

Karl Kolmetz

Summary

Degreed Chemical Engineer with over thirty-five years of progressive experience in the design, project management, construction, training, commissioning, and operations management of process units from the US Gulf Coast through Asia. Strengths encompass design details that originate from a strong operations background, with the ability to incorporate positive ideas from differing sources, Refining, Olefins, Cryogenics, Natural Gas Processing and Specialty Chemicals.

International Management experience as Managing Director, Business Director, and Vice President governing sales, engineering, production and R&D for multi-million business worldwide. Managing international and multi-cultural team with wide-experience in Business turn-over, Division Re-Engineering and Business performance Improvement.

Multiple roles in project management, feed studies, energy studies, and cost estimation with gated projects. High safety awareness that was developed from commissioning experiences, HAZOP Facilitation and the positive results of Process Safety Management. Written detailed over five Engineering Design Guidelines on Project Management and Project Cost Estimation.

Experience includes over fifteen years (15+) of **Refining Experience** in Phibro Houston, Texas, Total Refinery in Port Arthur Texas, and Shell at Norco Louisiana. Written over ten detailed Engineering Design Guidelines on Refining Process.

Over fourteen years (15+) **Ethylene experience** with the Westlake / Titan Group, Chandra Asri Petrochemicals, JG Summit Petrochemicals, and Indorama Ventures. Written over ten detailed Engineering Design Guidelines on Ethylene Process.

Over seventeen years (17+) **Cryogenic Gas Processing**, Ethylene, NGL, LPG and LNG design and commissioning experience with Westlake, Sulzer, KLM, Linde, DCP, Total and Enable Midstream. Written detailed Engineering Design Guidelines on Cryogenic Natural Gas Processing, LNG, LPG, and LNG systems.

Concurrently, over ten years (10+) of **specialty distillation experience** as Asian Technical Manager for Sulzer Chemtech, a major distillation company, Westlake Group and KLM Technology Group. Written detailed three Engineering Design Guidelines on Distillation.

Process Safety Management experience on multiple projects and roles for over 30 years. Experienced as a Hazop participant, facilitator and Hazop Team Leader Trainer. Written detailed Engineering Design Guidelines on Hazop, and safety in process design.

- 1) HAZOP Team Leader Training – 40 Classroom Hours
- 2) Root Cause Analysis, 24 Classroom Hours, Lake Charles LA 1999

- 3) Process Safety Management, 16 Classroom Hours, Port Arthur TX, 2014
- 4) Process Safety Management, 40 Classroom Hours, Sulphur, LA 2016
- 5) NFPA 70E, 8 Classroom Hours, Sulphur, LA 2016
- 6) Layers of Protection Analysis, 24 Classroom Hours, Jubail, Saudi Arabia, 2019
- 7) Risk Management, Jubail, Saudi Arabia, 2019
- 8) Transient Hazop Training Jubail, Saudi Arabia 2019
- 9) Safety Orientation, 40 Classroom Hours, Magnolia Arkansas, 2020
- 10) Participated and facilitated in over 50 HAZOPs
- 11) Taught over 5 courses on HAZOP Team Leader Training
- 12) Written a 75-page Guideline for Process Safety Management
- 13) Written a 77-page Guideline for HAZOPs
- 14) Written a 73-page Guideline for LOPA
- 15) Written a 153-page Guideline for Safety in Process Design

Commissioned and started up over twenty grass roots and revamp units including EB/Styrene (3), Refining (3), Natural Gas (3), Ethylene (4), Hydrotreaters (4) BTX (6) and others. Written detailed commissioning and start up procedures.

Conducted many feed and energy studies as production engineer, senior process engineer and technical manager. Major corporations see 1 to 3% energy reduction per year. A feed and energy study can have a very high return on investment.

Has extensive experience in **process equipment design and troubleshooting**. Has designed and commissioned multiple units. Has process design experience in

- 1) Heat Exchangers – completed process design for over fifty heat exchangers and reboilers, has 139-page process design guidelines for heat exchangers, a 97-page guideline for plate heat exchangers, has a 74-page guideline on cryogenic heat exchangers, a 91-page guideline on air cooled heat exchangers and 70-page guideline for reboilers. Has built excel programs to calculate fouling factors and has helped troubleshoot heat exchangers and reboilers.
- 2) Pumps – completed process design for over fifty pumps, has 175-page process design guideline for pumps, and has helped troubleshoot pumps.
- 3) Distillation Columns – completed process design for over fifty columns, has three process design guidelines for columns, a 147-page guideline on general distillation, a 50-page guideline on tray hydraulics, and a 68-page guideline on packing hydraulics. Has helped troubleshoot distillation columns.
- 4) Compressors / expanders – completed process design for over twenty compressors, has process design guideline for compressors, and has helped troubleshoot compressor and expanders
- 5) Storage Tanks and Product Loading systems – completed process design for over twenty storage tanks and product loading systems. Has a 92-page guideline to storage tanks and a 98-page guideline on Product Loading Systems. Has helped troubleshoot storage tank and product loading systems
- 6) Energy Management – completed many feed and energy studies. Has a 146-page guideline on Energy Management of Processing plants and 89-page guideline on Energy Management of Buildings.
- 7) Flare Systems – Has a 128 Page guideline on Flare System Design.
- 8) And others

Publications include authoring and co-authoring over 170 technical papers on a variety of subjects for product recovery, distillation troubleshooting, training, project management, and process design with safety and environmental concerns. He is an industrial lecturer at universities and has taught many courses for the process industry.

Industry Courses Taught

1. Introduction to Distillation
2. Advanced Distillation
3. Optimizing Ethylene Plants
4. Optimizing Refineries
5. Optimizing Natural Gas Plants
6. Flare Design and Mitigation
7. HAZOP Team Leader Training
8. Chemical Engineering for Non-Chemical Engineers
9. Introduction to Refining for Non-Technical Professionals
10. Flaring Systems
11. Safe Commissioning of Process Plants
12. Process Plant Equipment Design
13. Process Plant Equipment Troubleshooting
14. Building Operational Excellence
15. Introduction to Petrochemicals

Education

Bachelor of Science in Chemical Engineering, University of Houston - 1992
Hysim Computer Simulation Course, 40 Classroom Hours, University of Rice
Hazard Facilitator Training Course, 40 Classroom Hours, Houston, TX,
Raytheon EB Styrene Overview, 80 Classroom Hours, Houston, TX - 1995
ABB Lummis Ethylene Overview, 80 Classroom Hours, Lake Charles, LA, 1996
Aspen Computer Simulation Course, 24 Classroom Hours, Lake Charles, LA, 1998
Root Cause Analysis, 24 Classroom Hours, Lake Charles LA 1999
ASME Pump Fundamentals, 24 Classroom Hours, New Orleans, LA 1999
Pinch Technology, LSU Seminar, 8 Classroom Hours, Lake Charles, LA, 1999
KTI Spyro Ethylene Furnace Modeling, 8 Classroom Hours, Lake Charles, LA 2000
KBR Ethylene Seminar, 16 Classroom Hours, Singapore, Singapore, March 2000
Sulzer Distillation Seminar, 8 Classroom hours, Kuala Lumpur, Malaysia, March 2002
ISO 9002 Overview, 8 Classroom Hours, Johor Bahru, Malaysia, July 2002
Departmental Management, 24 Classroom Hours, Johor Bahru, Malaysia, Dec 2002
Financial Overview for Managers, 24 Classroom Hours, Singapore, May 2004
Team Building, 8 Classroom Hours, Switzerland, Dec 2004
Managing Teams, 16 Classroom Hours, Tulsa OK, 2012
Team Building, 16 Classroom Hours, Tulsa OK, 2012
Process Safety Management, 16 Classroom Hours, Port Arthur TX, 2014
Process Safety Management, 40 Classroom Hours, Sulphur, LA 2016
NFPA 70E, 8 Classroom Hours, Sulphur, LA 2016
GPSA Natural Gas Processing, Oklahoma City, OK 2018
Layers of Protection Analysis, 24 Classroom Hours, Jubail, Saudi Arabia, 2019
Risk Management, Jubail, Saudi Arabia, 2019
Transient Hazard Training Jubail, Saudi Arabia 2019
Safety Orientation, 40 Classroom Hours, Magnolia Arkansas, 2020

Professional Experience

August 2005 to Present
Managing Director

KLM Technology Group,
Florida, Texas and Malaysia

- Functioning as the Principal / Engineering / Managing Director for a technical consultancy group, providing specialized services and equipment to improve process plant operational efficiency, profitability, and safety.
- Responsible for Process Guarantees for Process Equipment
- Special project includes, process studies, revamps for increased capacity, and high capacity and efficiency distillation equipment.
- HAZOP facilitation and Trainer for Process Units
- Project Manager for multiple projects
- Owners Representative for multiple projects
- Leading grassroots commissioning teams
- Process optimization for feedstock reduction and energy reduction.
- Providing specialized technical training to the chemical processing industry.
- Providing Engineering Documentation for the Processing Industry; Refining, Olefins, Cryogenics and Specialty Chemicals
- Energy and Feed Studies
- Providing Specialized Process Equipment – Distillation, Heat Exchangers and Pumps

Selected Contracts

2019
Global Senior PSM Engineer

Specialty Chemical
Houston, Tx

- Functioning as Global PSM Engineer for multiple petrochemical plants all around the world; ethylene, ammonia, methanol, plastics, chlorine
- Participate in required audits
- Helped develop internal "Technical Safety Alert" for Ethylene Plant Decoking
- Helped develop safety critical scenarios for Ammonia and Ethylene Plants to review at each HAZOP
- Teaching and developing / reviewing training courses for; Risk Management Principles, HAZOP Leaders, LOPA, Incident Investigation, Transient HAZOP
- Developing PSM Standards and Procedures
- Developing HAZOP Best Practices

2014
Senior Engineering Advisor / Senior Process Engineer

Refinery,
Port Arthur Texas

- Functioning as the Engineering Advisor for a Major Refinery.
- Developing project Schedule "A" Packages with budgetary costing.
- Developing Feed Studies for Approved Projects
- Developing Feed Study for Expansion of Condensate Splitter
- Reviewing Feed Opportunities for Coker Unit
- Assisted Technical Group with distillation reviews and Lunch and Learn Trainings
- Assisted Operations Group with Grassroots LPG Cryogenic Commissioning
- Review Crude Unit Expansion for improved energy and capacity

2011
Assistant Project Manager

JG Summit Olefins
Batangas, Philippines

- Functioning as the Assistant Project Manager for a New 320 KTA Lummus Naphtha Cracker
- Finalizing HAZOP Reviews and building Process Safety Management Systems.
- Reviewed unit economics and suggested key improvements with less than 12 months payback.
- Training key staff in job functions

2008
VP Technology

PT Chandra Asri
Cilegon, Indonesia

- Functioning as the Vice President of Technology for seven process units. 1) Lummus Ethylene, 2) UCC Polyethylene, 3) SDK Polyethylene, 4) Badger Ethyl Benzene, 5) Lummus Ethyl Benzene, and 6,7) two Lummus Styrene Units
- Helped develop Ethylene Unit Yields Optimization Team resulting in feedstock cost reduction of greater than USD \$7 M per year in 2008.
- Helped develop Feed and Energy Key Performance Indicator implementation to increase operating margin by USD \$20 M per year in 2008, and USD \$13 M in 2009
- Improved Unit Reliability – Units listed above - 1,2, and 3 will set record production rates in 2010
- Coordinating Basic Engineering Design Package for a New Butadiene Unit including Hazop
- Coordinating Study for potential Ethylene Expansion
- Conducted Hazop Team Leader Training
- Coordinated all seven system HAZOP Revalidations

1996 to 2003

**Westlake Group, Houston, TX
Operations in USA and Malaysia**

- Functioning as the Process Engineering Manager for ethylene units with a combined capacity of 660 KTA with associated Krupp Uhde BTX.
- Direct supervision of up to twelve process engineers.
- Helped develop Ethylene Unit Yields Optimization Team resulting in feedstock cost reduction of greater than US \$10 M per year in 2001-02.
- Helped develop Feed and Energy Key Performance Indicator implementation to increase operating margin by US \$2 M per year in July 2002.
- Assigned to assist with an Expansion Study and Unit Optimization in June 2000. Study and Optimization found 7% additional capacity in existing plant. Helped design changes for additional unit capacity. Reviewing unit operations and submitting recommendations for optimization.
- Reviewed Extractive Distillation Operation for a 107 MTons per year of Benzene. Designed improved tower internals for an 18%-unit expansion wrote article on same.