

# CO2 Removal Systems Revamping & Upgrading

*aMDEA & Benfield Systems for Higher Capacity Reduced CO2 Slip*

IMPLEMENTED MANY SUCCESSFUL REVAMPS OF AMDEA & BENFIELD CO2 REMOVAL SYSTEMS

## Revamping CO2 Removal Systems

By Kinetics Process Improvements, Houston

*KPI-Houston is an Independent Process Technology, Design & Engg Consulting group specializing in Ammonia & Methanol Plants Revamps to improve the Capacity, Efficiency, and Reliability & CO2 footprint. Over 100 Revamp Studies completed*

### Revamp Experience

- **aMDEA Systems**
  - ✓ Single & Two Stages
  - ✓ Single-stage with LP flash
  - ✓ HP flash CO<sub>2</sub> recovery
  - ✓ Vac. Flash with LP Flash
  - ✓ Conversion of MEA to aMDEA
- **Benfield Systems**
  - ✓ With all Activators in use
  - ✓ All Process Configurations
  - ✓ Conversion to aMDEA study

### Expertise & Services

- **Proven Simulation modeling**
  - ✓ aMDEA Systems
  - ✓ Benfield Systems
- Holistic approach
- Evaluation of Column internals
- Evaluation & sizing Flash Drum
- Evaluation & Sizing Ejectors
- Evaluation & Sizing Reboilers
- Equipment evaluation & sizing
- Revamp Cost Estimates
- Basic Process Design Package

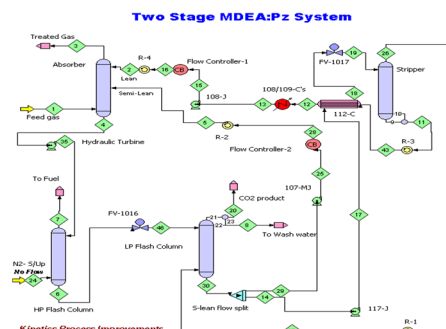
### References

- **Revamp Engineering Studies:**
  - ✓ aMDEA- 1200 tpd Ammonia \*
  - ✓ aMDEA- 3000 tpd Ammonia
  - ✓ aMDEA- 2520 tpd Ammonia \*
  - ✓ aMDEA- 1950 tpd Ammonia \*
  - ✓ Benfield-2200 tpd Ammonia \*
  - ✓ Benfield-2200 tpd Ammonia \*
  - ✓ Benfield-2250 tpd Ammonia \*
  - \*Successfully Implemented**
- **Revamp approach/scope:**
  - ✓ Simulation modeling
  - ✓ Engineering Study
  - ✓ Equipment Evaluation & sizing
  - ✓ Budgetary Cost Estimation
- **Revamp objectives included:**
  - ✓ Reducing CO<sub>2</sub> Slippage
  - ✓ Higher Capacity
  - ✓ Equipment adequacy & sizing

### End Users

**Nutrien, CNC, N2000, LSB**  
**CFI & YARA** (for various site locations)

SINCE 2006



### Kinetics Process Improvements

16000 Park Ten Pl.,  
Suite#903  
Houston- 77084 (USA)  
Phone: 281 773 1629  
Fax: 832 565 9360  
Email: [process@kpieng.com](mailto:process@kpieng.com)  
Web: [kpieng.com](http://kpieng.com), [kpieng.net](http://kpieng.net)

