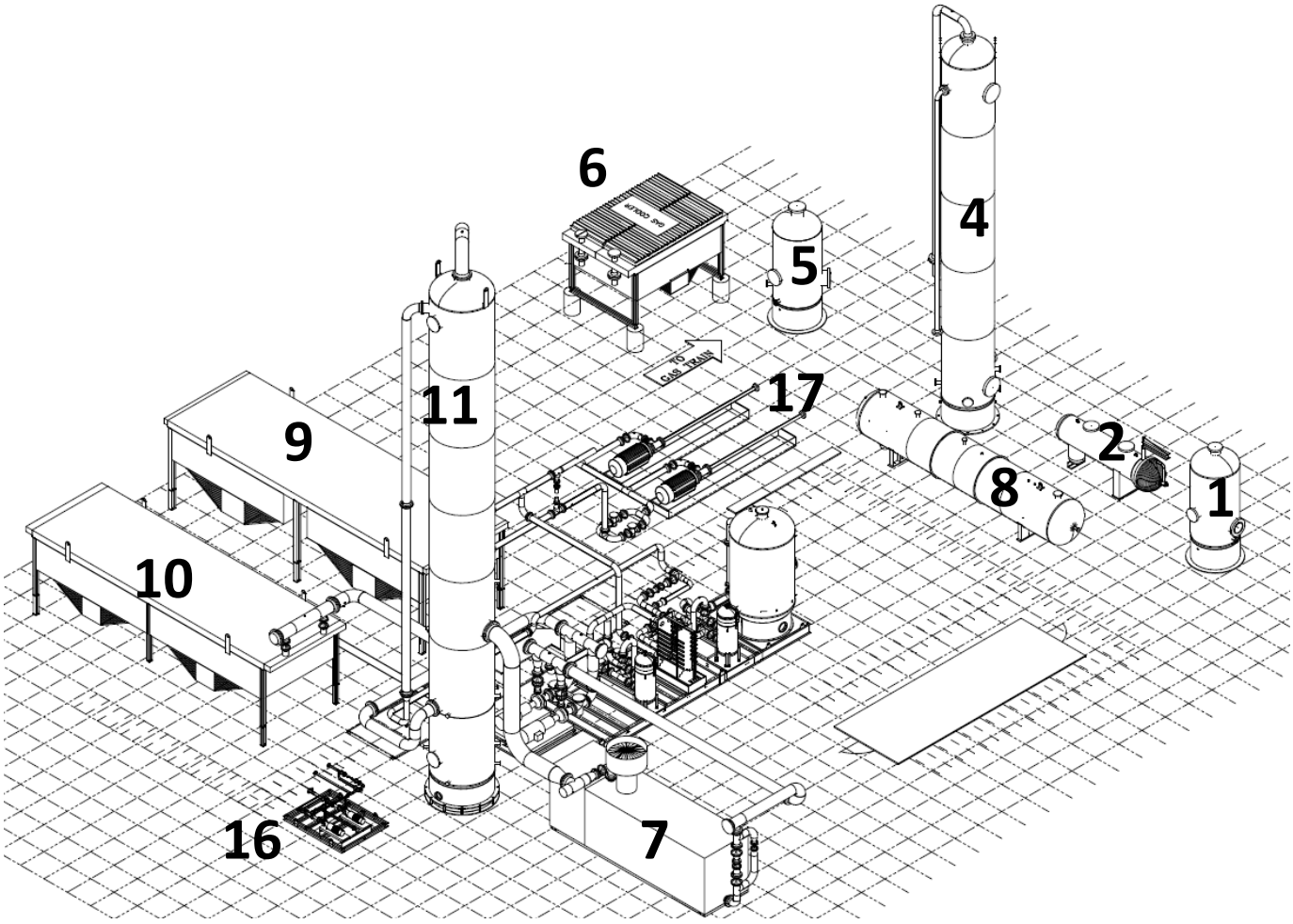
Gas Sweetening Booklet
300 GPM Amine Plant

Standard Amine Plant (300 GPM)



- Single or multiple skids
- Main regenerator skid
- Gas train skid or block mounted items
- Main solution pumps skid
- Reflux pump skid
- Coded vessels: ASME Section VIII, PWHT, ANSI B31.1 piping

Standard Amine Plant Major Components

- **Sour gas inlet and gas train**
  - Pressure 700#-1300#
  - Temp 60F – 130F
  - If source gas is delivered at higher or lower temperature, an inlet gas cooler may be indicated
  - Skidded or block mounted gas train

1. **Inlet Gas Scrubber or inlet separator**
   - Separates gas and water or other liquids
   - Instrumentation and controls for liquid level and automatic purge (optional)
   - It may be located at the bottom of contactor

2. **Inlet Gas coalescing filter separator**
   - Separates gas and water or other liquids
   - Instrumentation and controls for liquid level and automatic purge (optional)

3. **Gas – Gas exchanger**
   - Establishes the gas temperature for optimal performance inside the amine contactor

4. **Amine Contactor**
   - The item where the chemical reaction of amine and acid components (CO_2, H_2S) takes place
   - Sized for the actual gas flow
   - O.D. diameter up to 84”, typical height 60’
   - Trays sized for optimal performance and high turndown ratio (standard 4:1, optional up to 10:1)

Standard 300 GPM Major Components

5. Amine Scrubber

- Designed to remove amine particles left after still column and reflux condenser
- May be located at the bottom of the still column

6. Outlet gas cooler

- Establishes the gas delivery temperature downstream the amine plant

❑ Amine Regenerator

- Part of the plant where the release of acid components from solution takes place, and the amine is regenerated for reuse

7. Amine Heater, Reboiler and heat medium skid

- Direct fired heaters (preferred) or hot oil system
- All heaters with integral NFPA burner management panel
- For hot oil systems:
  - Heat medium skid with pumps and expansion tank
  - Shell and tube reboiler with level and pressure transmitters, safety relief valves, temperature and level controls

8. Amine Flash Tank

- Designed to operate after amine contactor
- It settles the process parameters at lower pressure, after the pressure control valve

9. Amine Cooler

- Cools the lean amine after regeneration, before being re-injected in the contactor

Standard 300 GPM Major Components

10. Reflux Condenser

– Designed to condensate the amine from the overhead gas out of still column

11. Still/reflux accumulator

– Two in one construction, with still column to separate and recover the lean amine from rich solution

12. Carbon filter

– Designed to remove and absorb traces of hydrocarbons form the amine solution

13. Lean/rich amine solids filters

– Designed to remove the solid particles from the amine solution, in order to prevent clogging of the plate and frame lean/rich exchanger

14. Lean/rich exchanger

– Designed to cool the lean amine before being reused, and to heat the rich amine before the still column

15. Amine Booster pumps

– Designed to ensure the minimum NPSH for the main solution pumps

16. Reflux pumps

– Designed to remove the amine solution that condensed in condenser

17. Main solution pumps

– Designed to ensure the high pressure necessary to inject the amine solution inside the amine contactor

Standard 300 GPM Major Components

- **Electrical and controls**

18. PLC panel

- Designed to host the PLC and auxiliary equipment, and to ensure communication and link with the skid junction box

19. Instrumentation

- Designed to remove amine particles left after still column and reflux condenser
- May be located at the bottom of the still column

- **Documentation**
  - Drawings and P&ID's
  - Process simulation
  - Cause and effect diagram, PLC program and operator interface
  - Weight and dimension list
  - Instrument list and calibration values
  - All coded required documents for pressure vessels: U1A forms, hydro charts, engineering calculations available
  - Curves for pumps, rating sheets for heat exchangers
  - Control valves and PSV sizing and calculations
  - Manuals for pumps and instruments

- **Startup assistance**
  - Ensured within continental US

- **Warranty**
  - 12 months from commissioning or 18 months from delivery (FOB Odessa, TX)