



Amine Optimization

Specializing in Amine Unit Performance

Amine Solvent Carryover Root-Cause, Losses Minimization & Amine Recovery

Problem

Amine solvent losses are a prevalent problem in most plants that treat LPG (liquefied petroleum gas) with amine units. Amine solvent losses can also take place in other amine units. These can be amine units in refineries, gas plants, upstream operations, petrochemical plants, metal processing facilities, SO₂ removal plants and CO₂ sequestration plants. The loss of amine solvents is to some extent unavoidable because of foaming episodes in treating streams, 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 solvent.



The cost associated with amine solvent losses can be high and can reach millions of dollars per year. In addition to several downstream effects, 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 Amine Optimization 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)
- Amine recovery system design and fabrication

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 Help@AmineOptimization.com