



MUHSEN SHOBBAR AL-SANNAA



Mr. Al-Sannaa is a Piping Engineering Expert with Long International and has over 35 years of experience in major technical issues related to the design and construction of piping systems. His diversified field and project expertise includes refineries, offshore pipelines, and oil and gas. Mr. Al-Sannaa has solved hundreds of piping system problems including, but not limited to, piping vibration, particularly high frequency issues in gas piping systems such as flare headers and control stations, piping stress analysis and failure, surge studies, operational issues, pipe supports, layout, and corrosion. In addition, he is knowledgeable with capital projects at all phases and conducting project reviews to improve quality and reduce costs. He is a recognized expert in his field and was granted a U.S. patent for his innovative design of gas strainers that effectively solve chronic noise and piping vibrations at centrifugal compressor suction. Mr. Al-Sannaa also possesses strong analytical and technical writing skills. He has authored numerous technical works including engineering standards, project documentation, and contracts. Mr. Al-Sannaa is an instructor and lecturer on piping and pipeline topics including design, construction, and operational issues such as vibration and hydrotesting. He is adept at performing piping stress analysis using various software programs including CAESAR II, AutoPipe, and SIMFLEX II. In addition, he is knowledgeable with SPS for Flow Assurance Analysis, ANSYS for Finite Element Analysis, and with Microsoft Office software including PowerPoint.

EDUCATION

M.S. Mechanical Engineering with honors, King Fahad University of Petroleum Minerals, Dhahran, Saudi Arabia, 1981

B.S. Mechanical Engineering with honors, King Fahad University of Petroleum Minerals, 1977

Completed over 50 credits in Ph.D. Mechanical Engineering studies

Various management and technical courses, workshops, and seminars

PROFESSIONAL AFFILIATIONS

Saudi Engineers Council Membership #436300 (National ID #1013269806)

Chairman, American Society of Mechanical Engineers (ASME) (2003–2005)

Vice Chairman, ASME (2001–2002)

Education Chairman, ASME (1996–2001)

Member, ASME (1994)

LANGUAGES

Arabic

English

PRESENTATIONS, LECTURES, AND SEMINARS

Presenter, “Using High CS Pipe for Pipelines, A Point of Reconsideration,” MPWT Dammam NACE and AWS Conference, 2017

Presenter, Workshop Leader, and Panel Chairman, ASME Saudi Arabia Section, MEMEC Bahrain, 2007

Presenter, “Solving Compressor Suction Piping Vibration by Process of Elimination,” PetroTech, 2006

Presenter, “Selection of Flange Gaskets – Lessons Learned,” 5th Maintenance Forum, 2006

Instructor, “Piping Vibration Workshop,” Piping and Valves Roundtable and Workshop, Saudi Aramco, 2004



Instructor, “Piping Design and Construction Workshop,” Piping and Valves Roundtable and Workshop, Saudi Aramco, 2003

Instructor, “Piping Failures,” Piping and Valves Roundtable and Workshop, 2000

Instructor, “Failures in Small Bore Piping,” Piping and Valves Roundtable, 1996

Instructor, “Piping, Pipelines, and Valves,” MEX-101, Saudi Aramco

Instructor, “Flange Integrity Seminars,” Saudi Aramco

Instructor, “Engineering Fundamentals for Piping and Pipeline,” Mustang HDP

Instructor, “Regulated Vendor List for Pipes, Fittings, and Flanges,” Saudi Aramco

Trained over 1,000 engineers within Saudi Aramco and the local engineering community

TECHNICAL EXPERIENCE

- Expert in piping and pipelines, piping vibration dynamics, industrial noise, and stress analysis
- Proven problem-solver for hundreds of challenging piping system issues including, but not limited to, piping vibration, particularly high frequency issues in gas piping systems such as flare headers and control stations, piping stress analysis and failure, surge studies, operational issues, pipe supports, layout, and corrosion
- Thorough understanding of major technical issues related to the design and construction of piping systems
- Developed and monitored the scope of many research projects and studies conducted by the King Fahd University of Petroleum and Minerals related to piping system design and construction
- U.S. patent holder for the innovative design of gas strainers that effectively solve chronic noise and piping vibrations at centrifugal compressor suction
- Expertise with capital projects at all phases and conducting project reviews to improve project quality
- Knowledgeable of value engineering and methods to decrease costs
- Led and participated in numerous investigation committees for major and minor industrial accidents
- Author, instructor, and lecturer on piping and pipeline topics including design, construction, and operational issues such as vibration and hydrotesting
- Recipient of 14 senior management level appreciation and recognition awards

PROJECT EXPERIENCE

Mr. Al-Sannaa’s diversified field and project expertise includes refineries, offshore pipelines, and oil and gas. He has solved hundreds of piping system problems. Major project experience includes:

Refineries and Offshore Pipelines

- Jubail Export Refinery Project (SATORP): Managed multi-discipline engineering activities at various stages during the construction of this world-class refinery located in Al Jubail, Saudi Arabia. Issued SATORP’s Engineering Standards and Specifications and taught piping classes to engineers. Acted as the project consultant. Solved critical piping issues and conducted pipeline surge analysis.
- Ras Tanura Refinery: Served as Operation and Piping Engineer in the early 1990s for this oldest refinery on the Persian Gulf coast owned by Saudi Aramco. Subsequently, served as Piping Engineer.



PROFESSIONAL EXPERIENCE

Long International, Inc.

Dammam, Saudi Arabia (May 2021 to Present)

As a Piping Engineering Expert with Long International, Mr. Al-Sannaa offers innovative solutions to address technical issues related to the design and construction of piping systems. In addition, he provides advice and expertise to clients related to piping vibration, particularly high frequency issues in gas piping systems such as flare headers and control stations, piping stress analysis and failure, surge studies, operational issues, pipe supports, layout, and corrosion.

Freelance Engineering Consultant

Dhahran, Saudi Arabia (January 2020 to Present)

As a freelance Engineering Consultant, Mr. Al-Sannaa provides consulting services to solve major technical issues related to the design and construction of piping systems.

CORE Engineering

Dhahran, Saudi Arabia (September 2018 to September 2019)

As an Engineering Principal Consultant, Mr. Al-Sannaa provided expertise and advice relating to piping and pipeline problems including piping vibration, industrial noise, and stress analysis.

Mustang HDP (Wood)

Dhahran, Saudi Arabia (January 2015 to July 2018)

During his employment with Mustang, Mr. Al-Sannaa worked vigorously to improve quality of work, inspire young Saudi engineers, and build team spirit. He held various roles with increasing responsibility, including Principal Consultant, Vibration Dynamics and Noise, Offshore Pipeline Engineering Consultant and Pipeline Engineering Department Manager. As Pipeline Engineering Department Manager, Mr. Al-Sannaa supervised approximately 28 professional senior and junior engineers, CADD designers, and operators. Moreover, he solved complex piping and structural vibration issues. He delivered several organized courses in piping and pipeline to company engineers concerning design, construction, and operational issues including vibration and hydrotesting.

AHECON

Dhahran, Saudi Arabia (April 2014 to December 2014)

Mr. Al-Sannaa was a Freelancer Consultant associated with AHECON. He transitioned to consulting for AHECON after working with Saudi Aramco for almost 29 years.

Saudi Aramco

Dhahran, Saudi Arabia (November 2013 to March 2014)

Mr. Al-Sannaa served as a Projects Consultant in the Saudi Aramco Domestic Joint Venture Department.



SATORP Project (Saudi Aramco)

Saudi Arabia (November 2006 to November 2013)

Mr. Al-Sannaa was temporarily assigned to work on the Jubail Export Refinery Project (SATORP). During his assignment, Mr. Al-Sannaa held the following roles: FEED Deputy Engineering Manager and FEED Standards Coordinator in Rome, Italy, EPC Deputy Engineering Manager-Jubail, and Engineering Manager for Package 9 (Jubail KFIP and Export Facilities). From July 2011 to March 2012, he worked in Seoul, Korea, as Engineering Supervisor Manager Package 2C (Propylene Export Facilities). From November 2006 to November 2013, he also acted as the SATORP Primary Piping and Pipelines Consultant as well as Surge Analysis Reviewer. During his involvement on the SATORP Project, Mr. Al-Sannaa issued SATORP's Engineering Standards and Specifications and taught piping classes to engineers. Moreover, he acted as the project consultant and was responsible for solving critical piping issues and conducting pipeline surge analysis.

Saudi Aramco

Dhahran, Saudi Arabia, and Houston, Texas (June 1985 to October 2006)

Mr. Al-Sannaa began his career with Saudi Aramco in 1985 as a multi-discipline Mechanical Engineer. He subsequently transitioned into the role of Piping Engineer. From 1990 to 1991, he served as Operation and Piping Engineer for the Ras Tanura Refinery Project. He later served as Piping Engineer. From 1992 to 1993, Mr. Al-Sannaa relocated to Houston for an assignment as an FEA Analyst with Stress Engineering Inc. During this time, he participated in a research project for the American Gas Association Pipeline Research Committee. As part of his research, Mr. Al-Sannaa conducted extensive finite element analysis and supervised laboratory testing. Later, he co-authored the technical report "Design Guidelines for High-Pressure Pipe Fittings." He returned to Saudi Arabia in late 1993 as a Piping and Pipelines Consultant. From 2000 to 2006, he served as Chairman of the Piping Standards Committee for the Saudi Aramco Consulting Services Department in Dhahran. As Chairman of the Piping Standards Committee, Mr. Al-Sannaa revised and restructured the company Piping Standards, Specifications, Procedures, and Standard Drawings to ensure practicality, clarity, cost effectiveness, and being scientifically supported by studies and research. In addition, he developed the Regulated Vendor List for Pipes, Fittings, and Flanges.

Mr. Al-Sannaa also developed and monitored the scope of many research projects and studies conducted by King Fahd University of Petroleum and Minerals as these studies related to the design and construction of major technical piping system issues. The outcome of these studies resulted in many changes to Saudi Aramco piping standards. Examples include: Buried Pipeline Design, Dead Leg in Piping, and Design Guidelines for High Gas Velocity Piping Systems.

King Fahd University of Petroleum and Minerals

Dhahran, Saudi Arabia (1972 to 1985)

Mr. Al-Sannaa was a part-time member of the King Fahd University Housing Department Staff. He was also a librarian, grader, and lab assistant. From 1977 to 1985, he was a Graduate Assistant and Lecturer, and from 1987 to 1989, he served as a Pipeline Operation Engineer for Saudi Aramco in the Dhahran and E/W Pipelines Department.

PUBLICATIONS AND SPEAKING ENGAGEMENTS

"Characteristics of Flow Field and Water Concentration in Horizontal Dead Leg," co-author with King Fahd University of Petroleum and Minerals Professors, *Heat Mass Transfer Journal*, 2005.



“Two Dimensional Finite Element Analysis of Large Diameter Flanges,” co-author with Professor Abdulmalik Al-Ghamdi, 6th Saudi Engineering Conference, 2002.

“Design Guidelines for High-Pressure Pipe Fittings,” co-author with Drs. Joe Fowler and Mahmood Samman, American Gas Association, Houston, Texas, 1993.

“Piping Standards, Specifications, Procedures and Standard Drawings,” Chairman of the Saudi Aramco Piping Standards Committee.

“Buried Pipeline Design,” Saudi Aramco.

“Dead Leg in Piping,” Saudi Aramco.

“Design Guidelines for High Gas Velocity Piping Systems,” Saudi Aramco.

“Piping Stress Analysis Using CAESAR II (Static and Dynamic),” Saudi Aramco.

“Piping Systems Vibration Solutions,” Saudi Aramco.

“Using High Grade CS in Pipelines – A Point to Reconsider,” Saudi Aramco.