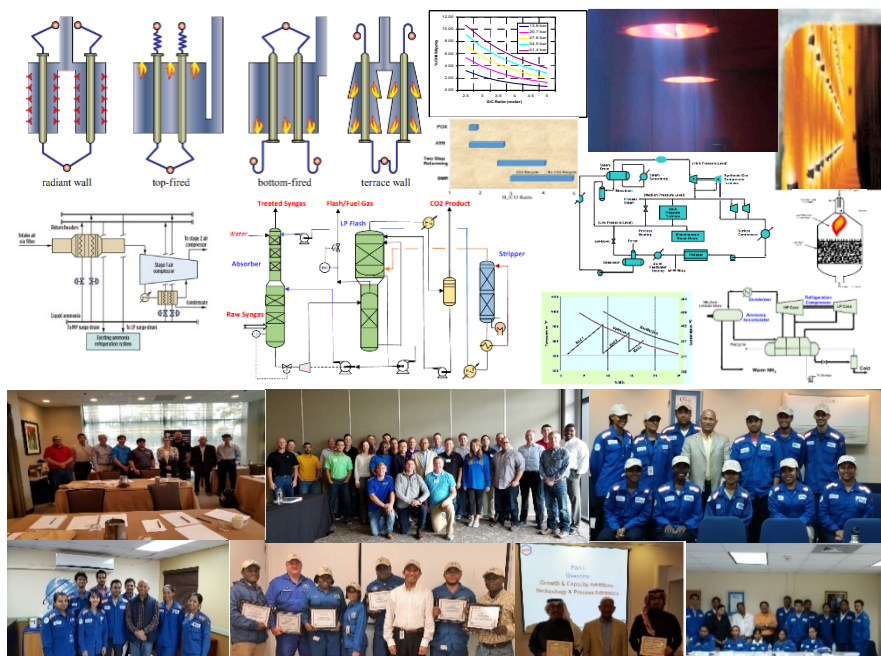


Ammonia Methanol Production & Troubleshooting Training

Including
**Best Practices
Lessons Learned
Equipment Monitoring
Improvements Tips
(Customized, as needed)**



EXCELLENT TESTOMONIALS FROM MORE THAN 500 ATTENDEES

AMMONIA TRAINING SINCE 2006

Ammonia/Methanol Plants Training

by Kinetics Process Improvements

OBJECTIVE: *The comprehensive workshop provides practical insights with a focus on process, reforming, troubleshooting, performance improvements in Ammonia & Methanol Plants to improve monitoring, maintenance & reliability*

OVERVIEW

- Process & Technology advances
- Process configurations & analysis
- Best Practices/Lessons Learned

PROCESS & TROUBLESHOOTING

- Improve Reforming performance
- Minimizing inerts in MUG
- Minimizing pressure drop
- Improve Compressor capacity
- Improve CO₂ removal performance
- Improve Mol. Sieve performance
- Cryogenic Purifier modeling & issues
- Optimize Synloop for max production
- Improve Ammonia Refrigeration
- Improve Steam system
- Process monitoring techniques
- Case studies/Lessons learnt
- Plant Modeling & Evaluation

CATALYST CONSIDERATIONS

- Feed Purification
- Reforming- Pre/Primary/Secondary
- Shift- LTS/HTS
- Methanation
- Ammonia Synthesis
- Methanol Synthesis

PRIMARY REFORMER

- Thermodynamics and Chemistry
- Reformer Arrangements
- All about Radiant Tubes
- Critical design features
- Key Operating Variables
- Burners, Draft & Combustion
- Air Preheater & considerations
- Controls & Safety Systems
- NO_x mitigation- pre- & post treatment
- Startup & Shut down consideration
- Re-harping considerations
- Catalyst evaluation techniques
- Efficiency evaluation & monitoring

AMMONIA/METHANOL SYNLOOP

- Converter types & Loop configurations
- Ammonia Refrigeration
- Optimize loop for max production
- H₂ recovery & CO₂ addition

PERFORMANCE MONITORING

- Primary Reformer Heat Balance, ATE
- Reformer Thermal Efficiency
- Compressor/Turbine Efficiency
- Heat Exchanger/Convection Fouling

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TRAINING FORMAT

- *Interactive Q&A for practical learning*
- *What-if scenarios for improvements*
- *Analysis of Practical Case Studies*
- *Models to demo Plant sensitivity*
- *Simple to follow Training material*

TARGET GROUP

- *Process/Operation Engr's*
- *Production Sup'dt/Supervisors*
- *Project/Mechanical Engineers*
- *Reliability & Safety Engineers*
- *Business Development/Analysts*

REFERENCES: CFI, NUTRIEN, SABIC, CNC, N2000, PLNL, AUM, ADVANSIX, MOSAIC, METHANEX, METHANOL HOLDINGS, CELANESE, AMPCO (Trained over 500 candidates with many repeats)