevant building codes, safety regulations, and environmental standards.
- Supervised on-site installation and commissioning of mechanical systems, ensuring quality and adherence to design specifications.
- Provided technical support and troubleshooting for mechanical systems during and after project completion.

4. Innovative Construction Solutions

Position: Junior Engineer

Duration: 2018 to 2020

Company: Innovative Construction Solutions



- Assisted in developing detailed mechanical designs for HVAC, plumbing, and firefighting systems under the guidance of senior engineers.
- Performed preliminary heat load calculations and supported system sizing to achieve energy-efficient solutions.
- Collaborated with architects and multidisciplinary teams to incorporate mechanical design requirements into project layouts.
- Prepared and updated technical drawings, schematics, and documentation for mechanical systems.
- Reviewed designs to help ensure compliance with building codes, safety regulations, and sustainability standards.
- Monitored on-site work during installation phases to verify alignment with design intent and quality standards.
- Supported senior engineers in resolving technical issues and provided assistance during system testing and commissioning.

PROJECTS

1- Riyadh Metro Project – 1B1 Station

Mechanical Design & Supervision Engineer

Arail Construction and Industrial Co. Ltd. | Contractor

- Executed detailed MEP design development for HVAC, chilled water networks, plumbing, and firefighting systems in compliance with project IFC (Issued for Construction) drawings and client specifications.
- Conducted heat load calculations, static pressure calculations, and equipment selection using HAP and Elite CHVAC to optimize energy efficiency and system performance.
- Prepared coordinated shop drawings, builder's work drawings, and as-built documentation, ensuring alignment with BIM models and clash-free integration across disciplines.
- Supervised on-site installation and testing of mechanical systems, including ductwork, chilled water piping, drainage, water supply, and fire suppression systems, in accordance with project QA/QC procedures and international standards (NFPA, ASHRAE, SMACNA).
- Participated in coordination meetings with consultants, subcontractors, and project stakeholders to resolve design discrepancies and facilitate seamless site execution.
- Oversaw material submittals, procurement schedules, and supported the preparation of method statements and ITPs (Inspection and Test Plans).
- Assisted in testing, commissioning, and handover processes, ensuring all mechanical systems met design intent and operational requirements.

2- FECO Bakes and Cakes (B&C) Factory – Riyadh (5-Story Industrial Facility)

Mechanical Design & Supervision Engineer

357 Design and Supervision Consultant | Design & Site Supervision Consultant

- Developed comprehensive MEP design packages covering HVAC, chilled water systems, ventilation, process exhaust, compressed air systems, plumbing, and firefighting networks, tailored to industrial production requirements.
- Performed detailed heat load calculations and ventilation rate assessments, ensuring compliance with ASHRAE, SMACNA, and local Saudi Building Codes (SBC).
- Designed specialized mechanical systems to support bakery production processes, including conditioned storage rooms, process cooling areas, and odor control ventilation.
- Prepared IFC (Issued for Construction) drawings, schematic diagrams, equipment schedules, and coordinated shop drawings using Revit MEP and AutoCAD MEP.
- Reviewed and validated mechanical system layouts to achieve clash-free coordination with structural and architectural disciplines via BIM processes.
- Generated technical specifications, BOQs (Bill of Quantities), and supported value engineering proposals to optimize cost without compromising functionality.
- Participated in technical meetings with the client, main contractor, and specialist subcontractors to clarify design intent and resolve RFI (Requests for Information).
- Provided site supervision support during installation, witnessing testing & commissioning, and ensured mechanical works adhered to project specifications, standards, and quality control procedures.

3- 7-Story Residential Building – Jeddah

Mechanical Design & Supervision Engineer

357 Design and Supervision Consultant | Design & Site Supervision Consultant

- Developed full MEP design deliverables for HVAC systems, domestic water supply, drainage, and firefighting systems in accordance with SBC (Saudi Building Code), ASHRAE, NFPA, and civil defense requirements.
- Performed detailed heat load calculations using HAP, equipment sizing, and static pressure analysis to ensure occupant comfort and energy-efficient system operation.
- Designed central ventilation systems, exhaust systems for kitchens and bathrooms, and stairwell pressurization systems to meet safety and ventilation standards.
- Produced coordinated IFC drawings, schematic diagrams, and equipment schedules in Revit MEP, ensuring seamless integration with architectural and structural models.
- Prepared technical specifications, BOQs (Bills of Quantities), and material submittal requirements, supporting tender documentation and bid evaluation processes.
- Participated in multidisciplinary design coordination meetings to resolve spatial constraints and MEP clashes identified in BIM.
- Supported the preparation of shop drawing reviews, design clarifications, and responded to contractor RFIs (Requests for Information) to maintain design intent during construction.
- Conducted design reviews for compliance with client requirements, sustainability considerations, and optimized system layouts for ease of maintenance and future expansion.

COMPUTER AND TECHNICAL SKILLS

- ❖ **Design & Drafting Software:** AutoCAD MEP, Revit MEP, Navis works Manage
- ❖ **Calculation & Analysis Tools:** HAP (Hourly Analysis Program), Carrier E20-II, Elite CHVAC, Mc Quay Duct Sizer, Pipe Flow Expert
- ❖ **Quantity Surveying & Estimation:** Cost X, Plan swift, MS Excel (advanced formulas & VBA)
- ❖ **Project Management & Collaboration:** MS Project, Primavera P6, BIM 360
- ❖ **Other Tools:** MS Office Suite (Word, Excel, PowerPoint), Adobe Acrobat Pro

CORE COMPETENCIES

- HVAC, Plumbing, and Firefighting System Design
- AutoCAD, Revit, and SolidWorks Proficiency
- Project Coordination and Cross-Disciplinary Collaboration
- Knowledge of Building Codes and Standards (ASHRAE, NFPA)
- Material Selection and Specification Development
- Energy Efficiency and Sustainable Design Practices
- Troubleshooting and Technical Support
- Quality Assurance and Compliance

CERTIFICATIONS

- Certified Lean 6 Sigma Green Belt (LSSGB)
- Certified Lean 6 Sigma Black Belt (LSSBB)
- Google Project Management Professional Certified (PMP)
- IBM Project Manager Certified
- Certified Mechanical Engineer (PEC)

PROFESSIONAL AFFILIATIONS

- American Society of Mechanical Engineers (ASME)
- Project Management Institute (PMI)
- Recognized Professional Engineer (PE) by Pakistan Engineering Council (PEC)
- Globally recognized Professional Engineer (PE) by Washington Accord, USA
- Alumni Mechanical Engineering Department at National University of Sciences & Technology Islamabad, Pakistan

ADDITIONAL INFORMATION

- Languages: Fluent in **Arabic and English**
- **Willing to relocate** and travel as required
- **Transferable iqama**
- Valid KSA **Driving License**
- **Available to join** upon notice period and committed to making immediate contributions from day one.

EXPERIENCE CERTIFICATES



Date: 02-October-2024

Subject: EXPERIENCE CERTIFICATE

Arail construction & industrial co. ltd. at Riyadh, Saudi Arabia hereby certifies that **Mr. Usman Bin Wilayat**, with Iqama ID **2581777238** was employed by Arail during the period from September 2022 to August 2024 as a **Mechanical Engineer**.

Throughout above period his performance was satisfactory and cooperative with his colleagues and superiors.

This Certificate is issued upon his request, without any obligation on our part.



شركة الأريل للمقاولات والصناعة المحدودة

مدير الموارد البشرية



Kingdom of Arabia
P.O. Box 70750 Riyadh 11577

T: +966 11 511 4540
F: +966 11 511 4541

Info@arail.com.sa
www.arail.com.sa

Ref: HR/ 2022/8/05

August 09, 2022

To Whom It May Concern

This is to confirm that **Mr. Usman Bin Wilayat S/O Mr. Muhammad Wilayat** having CNIC# **34403-0386981-9** working with us as “**Engineer**” from **Sep 14, 2020** to **August 08, 2022**

We always found him hard working, devoted, honest and dedicated person to his work as well as to the organization.

Wish him best of luck for the future endeavors.

Regards



Human Resource Department

Mughal Iron & Steel Industries Limited



HEAD OFFICE:

41 Peco Road, Badami Bagh, Lahore-Pakistan

Ph: +92-42-111-000-007, FAX: +92-42-37610160

Web: www.mughalsteel.com

Email: Info@mughalsteel.com

CORPORATE OFFICE:

31-A Shadman-1, Lahore

Office: 042-35960841-43

Fax: 042-35960846

Email: works@mughalsteel.com

WORKS:

17-Km Sheikhupura Road,
Sheikhupura

Tel: +92-42-37970226-7

Fax: +92-42-37970326

NTN: 3533975-6