

Removal of Acid Gas with Amine



23 USGPM Packaged Amine Sweetening Plant

If Acid Gas {H₂S and CO₂} is present in your well effluent, it must be removed prior to use. This is normally achieved with the use of Amine.

ALCO Gas & Oil has over twenty-five years of experience in the engineering design and fabrication of plants to remove acid gas. We will custom design a plant utilizing the amine that best suits your process conditions. ALCO Gas & Oil has extensive experience with MEA, DEA, DGA and MDEA (and MDEA based proprietary amines).

There are more than one hundred plants designed and fabricated by ALCO Gas & Oil Production Equipment Ltd. in service at this time. The units range in size from 500,000 SCFD (15 x 10³ m³/d) to 50,000,000 SCFD (1,500 x 10³ m³/d) with amine circulation rates from 5 to 400 USGPM.

The ALCO team offers:

- **EXPERIENCE** with over 100 plants in service.
- **CUSTOM DESIGNED** packages to meet your specific needs.
- **ALTERNATIVES** for removing the acid gas vary from the relatively simple MEA and DEA plants to the more sophisticated, selective solvents such as MDEA (and MDSA based proprietary amines).

ALCO Gas & Oil will make a recommendation based on your particular requirements.

- **OPTIONS** offered routinely by ALCO Gas & Oil include inlet separation and/or slug catching, inlet compression filter separation (required to remove lube oil to minimize foaming), inlet heating, power generation, flare system, metering, control (ie: remote, local, computer, etc.), steam generation (for water makeup), amine reclamation, acid gas disposal and sulphur recovery, downstream gas scrubbing, dehydration and/or processing for hydrocarbon dewpoint control and/or liquid recovery.
- **MODULAR DESIGN** to meet specific transportation and/or installation requirements.
- **SUPPORT SERVICE** program for installation and operation.
- **COMPETITIVE** pricing.

Information Required For Design Is:
 (English or Metric Units)

Site Conditions:

Elevation (above sea level) _____ Feet
 Min./Max. Ambient Temp. _____ °F

Information Required For Each Inlet Stream:

Composition (to C₇₊ min) _____ Mol %
 Flow Rate _____ MMscfd or B/D
 Inlet Pressure _____ psig
 Inlet Temperature _____ °F
 Water Content (ie. saturated) @ _____ °F & _____ psig
 Vessel Design Pressure _____ psig
 Corrosion Allowance _____ inches

Utilities Available:

- Outlet Gas Specification for H₂S and CO₂.
- Shipping Limitations.
- Delivery Point.

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117 GPM Gas Sweetening Plant (also see cover of folder).

AMINE SWEETENING PLANT

HOW IT WORKS

The inlet sour gas flows to the Amine Contactor which provides intimate contact between the gas and the downflowing amine. The gas leaving the top of the absorber has its acid gas content reduced to specification, (typically, $\frac{1}{4}$ grain/100 SCF H_2S and 2.0 mole % max. CO_2).

The rich amine is discharged via the Amine Flash Separator through the low pressure filter, (a filtered amine slip stream flows through the Charcoal Filter to remove any degradation product and hydrocarbon traces present in the amine) and rich Amine/Lean Amine Heat Exchanger to the upper section of the Amine Regenerator.

Amine regeneration occurs as steam from the Amine Reboiler warms the rich Amine in the Amine Regenerator causing the release of steam and the absorbed H_2S and CO_2 . The vapour is cooled in the Reflux Condenser with the condensed water being pumped as reflux and the acid gas sent to skid edge.

The lean amine is cooled and pumped back to the Amine Contactor, completing the loop.

Provisions must be made for:

- Amine reclaiming for MEA and DGA plants.
- Water and amine make-up.
- Water and/or hydrocarbon dewpoint control.
- Corrosion protection.
- Anti-foam chemical injection when required.

