

Khaled Mohammad Al-Sheref
Senior Onshore Structural Consultant
Petrochemical/Commercial Structural Facilities
Earthquake/Blast Engineering & Risk Management



I bring over 30 years of professional experiences from the fields of engineering consultation for Petrochemical, Industrial & Commercial facilities dealing with engineering challenges in civil/structural, earthquake/blast engineering, and associated Hazard Assessment and Risk Management issues.

Employers:

Dec 2012: Khaled Alsheref Engineering Consulting Office (KMFS ENGINEERING)

Nov 2012: Early Retirement - Freelance Blast/Earthquake Engineering Consultant

Sep. 1982 – Oct. 2012: Saudi Aramco

Main Departments:

- **Consulting Services Department – 25 yrs**
Mission: Provide effective specialized engineering consultation, introduce viable technologies and maintain quality industrial standards to support Company Operations.
- **Facilities Planning Department – 3+ yrs**
Mission: Plan, Develop and Present to Management Committee Capital Investment Programs that are aligned with Saudi Aramco's Mission, Values and strategic Direction.

KMFS Engineering is affiliated with:

- **Petrochem Engineering Services (PES)** to provide O&G engineering services, http://petrochemengg.com.pk/about_us.html
- **Pipelines Labeling Services (PLS Tarqeem)** to provide engineered process labeling services and field verification of assets against P&ID's. PLS Tarqeem is a contracting establishment owned by Khaled Alsheref. info@pls-tarqeem.com
- **AJab Khan Construction Company (AKE)**, providing a general contraction services in the field of Residential, Commercial, and Industrial construction and Land Surveying.

Khaled Alsheref is the Managing Partner and Structural Consultant of AKE.

Khaled.sheref@ajabkhan.com

- **AXIS Inspection Technologies Ltd, provides 3rd Party Industrial & Civil/Structural/Geotechnical Inspection and Non-Destructive Testing (NDT).** Khaled Alsheref is the Managing Partner and Structural Consultant of AXIS.
info@axis-inspection.com

Professional & Educational Details:

- Master of Science in Civil engineering (Structural), Purdue University, USA, 1987, with honor.
- English & Management Program at University of California at Davis, (9 Months, 1983)
- Bachelor of Science in Civil Engineering (Structural), King Abdulaziz University, Saudi Arabia 1982, w/ honor.
- Attended numerous international structural conferences and short courses sponsored by leading US Universities such as Wisconsin University at Madison and Expert Houses such as Wiss, Janey & Elstner Consultants at Chicago, dealing with structural dynamics, extreme loading such as seismic and blast; in addition to International Building Codes. A sample of specialty courses are listed below:
 - 3-day Specialty hands on training on one-to-one basis with Prof Ventura dealing with Seismic Risk Assessment in 2008 following the Structural Congress in Vancouver. (<http://www.civil.ubc.ca/people/faculty/faculty-ventura.php>)
 - Short course on “Modern Protective Structures” against terrorist acts and industrial accidents by Prof. Ted Krauthammer, Center for Infrastructure Protection and Physical Security, University of Florida in 2011.
 - Short course on “Design of Blast resistant Structures by BakerRisk at The George Washington University, Virginia on March 12-16, 2012
 - 2-day seminars on “Upgrade and Maintenance of Parking Structures” at University of Wisconsin – Madison on Dec 6-7, 2013.

Main Assignments:

Dec. 2012 – Present: KMFS ENGINEERING, President. We offer services related to earthquake/blast risk reduction, condition assessments, as-built drawings and CAD support, IBC/Saudi Arabia Building Codes Compliance Reviews and professional IBC/ASCE Codes Training:

- Structural Investigation of 11m span, Reinforced Concrete T-Beams showing diagonal cracking of a residential villa at the Executive Management Housing Complex in Dhahran. 3D Structural Modeling, Cracks Mapping & Monitoring and Load/Deflection testing were part of the investigation. Furthermore, repair recommendation using Fiber Wrapping was provided.
- Responded to two RFPs covering major rehabilitation/strengthening and Inspection of 7-story parking garage for an Iconic Tower in Jeddah with an estimated budget of SR 42 Million.
- Developing workshop materials for design/analysis of Industrial Structures including utilization of STAAD PRO Software. These materials will be the basis for teaching relevant short courses to practicing engineers.

- Recommended Fast Construction system to a leading Engineering Consulting House to be proposed for major urban development in the Eastern Province.
- Supervision of 6-story R/C Apartment Building in Khobar at Al-Aziziyah District.
- Structural Consultant working on RFP for decommissioning and dismantling process units of a Refinery in Kuwait.

- **Currently:**
 - Responding to RFP by NCB for assessment of stone cladding of 25 story Tower
 - Providing a proposal to perform Electrical Area Classification for Pilot Process Plant located in the Aramco R&D Building in Dhahran
 - Provided detailed proposal to develop In-house Asset Performance Management Program for Khafji Joint Operations (KJO) facilities. A 16-month program, with estimated value of SR 14 Million was prepared in collaboration with reputable international APM consultant. We will be presenting the program to KJO within the coming few weeks.
 - PLS Tarqeem working with a world leader in Process Piping Labeling Services has completed a pilot program in Abqaiq Plants, which received excellent remarks by plant management.
 - With AKE, KMFSE is supporting on going various projects worth over SR 50 M.
 - With AXIS, Several NDTs are being executed at Al-Kharj Military Facilities as part of Concrete Flooring Anti-Static coating inspection requirements.
 - Responding to Structural Condition Assessment & Rehabilitation of Aged RCC Marine Platforms at Yanbu, Saudi Arabia.
 - Responding to Condition Assessment & Repair of RCC Surface Drainage Collection Tank at a Sabic Jubail plant.
 - Structural Consultation to accelerate a behind schedule construction of Storm Water Retention RCC Underground Tank at Jubail, Saudi Arabia.

Note:

KMFS Engineering is currently an approved engineering services supplier to:

- Saudi Aramco – SA Vendor No 10051876
- SNC-Lavalin Fayez Engineering
- Mustang Al-Hajailan Consulting Office
- National Commercial Bank (NCB) – Engineering & Procurements

March 2010 – Oct. 2012: Infrastructure/Facilities Planning Department/Saudi Aramco:

- Refinery & Terminals at Jizan Economic City handling Seismic/Blast Risk Management Scoping Documents.
- Lead development of Building Risk Assessment Master Plan (BRA MP) to streamlines projects to mitigate risks associated with hazards from hydrocarbon explosions, toxic releases & external fires. This master plan will handle projects submittals for upgrading/replacing plant buildings with an estimated investment of \$1.0 Billion over a period of 10 years.
- Administered comprehensive condition assessments and mitigation conceptual designs working with ABS Consulting as part of Design Bases Scoping Papers development for

upgrade or replacement of buildings located in Ras Tanura Refinery, Shedgum / Berri / Hawiyah Gas and Abqaiq Plants (over 120 buildings being affected).

- Administered the VCE Hazard Assessment & Mitigation of the Power House at Ras Tanura Refinery.
- Scoped Risk Assessment & Mitigation proposal for 100 plant buildings within a large Jeddah Refinery complex at the West side of the Kingdom.
- Scoped a major liquefaction mitigation project of an existing refinery using Compaction Grouting of a high-risk process area of 115,000 m² at an average soil depth of 8 meter.
- Delivered presentations as part of an awareness campaign for the BRA Master Plan Study.

1990 – Feb 2010: Consulting Services Department/Saudi Aramco: Initiated and administrated the development of the Seismic Hazard Assessment & Risk Mitigation Program for the entire Saudi Aramco Plants, in addition to Onshore Structural Operational Support & Project Design Reviews. I've also provided professional engineering training to field engineers.

1990 – 1993: Khaled Al-Sheref Construction Est. (Industrial Concrete Repair, Water Proofing & Flooring), CR 2952000422:

Carried out major concrete repair and flooring jobs under the management of Australian Engr. Roman Elgin, such as epoxy screed of large evaporation ponds in Jubail, restoration of precast wall expansion joints at Dhahran Military Base, crack injection jobs, repair waterproofing of Al-Jumaih GMC Hanger including reinforcing of A/C duct penetrations and other typical rehabilitation jobs.

1989 – 1990: One-year Internship Assignment with Wiss, Janey & Elstner Associates, a leading Consulting Office at Northbrook, Illinois, USA, www.wje.com: Participated in structural assessment of a bridge abutments, vibration analysis of street light poles, condition assessment of a parking garage, and seismic assessment of 5-story bldg affected by Oakland (California) 1989 Earthquake .

1986 – 1987: Master Program

1984 – 1986: Cost Estimation/Saudi Aramco

1982: Office Services Department/Saudi Aramco

Brief Work Experiences:

- Design/analysis/design reviews of Buildings and industrial structures: Piperacks, Cross Country pipeline thrust anchor blocks, pre-engineered buildings, vessels/tank foundations, vibrating machinery foundations, etc.
- Static & dynamic structural analysis including vibration analysis.
- Analysis of vibrating machine foundation utilized for supporting piperacks.

- StaadPro and other structural utility programs, e.g., structural steel connections and brace design, Column base plates, Composite beam design, etc.
- Vice Chairman of the Onshore Structures Engineering Standards Committee in Saudi Aramco.
- X-Chairman of the Safety & Security Engineering Standards Committee in Saudi Aramco. Involved with review/update requirements of security fences and crash barriers.
- Active member in the Structural Committees of the Saudi Building Code National Committee, refer to the two attached papers. Member of Structural Steel & Seismic Loading Codes Subcommittees.
- Structural designs/investigations of heavy vibrating machinery foundations.
- American-based structural-related standards/codes: IBC, ASCE 7, ACI, AISC, PCI, CMAA (cranes), API 650 (tanks).
- Design/analysis of seismic & Vapor Cloud blast resistant structures.
- Seismic Analysis & Retrofit of main Marine Bridge at Jeddah Refinery – Superstructure Anchorage and liquefaction mitigation by Compaction Grouting recommendations were provided.
- Process Column damaged anchor bolts and skirts investigation under dynamic seismic loading
- Calculation of the Site Response Magnification at Haradh Gas Plant as part of ground shaking investigation.
- Subject Matter Expert on Onshore Structural Courses for the Saudi Aramco's Professional Engineering Development Program and Instructor for refreshing 5-day course on reinforced concrete design for plant engineers.
- Industrial incidents (confidential) and plant operation structural investigations.
- Seismic and Blast Risk Assessment & Mitigation. Initiated the Seismic Risk Assessment & Mitigation Program covering major Aramco Plants Kingdom-wide, working closely with ABS Consulting, a world leader in Risk Management.
- Administered two major studies (2000-2002, 2004-2006) with King Abdullah Research Institute at KSU to a) Verify company seismic data and b) Prepare spectral accelerations contour maps for Kingdom, which is now part of Saudi Building Seismic Code.
- Developed generic structural design of main Piperacks for fast-track major industrial projects taking into consideration seismic and piping anchorage loads using limited structural steel shapes.

Papers/Presentations:

- The Road to Structural Codes: The Process and the Criteria Adopted in the Development of Saudi Structural Codes.
http://faculty.ksu.edu.sa/ashuraim/Documents/The%20road%20to%20structural%20codes_paper_086_abstract.pdf
- Seismic Provisions in the Saudi Building Code.
http://faculty.ksu.edu.sa/ashuraim/Documents/seismic_provisions_paper_SEC-119_final.pdf
- A paper on Saudi Aramco Seismic Studies in collaboration with King Abdullah Research

Institute presented at an International conference sponsored by King Saud University.

- A presentation on RT Process Column Structural Vibration Simulation presented at the first Saudi French Civil Engineering Conference sponsored by KFUPM – Year 2010.
- Presentations delivered at Saudi Aramco Technical Exchange Meetings covering:
 - Allowable Service Design (ASD) verses Load Resistant Factor Design (LRFD) of Steel Structures
 - Floor Vibration under Walking Excitation
- Seismic Risk Management Program Overviews and status given to Company CEO & President, Executive Management, Jeddah Refinery, Yanbu Refinery, and Sambref JV
- Generic Design of Piperacks (presented to a Saudi steel stockiest).

References:

Recognized by leading local & International engineering consulting offices:

- Gary Graham, VP Middle East, ABS Consulting, Mob.: +971506215806, www.absconsulting.com
- Hazem Fawzy, Senior Architect & GM, Nassir Al-Mulhim Engineering Consulting Office, Mob.: +966505810933, www.nassiralmulhim.com/home.html
- Abdul Naser Sibai, Manager, Mustang – Al-Hejailan, Tel: +966 3 8697333, www.mustanghdp.com/default.aspx
- Sayed Hijazi, Senior Structural Engineer, KBR-AMCDE, www.amcde.com
- Zuhair Fayez & Partnership, www.zfp.com
- Nabel Jokhdar, General Manager, Khatib & Alami, www.kkatibalami.com
- Recognized by Civil Engineering Departments and R&D Centers of the two leading university in Kingdom, KFUPM & KSU:
 - KFUPM, R&D: Dr. KalimRahman
 - KFUPM, Civil Engineering Dep.: Prof Azad
 - KSU, Civil Engineering Dep: Prof. Saleh Al-Sayed, Dr. Al-Shuraim, Dr. Moh Al-Haddad
- Mentor to four structural engineers during my assigned with Consulting Services Department – Saudi Aramco.

For further information, please contact me at:

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