

# Muhammad Bilal Qamar

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## Objectives

Ambitious and motivated Mechanical Engineer, searching for a senior level position, to use my knowledge and experience to achieve organizational goals.

## Professional Snapshot

- A competent professional with 27 years of experience in Project Management & Maintenance of stationary equipment in **Fauji Fertilizer Bin Qasim Limited (FFBL)** with 3 years as Mechanical Engineer in **Pakistan Maroc Phosphore - Morocco**.
- FFBL is one of the leading Urea and DAP fertilizer manufacturer in Pakistan, established with a project cost of approximately US \$ 1 billion (Production started in 1999). The complex consists of Ammonia, Urea and DAP Plant.
- I was an active member of plant erection and commissioning team (1996-1999).
- Have experience of 3 revamp projects – Ammonia ~ US \$ 100 million in 2007 from 1270 MT/Day to 1570 MT/Day, DAP ~ US \$ 50 million in 2009 from 1350 MT/Day to 2232 MT/Day & Sulphuric acid plant ~ US \$ 12 million in Morocco 2017.
- Key contributor during revamp projects – in Engineering phase and Implementation phase
- During revamps - Engineering phase (with EPC contractor), was responsible for review of design of equipment including review of specifications, drawing etc. and coordination of project controls including document, scope (specifications etc. including management of change), cost, schedule, quality, and risk analysis and overseeing schedule and cost variances.
- During revamps – Implementation phase, was responsible for resource management (manpower plan) with local contractors along with implementation of Project Management Strategies to optimize timeline and cost.
- Expert in project management (co-ordination, monitoring & answering queries during fabrication & execution job)
- Personally skilled in routine & shutdown maintenance of stationary equipment like High Pressure Equipment, Heat Exchanger, Reactor, Column, Vessel, Tanks, Boiler along with planning & execution of activities in annual T/A.
- Familiar with relevant ASME, API, ASTM codes and standards.
- Can work under pressure & handle multiple tasks. Good team leader with decision-making & time management skills.
- Versatile experience as also worked as Unit Manager Project, Unit Manager - Training and Workshop Engineer.
- Strong educational background securing positions during studies.

## Education

- Bachelor's degree in Mechanical Engineering from NED University of Engineering and Technology, Karachi, Pakistan in year 1996 (4<sup>th</sup> position with 85.60%)
- Master's degree in Engineering Management (Industrial) from NED University of Engineering and Technology, Karachi, Pakistan in year 2011 (CGPA 3.76 out of 4)

## Certification

- Project Management Professional (PMP)®

## Areas of Expertise

### Projects Management

- Initiating, Planning, Executing, Monitoring & Control and Closing of Multiple Projects.
- Preparing Specification of Work, mechanical packages and on-line leakage rectification procedure, welding procedure and supervision of the execution activities.
- Formulating engineering solutions by contacting engineering companies such as Stamicarbon and others.
- Evaluation of engineering projects from the engineering management perspective.
- Review of Original Equipment Manufacturer (OEM) specifications and drawings against Codes & Standards.
- Ensuring drawings, documents and specifications submitted by vendor (s) and consortium are as per contract and establishing and verifying the contractual references on various issues.

### Mechanical Equipment Maintenance

- Experienced in maintenance of stationary equipment at Ammonia, Urea, DAP, Utilities also at SAP, PAP plants.
- Formulation of scope of work for shut down and Turn Around activities.
- Local & foreign ordering, technical evaluation, ensuring timely delivery & confirming delivered material is as per specs.

### Workshop

- Planning and supervising routine machining and fabrication jobs in Machine shop and Fabrication Shop including machining of shafts, repair of valves, fabrication of tube bundle (Heat Exchanger) as per Tubular Exchanger Manufacturers Association (TEMA) & fabrication of tank. Also, installation of machine in erection phase (Lathe etc.).

### Budget.

- Preparing Operational and CAPEX budget, its control and monitoring.

### Integrated Management System / Process Safety Management

- Ensuring alignment of procedures/documents with IMS (IMS → QMS ISO 9001:2000, ISO 14001:2004 (EMS) & OHSAS 18001:1999. Preparing manual → objectives, hazard & environment aspects, work procedures. Conducting internal audit and surveillance audit from external agencies. Part of implementing team of PSM (12 Cultural & 10 Risk based elements)

### Safety

- Conducting safety awareness program to improve safety in team members.

### Training

- Coordinating training institutes & preparing/organizing tailored made courses as per Training Need Assessment

## Organizational Experience

### Since April 2023 as Unit Manager (Equipment) – Fauji Fertilizers Bin Qasim limited.

- Leading a team of engineers and technicians to supervise routine and maintenance of stationary equipment at Ammonia, Urea, DAP, Utilities & Product Handling plants.
- Execution of modification jobs for improvement in existing system

### June 2017 – April 2023 as Unit Manager (Projects) – Fauji Fertilizers Bin Qasim limited.

- Planning, executing and monitoring major projects along with Engineers & Staff in adherence to safety & quality.
- Handling of Capital Expenditure (CAPEX) projects as per 5-year Risk Management Plan. Includes cost estimates, budget approval, mechanical design, material procurement, fabrication & field execution within timeline & budget.
- As part of CAPEX projects:
  - ✓ Replacement of stationary equipment (heat exchangers and vessels) at plant site.
    - Either complete replacement by ordering to local or foreign vendor. This includes identification of scope of work, preparation of engineering RFO's (request for quotation), technical review of quotations, recommendation for award of engineering job, coordination with vendor for design review and comments, finalization of quality inspection plan (QIP), overall compilation and presenting for approval.
    - In-house fabrication of various stationary equipment (heat exchangers, tank etc.) using local resources. This includes mechanical design, mechanical package, coding & procuring material, its fabrication and installation.
- Engineering design evaluation. Includes identification of scope, preparation of engineering RFP (request for proposal), technical review, and recommendation for ordering, coordination with designers for review, its compilation and approval.
- Change of Management:
  - ✓ Mechanical modification jobs for execution in annual turnaround & routine plant operation. Preparation of mechanical packages as per specification, codes and standard. This includes planning, reviewing and evaluating, preparation of specification and finalization of mechanical package as per process package including layout, GA drawing, Isometrics, Bill of Material, and Welding Procedures (covering piping, structures and equipment etc.)
  - ✓ Incorporate comments after review & present in Sub SOC (M) for approval before final implementation.
- Overall monitoring of plant CAPEX Projects, its status update & presenting to management on quarterly basis.
- Provide day-to-day emergency handling assistance to Maintenance including Provision of on-line box up procedures to rectify leakages (Welding or Clamp) and Welding Procedures Specifications.
- Contact Engineering - Coordination with 'Licensors' & 'Engineering Companies' for resolution of issues.
- Review and provide technical assistance on material specifications and equipment ordering.
- Engagement of expatriates at plant site for special services (coordination between different departments within FFBL).
- Overall coordination of Unit including OPEX Budget, IMS and safety related issues including PSM Process Safety Management and HORC - Hazard Operating Review Committee.
- Custodian of plant documentation (scanning of old hard data etc.)

#### Achievements:

- CAPEX Project (Shell and Tube Heat Exchangers and Tank)
  - ✓ Complete replacement of Ammonia Chiller Condenser (E-303A in 2019 and E 303B in 2022) at ammonia plant. Ordering of new Exchanger to M/s Astra Italy / M/s Aguilar Salas (Spain)- Rs 100 M / 155 M, (Type DKU → Kettle Re boiler, U – tube bundle: Shell side; Ammonia, Operating Pressure 0.9 kg, material 516 Gr70, thk 15 mm, ID 1.75 m and 1.25 m; Tube side; Synthesis gas, Operating Pressure 168 kg, material A210 Gr A1 Low Temp CS, Tube dia 19.05mm, thk 2.11 mm, length = 9 mm, no of tubes 895U. Also, piping modification package along with procurement of associated piping material (Piping A106 Gr B, Flanges A 350 Gr LF2 etc.)
  - ✓ Complete replacement through In-house fabrication of Natural Gas Feed Effluent Exchanger (E-1001 B) at ammonia plant - Rs 50 M, (0.836 x 9.242, BEM). Tubes SA-213 TP304L, OD = 19.05 mm, thk =1.83 mm, No of tubes 535, L = 9800, Tube sheet SA- 182 F304L, Finished Dia = 1200 mm, thk = 215 mm, Shell plates 32 mm, (material up gradation from F12 → Cr-1/2 Mo to SS304L)
  - ✓ Complete replacement of Sulphuric Acid Storage Tank (RT-221) with upgraded design at DAP plant - Rs 70 M, (I.D 6600 mm, Shell height = 9000 mm, 5 shell course, empty weight ~ 22 tons material A36 and Alloy 20).
- Other CAPEX Project
  - ✓ Secondary Reformer (C-102) Dome Replacement at Ammonia - Rs 60 M, Ordering to M/s Bigelow Liptak for re-design and supply of new Dome. 19 different types of bricks for 19 rows, demolishing of existing skew of 29°. Lining Material: Greencast 94 Plus, Thk: Hot face 4 ", Cold face= 6".
  - ✓ Primary Reformer (F-101) Outlet Header at Ammonia – Rs 120 M, Ordering to M/s Manoir for design and supply of 08 Header, Material 20 Cr 32 Ni + Nb, L=5865 mm, 940 Kg, ID 177.8 mm, thk 28.58 mm).
  - ✓ Replacement of De-Superheater (L-106) at Ammonia plant as per replica design - Rs 34 M, Material SS-316H,
  - ✓ I.D 876 mm, Shell height = 1905 mm, thk 19.05 mm, lining material = SS310, Operating Pressure 125 kg
- Project evaluation and feasibility:
  - ✓ DAP plant FRP equipment Duct DL 110, Cyclonic Column (DD-531) and Venturi DD-521 and DT-521.
  - ✓ Complete steel structure analysis of DAP scrubbing area for evaluating replacing existing FRP equipment & associated ducts with Stainless Steel Material Vs Preparation of scope of work involving VSM services and coordinating during turnaround for collection of data for Remaining Life Assessment (RLA) through M/s Nordic Glassfiber, M/s Plasticon)
  - ✓ Costing of heat exchanger E-2002, Tank Project (for Dosing of Anti – Caking agent Dustrol etc.)
  - ✓ Relocation of Evaporation Pond along with 12-inch Liquid Effluent Line
- Contact Engineering for seeking advice from:
  - ✓ Amec Foster Wheeler (Wood group) for ammonia plant F-101 for Replacement of baffle plates in convection section air preheat, feed gas coils (cleats option) & Borsig – for rectification of by-pass assembly passing problem.
  - ✓ Haldor Topsoe for ammonia plant Heat Exchangers & Caldery for C-102 manway nozzle high temp - proper sealing).
  - ✓ M/s Stamicarbon: Urea plant for HPCC leakages, scrubber cleats issue, Urea reactor sieve tray thickness reduction.
  - ✓ M/s Jacobs (Bellow rupture, Metallic bellow etc.), and Plasticon (FRP equipment) for DAP plant

### **June 2014 – June 2017 as Mechanical Engineer – (PMP - Pakistan Maroc Phosphore, Morocco)**

- As a part of secondement, worked in PMP for 3 years. Responsible for coordinating with different departments in PMP including Production, Mechanical, Magasin, Safety, Bureau Method and Admin & Finance. Major job responsibilities:
  - ✓ Mechanical Maintenance
    - Supervise Mechanical Maintenance on Plant Technical issues on day-to-day basis. Review of mechanical maintenance problems and recommendation for short and long-term solution.
    - Planning and execution of routine maintenance jobs related to stationary and machinery equipment such as jobs on Piping, Valve, Equipment, Rectification of Leakages and other jobs on Filters, Pumps and Agitators etc.
    - Ensure availability of spares and contracted manpower for maintenance jobs.
  - ✓ Technical Committee: Review of modification jobs and provide assistance in execution of jobs in field
  - ✓ Annual Shut Down (Arret Froid): Identification of jobs for annual shut down, preparation of bar chart, coordination in expediting Conventions - DPM (manpower & Logistics crane) & Spares - PDR for available inventory & lead time.
  - ✓ Budget :
    - Preparation of PMP Annual Budget (OPEX – PDR & Convention and CAPEX). Meeting with responsible in Production (SAP, PAP), maintenance etc., and comparing with last year consumption, compilation of Budget figures of OPEX & CAPEX for board approval.
    - Monitoring of Last Year Budget (OPEX & CAPEX) on quarterly basis and re-conciliating budget figures with Finance Dept. Moreover, review of documents such as RFQ's (Expression Besoin), Technical Choice note (Note de Choix), Purchase Orders (commands) with respect to available budget.

#### **Achievements:**

- Part of revamp team of Sulphuric Acid Plant during engineering and execution phase.

Sulphuric acid plant (SAP) is designed by Monsanto (MECS-USA) & Phosphoric acid plant (PAP) by Jacobs - USA. After preliminary study Jacobs informed that PAP has margins & can produce 450,000 Metric Tons per year (Design 375,000 MTPY). However, Sulphuric acid plant has capacity limitation to fulfil Phos Acid plant requirement and needs revamp. Therefore, it was concluded that sulphuric acid plant will be revamped to increase production capacity to 120 % (from 3410 MTPD to 4100 MTPD i.e. 1,125,000 to 1,353,000 MTPY) with minimum plant modifications at an approved cost of 12 million USD with payback period of 6 years. Orders were placed to MECS for conceptual study and basic engineering, Jacobs Engineering JESA for detailed engineering & for execution to DLM (Delattre Levivier Maroc). Detail includes:

  - ✓ Installation of new Trim Acid Cooler (201FE08 - Counter Current) along with Strong Acid (Zecor-Z) and Sea Water piping (FRP). (Designed by MECS, fabrication and inspection in South Africa, 0.3 million USD)
  - ✓ Re-routing of strong acid piping around the existing Drying & Interpass coolers (201 FE06 and 201FE07) for counter current flow. (Acid side piping was changed from Co-current to Counter Current flow), procurement of Zecor-Z Piping and fittings from MECS USA, 0.5 million USD
  - ✓ Installation of Mist eliminator in Towers (316L SS cage & chemical resistant glass fibre, MECS,0.5 million USD)
    - For Inter Pass Tower – Replacement of 54 existing with new design & addition of 03 mist eliminator.
    - For Final tower - Replacement of 20 existing with new design & addition of 06 mist eliminator.
    - For Drying Tower – Replacement of 17 existing with new design & addition of 04 mist eliminator.
  - ✓ Replacement of Converter 4th Bed Catalyst with new Cesium catalyst (MECS, 2 million USD)
  - ✓ Review of Requisition Document for execution of revamp during cold shut down.
  - ✓ Rotating Equipment: Replacement of impellers of GTS Turbo Blower (from Howden USA) as engineering study concluded to install large size impeller without replacement of turbine and gearbox & replacement of Sulphur and Strong Acid Pump Impeller (Lewis, USA)
- Engineering and construction of New Sulphuric Acid Storage Tank (13500 Metric Tons, ID = 31.6 meters, Overall height 14.1 meters, Material of plates A36, Shell thk 30, 25 → 10 mm). This includes:
  - ✓ Budget approval of amount 25 million Dirham (~ 2.5 million USD) in CAPEX budget for 2016 – 2017
  - ✓ Preparation of Technical scope of work for placement of order to M/s JESA for detailed engineering design (Cost around 1.545 million Dirham), followed by initial reviews to finalize the tank design.

### **2010 – June 2014 as Unit Manager (Projects) – Fauji Fertilizers Bin Qasim limited**

- Managing a team of engineers and staff members. Responsible for developing and executing projects, including planning, preparation of specification, preparation of mechanical package including drawings, Bill of Material etc.
- Providing emergency handling assistance including review of specification, leakages rectification etc.
- CAPEX monitoring, contact engineering and also responsible for overall Project Unit activities.

#### **Achievements:**

- Project execution including preparation of mechanical package, scope finalization, its approval, evaluation of bids, fabrication and replacement of following Shell and Tube Exchangers:
  - ✓ Glycol Water Heater AH-932 at Ammonia Storage area (0.72 x 4.88m, BEU, in-house fabrication, → CS to SS)
  - ✓ CO2 cooler after 3rd stage UH-134 at Urea plant (0.62 x 6.2m, BEU) including root cause analysis for repeated failure replacing SS-304 with Duplex Steel grade S31803 due to Stress Corrosion Cracking SCC).
  - ✓ Flash Steam Condenser UH-541 at Urea plant (0.68 X 3m, → BEU to BEM) & AH-921A/B lump sum Descon.
- Project evaluation and feasibility:
  - ✓ Replacement of carbamate overflow line of High-Pressure Scrubber at Urea Plant (Stamicarbon and SBN)
  - ✓ To improve safety and reliability; replacement of FRP equipment (DT-511), CS rubber lined tank (DT-5013) and FRP Ducts with Stainless steel material at DAP plant (this includes evaluation of steel structure, mechanical design with SS grade. (Phase-wise replacement due to CAPEX limitation)
- Contact Engineering – Provide engineering solution CBI - ammonia Tank, and SPIE - N/C meter cooler at Urea Plant.

### **2009 – 2010 as Unit Manager - Technical Training Centre – Fauji Fertilizers Bin Qasim limited.**

- Executing Training Needs Analysis (TNA) of employees & preparing plan for soft skills and technical courses.
- Implementation of apprentice training program including hiring, orientation, classroom and on-job training.

#### **Achievements:**

- Improved existing training facilities and infrastructure of Technical Training Centre.

### 2007 – 2009 as Project Team Member – DAP Revamp Project – Fauji Fertilizers Bin Qasim limited.

Contract for basic engineering, detailed engineering and procurement of major equipment was awarded to M/s Jacobs (USA), timeline in 20 months (basic engineering 3 months, detailed engineering 14 months with procurement of long lead items & implementation in 3 months). During engineering design, M/s Jacobs recommended that 50% expansion from 62 tph to 93 tph can be achieved without replacing the main equipment (i.e Granulator, dryer, Screens, Cooler etc.) However, a number of modifications were made including the removal and upgradation of some existing equipment and also the addition of some new equipment. Personally involved in Engineering reviews of new stationary equipment, overall material control (ordering to foreign and local vendors) etc. and execution of activities during implementation phase.

#### Achievements:

During revamp - Engineering phase, involved in review and fabrication of following equipment:

- M/s DLM (Morocco) – US \$ 1.8 million this includes: 1) Ammonia Separator DV-3011: Dia 1 meter, thk 12 mm, height ~ 2 meters, A 516 Gr 70, CS & Pre-Neutralizer DR-1031 Dia 4 meter / 3.4 meter, thk 8 mm, material 904L SS (ASME Section VIII Div 1, 2) Primary Scrubber Tank DT-5013 (API 650, Dia 4 meter, thk 6 mm and height 3 meter, CS/RL.
- M/s Manning & Lewis (USA)–US \$ 360K - DH-5031, Kettle type Shell and tube HX, Shell 516 Gr 70 CS, Tube SS 316 L
- M/s Favier Setrem (France)–US \$ 409K - Ammonia Chiller Unit DH-3011 & DH-3012, Finned Tube Heat Exchanger, Ammonia at Tubes & reheat coil LP steam – Material SS 316. Also, visited (FRANCE) for inspection.
- Piping modification of above jobs.

During revamp – Implementation phase: Execution contract was awarded to M/s Descon amounting Rs 160 million. During implementation phase, responsible for execution of above-mentioned projects along with construction of new phosphoric acid storage tank of capacity 10,000 metric tons. This includes pre-qualification of contractors, preparation of job scope, ordering of material, construction and commissioning of new rubber lining phosphoric tank (Diameter 30 meter, and height 9 meter).

### 2001 – 2007 as Maintenance Head Equipment – Fauji Fertilizers Bin Qasim limited.

- Worked as area head and supervised jobs along with engineers and technicians Urea, DAP and Utilities plants.
- Preparation of job scope for contracted out jobs or lump sum jobs for maintenance of High-Pressure Equipment, Heat Exchangers, Tank, Vessel and Columns, Modification jobs, Insulation, Sandblasting & Painting jobs etc.
- Planning and execution of jobs in annual turnaround (review of job packages, arrangement of material, manpower & logistics). Approximate number of jobs executed for inspection and maintenance activity in each annual turnaround are: HP equipment (4), Heat Exchanger (45), Tanks, Vessel and Columns (40), Modification jobs (40) etc.

#### Achievements:

- As a part of Urea revamp, installed Siphon jet trays (Safurex, BE-06, Duplex Stainless Steel) in HP Urea Reactor (2004)
- Carried out relining in High Pressure Urea reactor (Relining Material BC-05 (2007)

Maintenance jobs on High Pressure Equipment including following:

- HP Stripper at Urea Plant (BSL, tube Material BC-05 (25:22:02) / 2400 tubes / OD 31 mm, thk 3mm, L = 7,137 mm), maintenance job, rectification of deposit of iron content on ligaments, ferrules repair etc.)
- HP Carbamate Condenser at Urea Plant (BSL, tube Material BC-01 (SS-316L mod) / 2544 tubes / OD 25 mm, thk 2.5mm, L = 12,245mm, maintenance job, failure and repair of leakage)
- Repair maintenance job on Heat exchangers, Tank, Vessel and Columns in annual Turnarounds.
- Reviewed and updated warehouse catalogue and redefined warehouse inventory level of spares.
- For ease in maintenance activity, identified and executed several structural jobs.

### 1999 – 2001 as Workshop Engineer – Fauji Fertilizers Bin Qasim limited.

- Planned and supervised routine machining and fabrication jobs in Machine shop and Fabrication Shop

#### Achievements:

- As a cost saving measure identified spares that can be locally manufactured by reverse engineering.
- Drawings on AutoCAD, maintain database, prepare parts in Machine shop & local market → new shaft, sleeves etc.

### 1996 – 1999 as Project Engineer – Fauji Fertilizers Bin Qasim limited.

- Progress monitoring & reporting construction activities. Physical verification monthly progress & extra work invoice.
- Co-ordination among various sections & dealing with consortium.

#### Achievements:

- Active member of plant erection and commissioning team.

### Social Member

- Have successfully arranged FBLL Functions including Annual Musical Function, Mango Party, Fun Gala, Farewell etc.

### Training Courses

- Attended following Management Courses:

◆ ASME Sec VIII, Div 1, held in Orlando - Florida, USA.	◆ Failure of Engineering Material & structure
◆ French Language Course. (M/s Alliance Francaise)	◆ High Performance Manager.
◆ Attended Seminars on Heat Exchangers	◆ Problem Solving & Decision Making.
◆ Internal Auditor for implementation of IMS	◆ Causes for Risk Management.
◆ Project Management.	◆ Teamwork – Getting People to Work.
◆ Communication Skill & Effective Presentation Skills.	◆ Leadership & Out of Box Thinking

### Personal Details

Date of Birth: 29th January 1973  
Marital Status: Married and have 3 children.