

## Amine Solvent Carryover Minimization & Amine Recovery

### Problem

Amine losses are a prevalent problem in most plants that have amine units for H<sub>2</sub>S and CO<sub>2</sub> removal. These units can be in refineries, gas plants, upstream operations, petrochemical plants, metal processing facilities, SO<sub>2</sub> removal plants and CO<sub>2</sub> sequestration plants. The loss of amine solvents (and also physical solvents) are to some extent unavoidable due to issues such as foaming episodes in gas treating, upsets, mechanical entrainment caused by high absorber velocities, absorber flooding or absorber design deficiencies. In liquid streams, amine solvent losses can be caused by solubility of the amine solvent in the treated stream. Losses are also caused by emulsification of the amine solution and the hydrocarbon liquid phase (generally LPG) and mechanical entrainment of the amine.



The cost associated with amine losses can be staggering and can reach millions of dollars per month. One can consider the following areas of economic impacts in amine losses:

- Amine cost (up to USD 5/lb for formulated amines)
- Amine inventory, storage and replenishment maintenance
- Downstream impacts in fuel gas lines, burners, compressors and turbines
- Downstream impacts in mercaptans removal, alkylation and caustic units

### Solution

The Amine Carryover Minimization & Amine Recovery Program at Nexo Solutions is a multi-stage approach that includes on-site tests, engineering evaluations and simulations. The program starts with no capital cost initiative initially. The program includes:

- Amine absorber simulations for amine loss minimization
- Instrumentation verification
- Suspended solids evaluation at lean amine stream
- Contaminant profiles at inlet gas and liquid streams
- Amine loss quantification in gas and liquid streams
- Surfactant and hydrocarbon analysis
- Separation system evaluation (filters, coalescers and activated carbon beds)

The program also includes the incorporation of an amine recovery system if there is a need for a high efficiency amine recovery unit. The system was designed to recover amine carryover and to extract residual dissolved amines in the treated streams.

For additional information, please contact us at [Support@NexoSolutions.com](mailto:Support@NexoSolutions.com)